

Eating Habits of Youth

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Abstract

Youth eating habits are formed within a rapidly changing nutritional, social, and digital environment. Adolescence and emerging adulthood are periods of accelerated growth, increasing autonomy, identity formation, and transition from family-controlled meals to independent food purchasing. These developmental changes occur alongside expanding access to ultra-processed foods, sugar-sweetened beverages, food-delivery platforms, influencer marketing, irregular schedules, and high screen exposure. This structured narrative review synthesizes recent evidence on the eating habits of youth, with emphasis on adolescents aged 10–19 years and young adults up to 24 years. It examines meal regularity, breakfast consumption, snacking, fruit and vegetable intake, dietary diversity, ultra-processed food use, sugary and energy drinks, family meals, emotional eating, and screen-linked eating. It also analyses determinants at individual, interpersonal, institutional, community, commercial, and policy levels. Current evidence indicates that unhealthy eating among youth is rarely the result of knowledge deficits alone.

Food affordability, time pressure, peer norms, family routines, retail exposure, targeted digital marketing, sleep disruption, mental distress, and limited cooking opportunities interact to shape daily choices. Poor-quality dietary patterns are associated with excess adiposity, micronutrient deficiencies, dental disease, poorer sleep, adverse cardiometabolic profiles, and disordered eating risk, although causal certainty varies across outcomes because much of the literature is cross-sectional. Indian evidence illustrates a double burden: persistent undernutrition and iron inadequacy coexist with rising intake of packaged foods, saturated fat, and commercially promoted snacks.

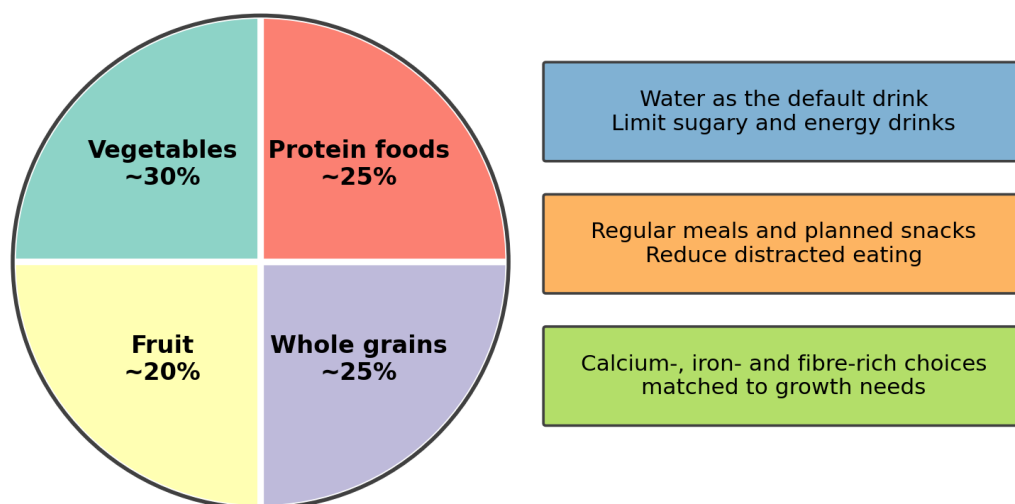
Effective action therefore requires multilevel intervention. School and college standards, healthy procurement, water access, food literacy and cooking skills, family engagement, marketing restrictions, front-of-pack labels, fiscal measures, and digital safeguards should reinforce one another. Future research should use longitudinal designs, objective dietary assessment, culturally valid tools, and equity-focused evaluation. Youth should be involved in designing interventions so that recommendations are practical, affordable, socially acceptable, and sustainable.

Keywords: Adolescents; young adults; dietary behaviour; eating habits; ultra-processed foods; food environment; nutrition education; India

1. Introduction

Eating habits include more than the selection of individual foods. They encompass what people eat, how often they eat, when they eat, where food is obtained, with whom meals are shared, the degree of industrial processing, the emotional context of eating, and the social meanings attached to food. Among youth, these habits are especially consequential because nutritional requirements are high while decision-making systems, social identities, and daily routines are still developing. The World Health Organization defines adolescence as 10–19 years, while many public-health and developmental studies extend the period of “youth” into emerging adulthood, often to 24 years. This broader framing is useful because the transition from school to college or work frequently changes food access, autonomy, sleep schedules, and financial constraints. The same young person may move from structured family meals to cafeteria food, street food, convenience snacks, or delivery-app purchases within a short period. Consequently, the study of youth eating must combine developmental nutrition with behavioural science and food-environment analysis (World Health Organization [WHO], 2026; Maneschy et al., 2024). A healthy diet during youth supports linear growth, bone mineralisation, neurocognitive development, immune function, menstrual health, physical performance, and the establishment of metabolic resilience. It also creates food preferences and practical skills that can persist into adulthood. Conversely, poor dietary quality can produce apparently contradictory outcomes. A young person may consume excess energy while remaining deficient in iron, calcium, folate, vitamin B12, vitamin D, or fibre. This coexistence of excess and deficiency is central to the modern “double burden” of malnutrition. Global analyses show that underweight remains important in many settings, while overweight and obesity have risen markedly among school-age children and adolescents. The worldwide shift is not simply a matter of individual willpower; it reflects changes in food production, retail, urban design, advertising, and the price relationship between minimally processed foods and highly promoted products (NCD Risk Factor Collaboration [NCD-RisC], 2024; UNICEF, 2025).

Balanced Eating Pattern for Youth



Practical principle: variety + regularity + minimally processed foods + responsive portioning

Figure 1. A practical balanced-eating model for youth. The diagram emphasises food-group variety, water, regularity, and growth-related nutrient density.

Youth diets are often characterised by low intake of fruits, vegetables, legumes, and whole grains; irregular breakfast; frequent snacking; sugary-drink or energy-drink use; and increased consumption of ultra-processed products. These patterns vary substantially by country, socioeconomic position, sex, culture, and urbanisation. Some young people face food scarcity and limited dietary diversity, whereas others are surrounded by inexpensive, energy-dense foods and persuasive marketing. Many experience both conditions at different times of the month or year. Food insecurity can promote cyclical restriction and overeating, reliance on shelf-stable products, and anxiety around food. It is also associated with disordered eating behaviours among children and adolescents, demonstrating that nutritional and psychological risks cannot be separated (Bidopia et al., 2023).

Table 1. Core domains of youth eating habits

Domain	Examples	Why it matters	Preferred indicator
Food selection	Fruits, vegetables, pulses, grains, animal-source foods, snacks, beverages	Determines nutrient density and dietary diversity	Repeated 24-hour recalls or food-frequency questionnaire
Meal pattern	Breakfast, meal frequency, timing, family meals	Affects regularity, satiety, sleep and food context	7-day meal-pattern diary

Domain	Examples	Why it matters	Preferred indicator
Processing level	Minimally processed, processed, ultra-processed	Captures displacement and commercial formulation	NOVA-classified recall or screener
Eating context	Home, school, street, restaurant, screen use	Shapes attention, portions, social norms and marketing exposure	Ecological momentary assessment
Psychological style	Emotional, external, restrained, intuitive eating	Links mood, body image and appetite regulation	Validated behavioural questionnaire
Food acquisition	Canteen, retail, delivery apps, family purchase	Connects individual choice to environment and affordability	Purchase diary or transaction data

The digital environment has added a new layer of influence. Social-media platforms deliver personalised food content, influencer endorsements, branded entertainment, discount notifications, and one-click purchasing. Exposure is not passive: engagement data are used to refine future content, creating a feedback loop between attention, preference, and purchasing. Reviews indicate that commercial food marketing increases children's and adolescents' intake, choice, preference, and purchase requests, while social-media content can shape body image and food selection (Boyland et al., 2022; Kucharczuk et al., 2022; Rounsefell et al., 2020). At the same time, digital tools can support healthier behaviours when they provide credible information, self-monitoring, goal setting, and social support. Their effect depends on design quality, privacy, engagement, and whether the surrounding food environment makes healthy choices feasible (Melo et al., 2025; Tang et al., 2024).

This paper therefore treats youth eating as an ecological outcome rather than an isolated personal choice. It reviews the major eating patterns observed in contemporary youth, the mechanisms through which they may influence health, the multilevel determinants that sustain them, and the interventions most likely to produce durable improvement. Special attention is given to India, where traditional dietary diversity, rapid nutrition transition, persistent anaemia, urban growth, and a large youth population create distinctive challenges and opportunities. The paper does not present invented primary data. Instead, it offers a structured synthesis of current systematic reviews, meta-analyses, observational studies, and policy reports, and translates the evidence into a practical framework for research, education, and public-health action.

2. Review Approach and Conceptual Scope

A structured narrative-review approach was used because the topic spans epidemiology, psychology, nutrition, education, marketing, and public policy. Recent peer-reviewed evidence was prioritised, particularly systematic reviews, meta-analyses, umbrella reviews, and large

observational studies published from 2020 to August 2026. Seminal earlier work was retained where it established widely used concepts such as family-meal quality, front-of-pack labelling, or social-media effects. Sources were identified through targeted searches of PubMed/MEDLINE and through official publications from WHO, UNICEF, the Food and Agriculture Organization, and Indian nutrition institutions. Search concepts included adolescent or youth combined with dietary habits, meal patterns, breakfast, ultra-processed foods, sugar-sweetened beverages, energy drinks, food insecurity, food marketing, social media, emotional eating, school nutrition, food literacy, and India.

The evidence was organised using a socio-ecological model. Individual influences include appetite, taste, knowledge, self-regulation, sleep, stress, body image, and health conditions. Interpersonal influences include parents, siblings, peers, and shared meals. Institutional influences include school and college food provision, timetables, vending, and nutrition education. Community influences include retail density, transport, neighbourhood safety, and local food culture. Commercial influences include product formulation, price promotions, branding, influencer marketing, and delivery platforms. Policy influences include taxes, subsidies, procurement standards, marketing regulation, labelling, and social protection. This framework helps explain why information-only programmes often improve knowledge but have limited effect on sustained dietary behaviour when affordability and availability remain unchanged (Samad et al., 2024; Shaw et al., 2023).

Because youth is heterogeneous, interpretation distinguishes early and middle adolescence, late adolescence, and emerging adulthood where possible. It also recognises that many studies rely on self-reported food-frequency questionnaires, single-day recalls, or brief screeners. These methods are practical but vulnerable to recall error, social desirability, under-reporting, and inconsistent classification of meals or processing levels. Associations described in this review should therefore not automatically be interpreted as causal. Stronger confidence is placed in convergent findings across longitudinal studies, experiments, and systematic reviews, while areas dominated by cross-sectional evidence are explicitly described as uncertain.

3. Contemporary Eating Patterns Among Youth

Meal regularity is a basic dimension of eating behaviour. Breakfast is the most frequently studied meal because it is often skipped during adolescence as school start times, late sleep, body-weight concerns, and morning time pressure intensify. A 2025 systematic review and meta-analysis of adolescents in low- and middle-income countries found that infrequent or non-daily breakfast consumption was associated with higher odds of overweight or obesity, although certainty was very low because most studies were cross-sectional and heterogeneous (Fischer et al., 2025). The most defensible interpretation is not that breakfast itself has a universal metabolic effect, but that regular breakfast may be a marker or facilitator of structured routines, adequate sleep, family support, and lower reliance on energy-dense snacks later in the day. Breakfast quality also matters. A sugary beverage and refined snack cannot be assumed equivalent to a meal containing whole grains, fruit, dairy or fortified alternatives, pulses, eggs, or other protein-rich foods.

Meal timing and context extend beyond breakfast. Longitudinal evidence suggests that regular meals, family meals, and avoiding eating while watching television may protect against excess weight, but definitions and findings remain inconsistent (Saltaouras et al., 2024). Late-night eating is common among students with delayed sleep schedules, examination stress, gaming, shift work, or unrestricted device use. Circadian biology suggests that the body handles identical energy loads differently across the day, yet youth-specific intervention evidence is limited. A practical recommendation is therefore to promote regularity, adequate daytime intake, and reduced habitual eating close to sleep rather than prescribing rigid clock times that ignore cultural and school schedules.

A Supportive 24-Hour Eating Rhythm

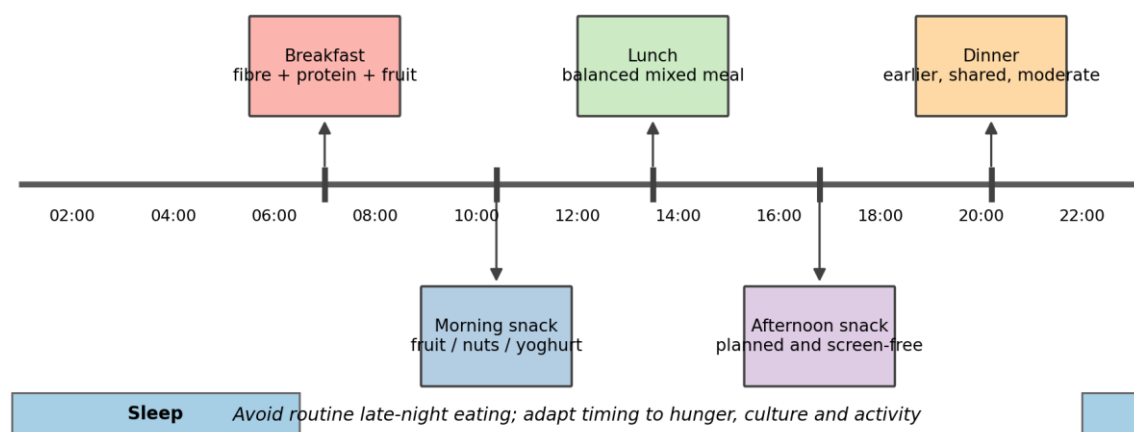


Figure 2. Illustrative 24-hour eating rhythm. Timing should be adapted to culture, school schedules, activity and hunger rather than treated as a rigid prescription.

Snacking is not inherently unhealthy. Planned snacks can contribute fruit, nuts, dairy, whole grains, or nutrient-dense local foods and may be especially useful for physically active youth or those with long school days. Risk arises when snacking becomes frequent, unplanned, screen-linked, and dominated by salty snacks, confectionery, refined baked products, instant foods, or sugary drinks. Such foods are engineered for convenience, palatability, portability, and long shelf life. Ultra-processed foods often contain flavourings, colours, emulsifiers, sweeteners, or other industrial ingredients and are frequently high in energy, free sugars, sodium, or unhealthy fats. Systematic reviews in children and adolescents report associations between higher ultra-processed-food intake and poorer diet quality, adiposity, cardiometabolic outcomes, dental problems, and inactivity, but the strength of evidence varies and residual confounding is common (Mescoloto et al., 2024; Petridi et al., 2024; Robles et al., 2024).

Table 2. Common eating patterns and recent evidence

Pattern	Evidence summary	Potential interpretation	Key sources
Breakfast skipping	Associated with overweight/obesity in LMIC reviews, but certainty is low	Marker of disrupted routine, sleep or later snacking rather than a single causal meal effect	Fischer et al., 2025; Saltaouras et al., 2024
High ultra-processed-food intake	Generally associated with poorer diet quality and adiposity	Energy density, palatability, displacement and marketing may contribute	Mescoloto et al., 2024; Petridi et al., 2024
Sugary/energy drinks	Linked to excess sugar exposure, sleep problems and dental risk	Liquid calories and caffeine reduce satiety and disrupt sleep	Ajibo et al., 2024; Malhotra et al., 2025
Frequent family meals	Usually associated with better fruit/vegetable intake and meal structure	Modelling, availability and positive social context are plausible mechanisms	Dallacker et al., 2019; Melo et al., 2020
Emotional eating	Associated with depressive symptoms and obesity risk	Food may become a coping strategy within stress and reward pathways	Muha et al., 2024; Kösem & Bektaş, 2025
Screen-linked eating	Clusters with packaged foods, low activity and inadequate sleep	Distraction and digital marketing may reinforce automatic intake	Kucharczuk et al., 2022; Rounsefell et al., 2020

The processing framework should be applied thoughtfully. Not every packaged food is nutritionally poor, and some fortified or conveniently prepared foods can improve access and safety. The problem is a dietary pattern in which highly promoted products displace minimally processed staples and mixed meals. In India, formative mapping has identified a wide range of products that fit ultra-processed categories, including breads, chips, sugar-sweetened beverages, instant foods, and packaged versions of traditional recipes (Ghosh-Jerath et al., 2024). A study of South Indian young adults found relatively modest average energy contribution from ultra-processed foods compared with many high-income settings, but

qualitative findings showed a clear shift driven by convenience and commercial factors (Menon et al., 2024). This suggests an opportunity for prevention before higher levels of consumption become normalised.

Sugar-sweetened beverages are a prominent source of free sugars because liquid calories produce limited satiety and are easy to consume rapidly. Soft drinks, sweetened fruit beverages, flavoured milk drinks, sports drinks, and sweetened teas may all contribute. Energy drinks add substantial caffeine and other stimulants. A 2024 systematic review found that energy-drink consumption among children and young people was associated with short sleep, poor sleep quality, lower academic performance, substance use, psychological distress, dental erosion, and other adverse outcomes, although many included studies were observational (Ajibo et al., 2024). School-based programmes can reduce sugar-sweetened-beverage intake, but effects are usually modest unless educational strategies are combined with water access, restrictions on sales, and environmental change (Malhotra et al., 2025).

Fruit, vegetable, pulse, nut, and whole-grain intake remains inadequate in many youth populations. Barriers include cost, limited availability, taste expectations shaped by intense flavours, lack of preparation skills, time, and peer perceptions that healthier foods are less convenient or socially desirable. Picky eating is usually studied in younger children, but it can persist into adolescence and restrict dietary variety. A recent meta-analysis found that picky eating was associated with lower vegetable and fruit intake and greater likelihood of underweight, although effect sizes were small (Jani et al., 2024). Repeated exposure, supportive family modelling, participation in preparation, and non-coercive availability are preferable to pressure or shame.

Family meals are consistently associated with better dietary quality, including higher fruit and vegetable intake and lower consumption of soft drinks. The frequency of eating together is important, but the quality of the mealtime may matter more. A meta-analysis identified positive atmosphere, healthy parental modelling, better food quality, youth involvement in preparation, longer meal duration, and turning off television as favourable components (Dallacker et al., 2019). A systematic review of adolescents similarly found that more frequent family meals were generally linked to healthier food consumption, while associations with body weight were less consistent (Melo et al., 2020). Family meals should not be idealised as a universal solution; they must be feasible for households with shift work, migration, limited kitchen facilities, or food insecurity. Even a few predictable shared meals or collaborative preparation sessions may provide structure and connection.

Emotional and distracted eating represent another important pattern. Stress, sadness, boredom, loneliness, and anger can alter appetite and increase preference for highly palatable foods. Meta-analytic evidence indicates a positive association between depressive symptoms and emotional eating in children and adolescents, while a 2025 review reported a moderate association between emotional eating and adolescent obesity (Köseme & Bektaş, 2025; Muha et al., 2024). These findings do not justify blaming youth for using food to cope. They indicate the need to integrate nutrition with mental-health support, emotion-regulation skills, adequate sleep, and safe social connection. Eating while scrolling, gaming, or streaming may also reduce

awareness of hunger and fullness and increase exposure to food advertising. Screen-time studies commonly report clustering of packaged-food intake, physical inactivity, and inadequate sleep, making the direction of causation difficult to separate.

Emerging adulthood introduces additional patterns that are often missed when research stops at age nineteen. University students, trainees, and new workers may live in hostels, rented rooms, or shared accommodation with limited kitchens and irregular timetables. Food decisions become constrained by canteen hours, commuting, late classes, part-time work, and small personal budgets. Skipping meals may be followed by large evening portions or delivery orders. Alcohol, caffeinated beverages, and social eating can become more common, while family supervision declines. At the same time, this period offers opportunities for rapid improvement because young adults are developing independent identities and household skills. Campus orientation can include information about affordable meal combinations, safe food storage, hydration, sleep, and where to obtain help for food insecurity or disordered eating. Universities should monitor the nutritional quality and price of hostel and cafeteria meals rather than assuming that students can compensate through private purchases.

Diet trends and supplement culture also affect youth eating. High-protein products, meal-replacement shakes, detox plans, intermittent fasting, and restrictive elimination diets are promoted through fitness and wellness content. Some young people use supplements appropriately under professional guidance, but others substitute powders or bars for balanced meals, exceed safe caffeine exposure, or adopt severe restriction to change body shape. Young athletes may be especially vulnerable to advice from peers or unqualified influencers. Education should distinguish performance nutrition from marketing, emphasise that protein needs can usually be met through varied foods, and encourage screening for relative energy deficiency, menstrual disturbance, fatigue, or recurrent injury. The same precaution applies to vegetarian and vegan diets: these patterns can be nutritionally adequate and culturally compatible, but planning and reliable sources of vitamin B12, iron, calcium, iodine, vitamin D, and omega-3 fats are important.

4. Determinants of Youth Eating Habits

Biological development shapes eating in ways that adults may overlook. Puberty increases requirements for energy, protein, iron, calcium, zinc, and other nutrients. Growth spurts and physical activity can produce substantial hunger, while hormonal and circadian changes delay sleep timing. Restrictive dieting during this period may therefore conflict with genuine physiological needs. Sex-specific issues also matter. Menstruating adolescents have higher iron requirements and are vulnerable to iron deficiency when intake is low, absorption is poor, or menstrual loss is heavy. Young people who exclude animal foods may meet needs through well-planned plant-based diets, fortified foods, or supplementation, but require reliable guidance on iron, vitamin B12, calcium, iodine, omega-3 fats, and protein quality. Individualised advice is particularly important for athletes, youth with chronic illness, neurodivergent youth with sensory sensitivities, and those recovering from eating disorders.

Taste preferences are learned through repeated exposure, family cuisine, marketing, and the sensory properties of foods. Highly processed products often combine sweetness, saltiness, fat,

crunch, aroma, and rapid digestibility in ways that strongly activate reward pathways. Youth are not passive recipients, but their capacity to weigh long-term consequences against immediate reward is still developing. Portion size, packaging, price promotions, and peer sharing can amplify intake without conscious intention. Food literacy can improve the ability to plan, select, prepare, and evaluate foods, yet literacy is broader than nutrient knowledge. It includes practical cooking, budgeting, label interpretation, food safety, cultural competence, and understanding of sustainability and marketing. Ares et al. (2024) argue that these competencies develop across childhood and adolescence and should be taught through age-appropriate, experiential methods rather than abstract lectures.

Socio-Ecological Determinants of Youth Eating

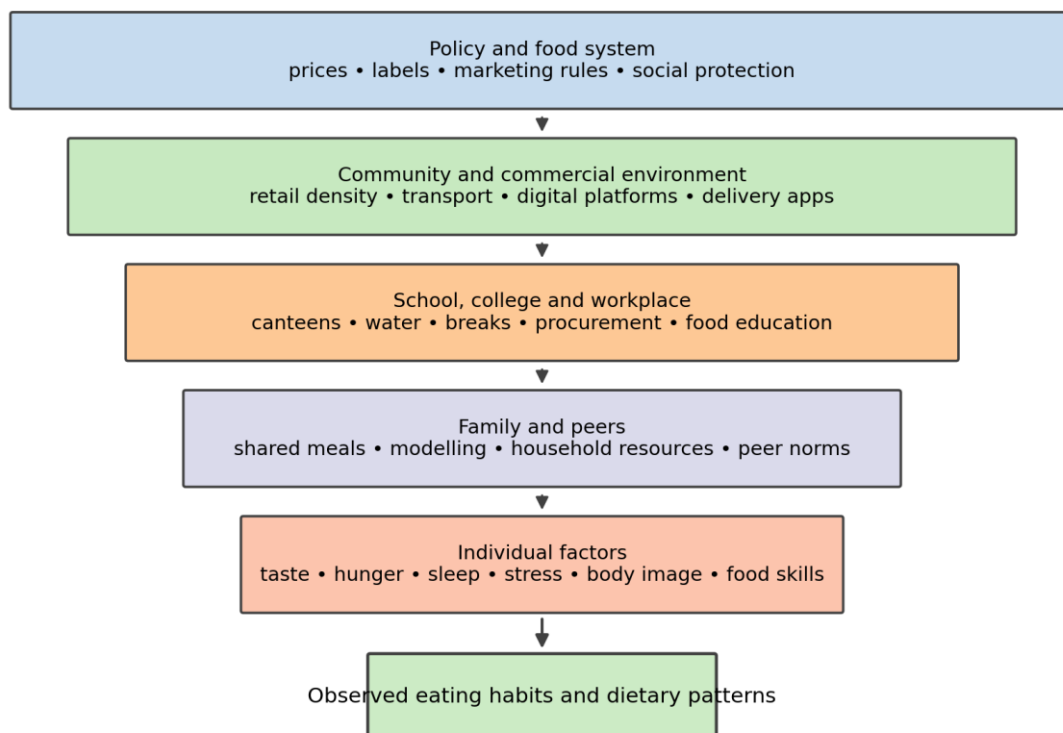


Figure 3. Socio-ecological model showing interacting determinants from individual biology and skills to food-system policy.

Sleep is closely intertwined with diet. Adolescents commonly experience insufficient or irregular sleep due to early school times, homework, social media, gaming, household responsibilities, and employment. A longitudinal systematic review and meta-analysis linked shorter or poorer sleep with higher body mass index and obesity risk, while evidence on bidirectional links with eating behaviour remained limited (Grimaldi et al., 2023). A separate review found that healthier dietary factors were generally associated with better sleep, whereas high-fat, high-sugar, processed foods, caffeine, and alcohol were associated with poorer sleep features (Zhong et al., 2024). The relationship is plausibly reciprocal: inadequate sleep may

increase appetite and preference for rewarding foods, while caffeine and late heavy meals may further disrupt sleep.

Table 3. Multilevel determinants of eating habits

Level	Facilitators	Barriers	Example intervention
Individual	Food skills, self-efficacy, adequate sleep	Stress, limited time, body dissatisfaction	Cooking and media-literacy curriculum
Family/peers	Shared meals, modelling, supportive norms	Shift work, coercive feeding, peer pressure	Flexible family-meal planning and peer leadership
School/college	Healthy canteen, water, sufficient breaks	Unhealthy vending, short breaks, marketing	Procurement standards and healthy pricing
Community	Markets, safe transport, local food culture	Dense fast-food retail, unsafe access	Retail incentives and school-neighbourhood planning
Commercial/digital	Healthier reformulation and transparent information	Influencer marketing, discounts, algorithmic targeting	Marketing restrictions and platform accountability
Policy/economy	Subsidies, school meals, clear labels	Food inflation and weak enforcement	Fiscal policy, social protection and monitoring

Psychological factors include stress, mood, self-esteem, body image, perfectionism, and perceived control. Adolescents may alternate between restriction and overeating, particularly when exposed to idealised bodies, fitness culture, or “clean eating” messages. Social media can simultaneously promote fast food, extreme dieting, muscle-building supplements, and wellness products. Reviews link image-focused social-media exposure with body dissatisfaction and altered food choices in some young adults, while the global prevalence of screen-detected disordered eating among high-school students has been estimated at approximately one in eight, with substantial heterogeneity between studies and instruments (Ghazzawi et al., 2023; Rounsefell et al., 2020). Prevention messaging must avoid moralising foods or equating body size with health, because shame can intensify secrecy, restriction, and disordered eating. Family influence operates through food availability, rules, modelling, emotional climate, and socioeconomic resources. Authoritative structure—regular opportunities to eat, nutritious options, reasonable boundaries, and responsiveness to hunger—is generally preferable to

coercive restriction or pressure. Parents and caregivers also transmit cultural recipes and expectations. In many households, adolescents participate in shopping, cooking, or feeding younger siblings, creating an opportunity to build competence. However, families cannot be expected to solve structural problems alone. Long working hours, high food prices, limited refrigeration, unsafe neighbourhoods, and aggressive marketing constrain what households can provide. Interventions that praise family responsibility without improving affordability risk increasing stigma.

Peers become more influential as youth seek belonging and autonomy. Food is a social signal: choosing a popular beverage, sharing snacks, visiting a fast-food outlet, or following a food trend can communicate identity. Peer influence can support healthy habits when groups cook, play sport, or value balanced eating, but it can also reinforce meal skipping, dieting, supplement use, or frequent fast-food purchases. Qualitative research repeatedly shows that adolescents value taste, convenience, price, and social acceptance. A 2024 mixed-methods systematic review of barriers and facilitators to healthful eating found that adolescents understood many health messages but struggled with availability, affordability, time, peer influence, and the appeal of unhealthy foods (Louey et al., 2024). Thus, interventions should make healthy choices socially rewarding and convenient rather than relying on fear-based information.

Schools and colleges are powerful food environments because they shape daily schedules, food access, water availability, and norms. A student may receive nutrition education in class while being surrounded by vending machines, fried snacks, sugary drinks, and advertising. The neighbourhood around school also matters. A systematic review found that greater exposure to unhealthy food retail near schools or along the commute was often associated with more frequent unhealthy purchasing, though study quality was limited (Caruso et al., 2024). Broader evidence on community food environments similarly suggests that greater exposure to unhealthy outlets is linked with less healthy purchasing and intake among adolescents (Shaw et al., 2023). Institutional action therefore needs to include procurement, pricing, placement, portioning, break times, and restrictions on commercial promotion.

Commercial determinants are increasingly personalised. Food and beverage companies use branding, entertainment, sports sponsorship, games, influencers, and limited-time promotions to shape preferences. Digital marketing can follow youth across platforms and times of day, often without clear recognition that content is advertising. The systematic review and meta-analysis by Boyland et al. (2022) concluded that food marketing exposure is associated with increased intake, choice, preference, and purchase requests in children and adolescents. Kucharczuk et al. (2022) described widespread use of celebrities and influencers to promote unhealthy products. Because persuasion is embedded in social content, media literacy is necessary but insufficient; policy restrictions and platform accountability are also required.

Economic conditions determine whether recommendations are realistic. Healthy diets can be unaffordable when fruits, vegetables, pulses, dairy, eggs, or nuts fluctuate in price, while refined snacks are cheap, shelf-stable, and heavily discounted. Food insecurity can coexist with obesity because households may rely on low-cost, energy-dense products and experience cycles of shortage and compensation. The global food-security reports emphasise that inflation

and reduced purchasing power undermine access to nutritious diets (FAO et al., 2025). Youth may also have limited personal money and prioritise filling, shareable, or branded foods. Subsidies, school meals, social protection, and price policies are therefore nutrition interventions, not merely economic measures.

Culture and place influence food meaning. Traditional diets may contain diverse grains, pulses, vegetables, fermented foods, dairy, fish, or spices, but can be displaced by standardised commercial products. At the same time, “traditional” should not be romanticised; some customary practices may be high in salt, sugar, or saturated fat, and gender norms may determine who eats first or receives nutrient-rich foods. Effective guidance adapts evidence-based principles to local cuisine rather than importing a single idealised diet. In rural India, adolescents classified foods as healthy or unhealthy using nutrients, perceived effects on immunity, ingredients, preparation setting, packaging, and parental influence, showing that food concepts are culturally constructed and can be strengthened through locally relevant education (Kansal et al., 2023).

Gender and social position modify nearly every determinant. Girls may face greater pressure to be thin, restrictions on mobility, lower access to sports, and intrahousehold norms that affect food allocation. Boys may be targeted by muscle-building marketing, energy drinks, large-portion norms, and high-protein supplements. Gender-diverse youth may experience stigma, mental distress, or reduced access to affirming health care, which can influence eating and body image. Socioeconomic gradients are equally complex. Higher-income youth may have more access to diverse foods but also greater exposure to delivery apps and branded products; lower-income youth may depend on inexpensive refined foods, school meals, or informal vendors. Rural youth may retain traditional foods yet face seasonal scarcity and limited retail variety, whereas urban youth face dense commercial exposure. Analysis should therefore avoid treating sex, income, or residence as simple confounders and instead examine how they change pathways and intervention feasibility.

5. Health and Developmental Consequences

The most visible consequence of poor diet is often excess weight, but body mass alone is an incomplete outcome. Youth can have a higher body mass index with adequate metabolic health, or a normal body mass index with micronutrient deficiency, low fitness, high central adiposity, or disordered eating. Nevertheless, the rise in youth overweight and obesity is clinically important because it increases the likelihood of persistence into adulthood and is associated with insulin resistance, dyslipidaemia, hypertension, fatty liver disease, sleep apnoea, orthopaedic problems, and psychosocial stigma. NCD-RisC (2024) documented worldwide increases in obesity alongside continuing underweight, highlighting the need for “double-duty” actions that improve diet quality without promoting restrictive or stigmatising practices.

Ultra-processed dietary patterns may influence weight through several pathways: higher energy density, rapid eating rate, large portion sizes, weak satiety, displacement of fibre-rich foods, and strong sensory reward. Reviews in children and adolescents generally report associations with greater adiposity, although certainty is limited by observational designs and inconsistent exposure measurement (Petridi et al., 2024; Robles et al., 2024). Randomised evidence on

ultra-processed foods is still dominated by adult studies, so youth-specific causal claims should be cautious. The practical implication is not to ban every packaged item but to reduce habitual reliance on products that combine high palatability, low nutrient density, and aggressive marketing.

Mechanistic Pathways Linking Eating Habits to Youth Health

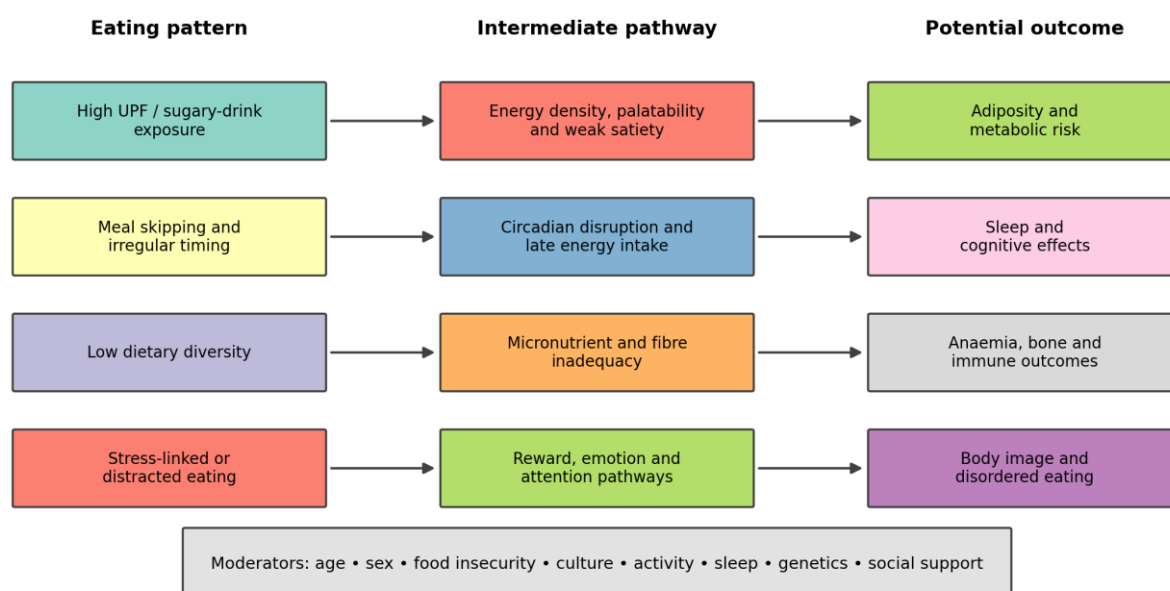


Figure 4. Mechanistic pathways linking common eating patterns to metabolic, nutritional, sleep and mental-health outcomes.

Micronutrient deficiency remains a major concern. Iron deficiency can impair attention, learning, physical capacity, and immune function, especially in menstruating adolescents. Calcium and vitamin D are important during peak bone-mass acquisition. Folate, vitamin B12, iodine, zinc, and vitamin A support neurodevelopment, thyroid function, growth, and immunity. Low dietary diversity increases risk because no single food group supplies all necessary nutrients. A 2025 meta-analysis found that lower dietary diversity was associated with higher odds of anaemia in children and adolescents. In a Delhi study, fewer than 40% of girls achieved the estimated average requirement for iron, while saturated-fat intake exceeded recommendations for most participants (Ivaturi et al., 2024). These results exemplify the coexistence of excess energy or fat with inadequate micronutrients.

Table 4. Health outcomes and plausible pathways

Outcome	Relevant habits	Plausible pathway	Evidence caution
Adiposity/metabolic risk	UPFs, sugary drinks, irregular meals	Energy density, weak satiety, late intake	Mostly observational youth evidence
Micronutrient deficiency	Low diversity, restrictive diets, meal skipping	Low iron, calcium, B12, folate or zinc intake	Biomarkers needed for confirmation

Outcome	Relevant habits	Plausible pathway	Evidence caution
Dental caries/erosion	Frequent sugar and acidic drinks	Repeated acid exposure and demineralisation	Frequency may matter more than single quantity
Sleep problems	Caffeine, energy drinks, late eating	Arousal and circadian delay	Bidirectional association
Mental health/disordered eating	Restriction, emotional eating, food insecurity	Stress, reward, body image and shame	Avoid weight-stigmatising interpretation
Academic functioning	Hunger, iron deficiency, poor sleep	Attention, attendance and fatigue	Socioeconomic confounding is substantial

Dental health is directly affected by eating frequency and free-sugar exposure. Repeated sipping of sugary drinks, sticky snacks, and energy drinks extends acid exposure and promotes caries and erosion. Energy drinks may be particularly erosive because of acidity in addition to sugar. Oral-health outcomes can therefore provide an immediate and understandable reason for youth to reduce sugary beverages, sometimes more motivating than distant cardiometabolic risk. School water availability, limits on sugary-drink sales, and dental-health education should be integrated rather than delivered separately.

Diet and sleep have reciprocal effects. Caffeine and energy drinks can delay sleep and reduce sleep quality; late-night eating can accompany device use and academic stress; and insufficient sleep can increase impulsive food choices. Reviews report associations between healthier food patterns and better sleep, and between caffeine, sugar-rich foods, processed foods, or alcohol and poorer sleep (Grimaldi et al., 2023; Zhong et al., 2024). Poor sleep also affects mood, learning, appetite regulation, and physical activity. Consequently, dietary counselling that ignores sleep may fail, while school policies that encourage earlier schedules and reduce late academic load may indirectly improve eating.

Mental health and eating are deeply connected. Depression, anxiety, loneliness, trauma, and stress may reduce appetite in some youth and increase emotional or loss-of-control eating in others. Food insecurity intensifies uncertainty and shame. Body dissatisfaction can lead to meal skipping, vomiting, misuse of laxatives or supplements, compulsive exercise, or binge eating. Screening studies suggest that disordered eating is common among high-school students, though prevalence estimates depend heavily on instruments and cultural context (Ghazzawi et al., 2023). Health promotion should therefore include clear referral pathways for eating disorders and mental-health problems. Weight-focused programmes must be designed carefully so they do not increase dieting, teasing, or body surveillance.

Academic performance may be influenced through multiple pathways, including hunger, iron deficiency, sleep disruption, and energy fluctuations. Evidence linking specific meals such as breakfast directly to grades is mixed and confounded by socioeconomic factors, but regular

access to nutritious food supports attendance and concentration. In India, a systematic review of the mid-day meal programme found improvements in enrolment, attendance, retention, and some nutritional outcomes, while effects on academic performance were less clear (Raveenthiranathan et al., 2024). The strongest justification for school meals is therefore broader than test scores: they provide social protection, reduce hunger, establish healthy norms, and can improve dietary equity.

Long-term consequences arise because youth habits track into adulthood. Repeated exposure shapes taste preferences; cooking confidence influences reliance on takeaway foods; and the transition to university or employment can consolidate irregular routines. Family meals during adolescence have been associated with better dietary patterns in young adulthood, suggesting that social structure can have lasting effects. Yet tracking is not destiny. Transitions are also opportunities. Starting college, joining a sports team, moving to a hostel, beginning work, or gaining purchasing autonomy can motivate new habits when environments provide affordable choices and practical support.

6. The Indian Context

India illustrates the complexity of youth nutrition because undernutrition, micronutrient deficiencies, and overweight coexist across regions and socioeconomic groups. National surveys have documented underweight and anaemia among adolescents, while more recent analyses and reports show rising overweight and obesity. Rapid urbanisation, increased household purchasing power for some groups, expansion of packaged-food markets, and app-based delivery are changing food exposure. At the same time, many families continue to face food insecurity, seasonal employment, and unequal access to diverse foods. A single message such as “eat less” is therefore inappropriate. Public health must improve diet quality, food security, physical activity, and body-image safety simultaneously.

The Comprehensive National Nutrition Survey provided a major evidence base on adolescents aged 10–19 years, including dietary habits, micronutrient status, physical activity, and access to services (UNICEF India, 2019). The findings reinforced the need to address both insufficient and excessive intake. More recent research among private-school adolescents in Delhi identified high energy and saturated-fat intake alongside iron inadequacy in girls (Ivaturi et al., 2024). This pattern is particularly concerning because iron deficiency can impair learning and future maternal health, while high saturated-fat intake contributes to cardiometabolic risk. School-based nutrition must therefore include iron-rich foods and absorption-enhancing combinations, not merely calorie control.

Indian dietary patterns are highly diverse. Balanced local meals may combine cereals or millets, pulses, vegetables, curd, eggs, fish, meat, nuts, seeds, and fruit. However, time pressure and commercial convenience can displace mixed meals with biscuits, chips, instant noodles, sweetened drinks, and bakery products. Ghosh-Jerath et al. (2024) identified 23 categories of ultra-processed foods in the Indian market and noted inconsistent terminology such as junk food, fast food, packaged food, and high-fat-sugar-salt food. Standardised classification and simple screening tools are important for surveillance, but consumer communication should

remain practical: identify products with long lists of industrial ingredients, high added sugar or sodium, and heavy promotion, while preserving useful packaged staples and fortified foods.

The study of young adults in Puducherry found that ultra-processed foods contributed less energy than reported in many Western populations, yet biscuits, wafers, and chips were prominent and participants described convenience, taste, social context, and advertising as drivers (Menon et al., 2024). This is a strategic moment for prevention. Policies can protect traditional meal patterns before ultra-processed products dominate energy intake. Campus canteens and hostels can offer affordable thalis, pulses, eggs, fruit, curd, and safe drinking water; vendors can be incentivised to reduce oil, salt, and portion sizes; and delivery platforms can display healthier default options.

Food knowledge among Indian adolescents is not absent, but it may be fragmented. Rural adolescents in Uttar Pradesh used multiple criteria to classify foods, including ingredients, preparation location, packaging, health effects, and parental messages (Kansal et al., 2023). Nutrition education can build on these existing frameworks by using familiar meals, label-reading practice, cooking demonstrations, and comparisons of cost per serving. Messages should avoid portraying all street food or traditional snacks as unhealthy; preparation method, portion, frequency, hygiene, and overall pattern matter. Similarly, imported “health foods” are not necessary when local pulses, seasonal vegetables, millets, peanuts, eggs, and fermented foods are accessible.

School feeding is a major equity tool. The PM-POSHAN programme can reduce hunger and support attendance, but menu quality, food safety, implementation consistency, and adolescent relevance require continued attention. As students age, participation may decline or energy needs may exceed provision. School-health programmes can complement meals with weekly iron and folic acid supplementation, deworming where indicated, menstrual-health support, water and sanitation, physical activity, and counselling. The 2024 systematic review of India’s free school lunch programme found overall educational benefits and mixed but sometimes favourable nutritional effects (Raveenthiranathan et al., 2024). Strong monitoring should include dietary diversity and acceptability, not only calories or attendance.

India’s 2024 Dietary Guidelines for Indians provide an important national foundation, emphasising variety, minimally processed foods, moderation of sugar, salt, and fat, and attention to food labels (ICMR–National Institute of Nutrition [ICMR-NIN], 2024). Implementation should focus on the environments where youth make decisions: schools, coaching centres, colleges, hostels, workplaces, transport hubs, sports settings, and digital platforms. Restrictions on marketing near schools, clearer front-of-pack labels, standards for school foods, and fiscal measures can reinforce education. Because India’s food economy includes small vendors as well as multinational companies, policy should pair regulation with training, infrastructure, and incentives so healthier options remain affordable and livelihoods are protected.

7. Measuring Eating Habits in Youth Research

High-quality research depends on clear definitions. “Eating habits” can refer to meal frequency, breakfast, snacking, food groups, nutrient intake, diet quality, processing level, emotional

eating, or food purchasing. Studies should specify the construct and its timeframe. A single question about breakfast cannot represent overall diet quality, and a food-frequency questionnaire cannot fully capture meal context. Multi-method assessment is therefore desirable. Repeated 24-hour recalls estimate foods and nutrients; food diaries capture timing and context but increase burden; food-frequency questionnaires estimate habitual intake but rely on memory; brief screeners identify high-risk patterns; and photographs or digital purchase records can add objective information.

Validated behavioural questionnaires are useful when the research question concerns appetite or eating style. The Child Eating Behaviour Questionnaire and Dutch Eating Behaviour Questionnaire assess traits such as food responsiveness, emotional eating, external eating, and restraint. A recent systematic review found meaningful associations between these eating behaviours and dietary intake, while also noting inconsistency across age groups and instruments (Maneschy et al., 2024). Researchers should use culturally validated versions and avoid assuming that a score has the same meaning across countries. Translation requires more than literal wording; examples, meal structures, and social norms may differ.

Diet quality can be summarised using food-group scores, healthy-eating indices, Mediterranean-diet scores, or dietary-diversity indicators. Processing-based assessment uses the NOVA framework, but classification can be difficult when recipes or ingredient lists are incomplete. India-specific work to map ultra-processed categories may improve consistency (Ghosh-Jerath et al., 2024). Researchers should report how mixed dishes, restaurant foods, and packaged traditional products were classified. Sensitivity analyses are valuable because conclusions can change when uncertain items are reclassified.

Table 5. Recommended measurement toolbox

Research aim	Preferred method	Strength	Limitation
Habitual intake	Validated food-frequency questionnaire	Low burden and scalable	Recall and fixed food lists
Detailed foods/nutrients	Multiple 24-hour recalls	Quantitative and adaptable	Requires trained coding
Timing/context	7-day diary or ecological momentary assessment	Captures real-time context	Participant burden
Processing level	NOVA-coded recalls plus label data	Relevant to food-system transition	Classification uncertainty

Research aim	Preferred method	Strength	Limitation
Eating behaviour	CEBQ/DEBQ or related validated scale	Measures emotional/external/restraint traits	Cultural validation essential
Environment/purchasing	GIS, store audit, receipts or transaction data	Reduces reliance on memory	Privacy and access challenges
Health outcomes	Measured anthropometry and selected biomarkers	Clinically meaningful	Cost and ethical considerations

Anthropometry should be measured rather than self-reported where possible and interpreted using age- and sex-appropriate standards. Body mass index should be complemented by waist measures, growth history, pubertal stage where ethical and feasible, and biochemical indicators when resources permit. Iron status, lipids, glucose regulation, blood pressure, and vitamin markers provide clinically relevant outcomes. Equally important are sleep, physical activity, mental health, food insecurity, socioeconomic position, and screen exposure, because these factors confound or mediate associations.

Ethics are especially important in youth nutrition research. Weight measurements must be private; consent and assent procedures should be clear; and results should not label or shame participants. Surveys asking about binge eating, purging, or food insecurity need referral pathways and trained staff. Digital studies must protect geolocation, purchase, and social-media data. Youth advisory groups can improve question wording, reduce burden, and identify unintended harms. Finally, reporting should distinguish exploratory associations from causal conclusions and should include null findings to reduce publication bias.

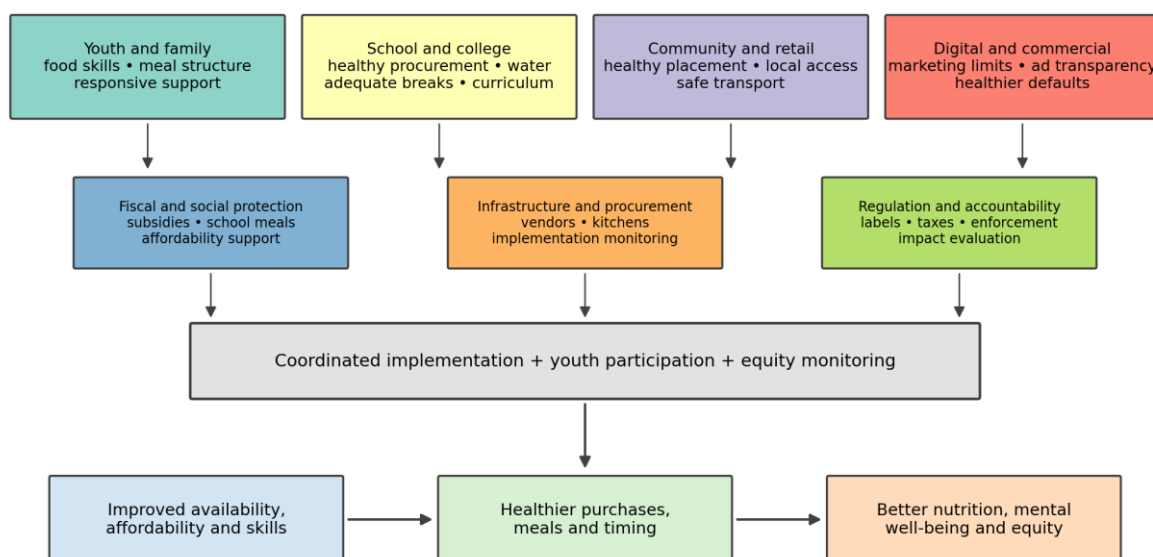
8. Effective Interventions and Policy Options

Education remains necessary, but evidence shows that education alone is rarely sufficient. The strongest school-based programmes combine curriculum with environmental changes and family or community involvement. An umbrella review of interventions for adolescents found that multicomponent approaches generally improved knowledge and healthy-eating behaviour, while technology-based curricula were more effective when supported by changes in the school environment (Samad et al., 2024). A separate review similarly identified benefits from nutrition education, physical activity, and comprehensive programmes, although long-term effects on body mass index were uncertain (Chatterjee & Nirgude, 2024). The goal should be to make the healthier action the easy, affordable, and socially normal action.

Food literacy programmes should include practical competencies: assembling a balanced meal, preparing two or three low-cost dishes, comparing labels, recognising marketing tactics, budgeting, planning snacks, storing food safely, and adapting traditional recipes. Experiential learning is more likely to transfer into daily life than memorising nutrient functions. Youth can

audit their own canteen, map food outlets around school, redesign a favourite snack, or create social-media content that counters misleading claims. Ares et al. (2024) emphasise that food-literacy development should be age-appropriate and connected to sustainability. Programmes must also teach flexibility so students do not interpret healthy eating as perfection or restriction.

Multilevel Intervention Architecture for Healthier Youth Diets



Coordinated packages are more effective than education-only approaches.

Figure 5. Multilevel intervention architecture. Coordinated action changes capability, opportunity and commercial exposure.

School and college food standards can change exposure at scale. Standards may set limits for free sugars, sodium, saturated fat, portion sizes, and deep-fried foods; require fruits, vegetables, pulses, whole grains, and safe water; restrict energy drinks; and prevent branded marketing. Procurement can support local producers and culturally familiar foods. Pricing and placement matter: healthier items should be visible, convenient, and competitively priced. The WHO's 2026 guidance on healthy school food environments recommends a whole-school approach that aligns provision, sales, education, and the broader environment. Implementation must include monitoring, vendor training, infrastructure, and student feedback rather than simply banning foods without alternatives.

Table 6. Multilevel actions for healthier youth diets

Setting	Priority actions	Implementation indicator	Expected benefit
Youth	Food literacy, cooking, label and marketing skills	Competency assessment and food-choice change	Greater capability and autonomy

Setting	Priority actions	Implementation indicator	Expected benefit
Family	Responsive structure, shared preparation, affordable planning	Meal regularity and home availability	Improved diet quality and connection
School/college	Healthy standards, water, procurement, adequate breaks	Compliance audit and sales mix	Reduced unhealthy exposure
Digital platforms	Ad transparency, youth safeguards, healthier defaults	Exposure and engagement metrics	Reduced persuasive pressure
Government	Marketing rules, warning labels, taxes/subsidies	Coverage, enforcement and price change	Population-level shift and reformulation
Health services	Screen food insecurity, anaemia and disordered eating	Referral and follow-up rates	Earlier detection and safer counselling
Research systems	Longitudinal, equity-focused, participatory evaluation	Protocol quality and subgroup reporting	Stronger causal and implementation evidence

Family engagement works best when it is practical and non-judgemental. Programmes can provide low-cost meal plans, batch-cooking ideas, strategies for shared meals despite shift work, and guidance on responsive feeding. Parents should learn about digital marketing, energy drinks, supplements, and warning signs of disordered eating. Adolescents should retain age-appropriate autonomy. Joint goal setting—such as adding one fruit, carrying water, or scheduling two shared dinners—may be more acceptable than strict household rules. Family involvement is particularly important for younger adolescents, but emerging adults in hostels or rented housing need peer and institutional support instead.

Digital interventions can deliver reminders, recipes, self-monitoring, challenges, and peer support at low marginal cost. A 2025 review found promise for internet-based dietary interventions but highlighted variable engagement and the importance of behaviour-change techniques (Melo et al., 2025). Social-media interventions have mixed evidence and may unintentionally increase comparison or misinformation (Tang et al., 2024). Effective design should minimise data collection, avoid weight-centred gamification, disclose sponsorship, use qualified content review, and connect digital advice to real food access. Hybrid programmes that combine apps with face-to-face support may produce stronger engagement, though they are less scalable (Baumann et al., 2025).

Marketing regulation is a population-level intervention. WHO recommends mandatory, comprehensive policies to protect children from harmful food marketing across television, digital media, packaging, sponsorship, retail, and public spaces. Voluntary industry codes often have narrow definitions or weak enforcement. The evidence that marketing influences intake and preferences supports restrictions based on nutrient-profile criteria (Boyland et al., 2022; WHO, 2023). Protection should extend through adolescence because older teenagers remain developmentally vulnerable and are heavy users of digital platforms. Brand advertising and influencer content require explicit coverage.

Front-of-pack nutrition labelling can help consumers identify products high in sugar, sodium, or saturated fat. Systematic reviews suggest that interpretive labels can encourage healthier purchasing, but effects depend on format, visibility, understanding, and the available alternatives (Crocker et al., 2020). Labels are not a substitute for regulation; they work best alongside reformulation, marketing limits, and education. For youth, simple warning symbols may be more actionable than dense numeric panels. Menu labelling in restaurants and cafeterias has shown limited and mixed effects among children and adolescents, suggesting that calorie numbers alone are insufficient.

Fiscal policies can shift prices. Taxes on sugar-sweetened beverages and selected unhealthy products can reduce purchases and encourage reformulation, while subsidies or procurement support can make fruits, vegetables, pulses, and healthy school meals more affordable. WHO's 2024 fiscal-policy guideline recommends using taxes and subsidies as part of a broader healthy-diet strategy. Equity requires careful design: revenues can fund water infrastructure, school meals, or fruit and vegetable subsidies, and policy evaluation should examine household burden, substitution, and industry response. Price measures are most effective when combined with clear public communication and accessible alternatives.

Health services should screen for both dietary risk and disordered eating. Brief questions about meal skipping, sugary drinks, energy drinks, food insecurity, body dissatisfaction, binge eating, compensatory behaviours, sleep, and menstrual health can identify needs. Counselling should use motivational interviewing and collaborative goals rather than lectures. Youth with obesity deserve evidence-based, stigma-free care, while those with restrictive eating or eating-disorder symptoms need specialist referral. Nutrition professionals, paediatricians, school nurses, dentists, psychologists, and community health workers should share consistent messages.

Community and urban-planning interventions are less studied but potentially important. Zoning or licensing can limit dense clusters of unhealthy outlets near schools; transport and safety improvements can increase access to markets; and community kitchens or youth clubs can build skills. Retailers can use healthier checkout placement, portion options, and promotions. Because local food economies differ, pilot programmes should be co-designed with vendors and evaluated for sales, acceptability, and unintended consequences. The school-neighbourhood evidence is not yet definitive, but it is sufficiently suggestive to justify stronger natural experiments and policy evaluation (Caruso et al., 2024).

Interventions can also connect health with sustainability in practical ways. School and campus procurement can favour seasonal produce, pulses, diverse grains, and minimally processed

foods while reducing waste through better forecasting and portion choice. Students can learn to use leftovers safely, understand date labels, compost where feasible, and compare the environmental as well as nutritional implications of meals. However, sustainability messages should not imply that individual youth are responsible for solving climate change through perfect consumption. Institutions and suppliers control procurement, packaging, transport, and waste systems. Healthier and more sustainable defaults should therefore be built into menus and contracts, while respecting cultural preferences and ensuring adequate energy, iron, calcium, vitamin B12, and protein for growth.

9. Discussion, Research Gaps, and Future Directions

The central conclusion of the evidence is that youth eating habits are produced by interacting systems. Knowledge matters, but it competes with price, convenience, sleep deprivation, social identity, marketing, and institutional availability. This explains why a student can accurately describe a healthy diet while purchasing a sugary drink and packaged snack. The immediate choice may be the cheapest, fastest, most socially accepted, and most visible option. Effective strategies therefore align personal capability with environmental opportunity and supportive policy.

Causal certainty remains uneven. Many studies are cross-sectional and use self-reported dietary measures. Associations between breakfast skipping, screen time, ultra-processed foods, sleep, and body weight may reflect broader lifestyle patterns. Longitudinal studies and randomised trials are increasing but remain concentrated in high-income countries. Future research should harmonise definitions of meals, snacks, and ultra-processed foods; use repeated dietary assessments; incorporate objective purchasing or digital-exposure data; and report effect sizes rather than only statistical significance. Natural experiments evaluating taxes, labels, school standards, and marketing restrictions are especially valuable.

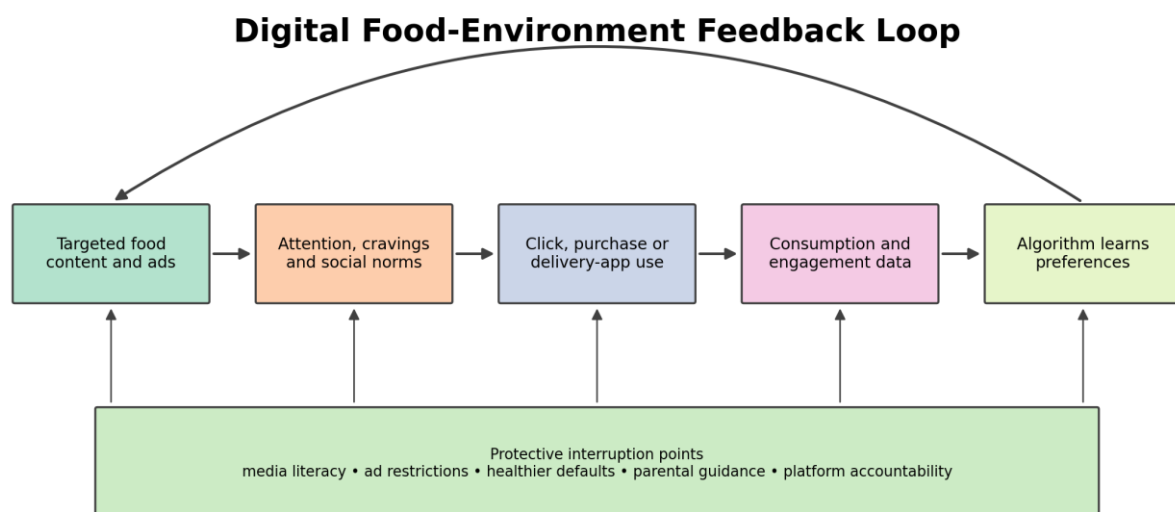


Figure 6. Digital food-environment feedback loop and points where policy, platform design and media literacy can interrupt persuasive exposure.

Equity must be a primary outcome rather than an afterthought. Interventions can widen disparities if they require smartphones, expensive ingredients, parental time, or safe kitchens. Research should stratify effects by income, rurality, caste or ethnicity where appropriate, gender, disability, food insecurity, and school type. Youth living in hostels, informal settlements, conflict-affected areas, or migrant households are underrepresented. Food insecurity and obesity should be studied together, and mental-health measures should accompany weight outcomes.

India needs more nationally representative, repeated dietary-intake data for adolescents and young adults. Market sales indicate rapid growth of packaged foods, but consumption varies by region and social group. Studies should capture mixed dishes, street foods, hostel meals, coaching-centre schedules, religious practices, and app-based ordering. Biomarkers can clarify iron, vitamin B12, vitamin D, lipid, and glycaemic risk. Intervention studies should evaluate PM-POSHAN quality, food-environment standards, front-of-pack labels, and digital-marketing regulation using implementation-science methods.

Youth participation is essential. Adolescents understand the practical realities of school breaks, peer pressure, taste, price, and platform use. Co-design can improve language, format, timing, and credibility. Participation should extend beyond consultation to decision-making, testing, and evaluation. Programmes that treat youth only as recipients may miss creative solutions, such as peer-led canteen audits, student-designed menus, cooking clubs, or digital counter-marketing. Safeguards are needed so participation is inclusive and not dominated by high-achieving or affluent students.

Sustainability should be integrated with health without creating a new moral burden. Diets rich in diverse plant foods and with moderate amounts of animal-source foods can support health and reduce environmental pressure, but nutritional adequacy, culture, affordability, and local livelihoods must guide recommendations. Adolescents' understanding of sustainable diets is often limited, and school-based experiential interventions appear more promising than abstract messaging. Food-waste reduction, seasonal foods, pulses, and practical cooking provide accessible entry points.

Finally, communication must avoid polarisation. Dividing foods into “good” and “bad” can increase guilt and reduce trust. A more useful framework is frequency, portion, context, and displacement. Foods high in sugar, sodium, or unhealthy fats can be occasional rather than routine; packaged foods can vary in quality; and celebratory eating is compatible with an overall healthy pattern. The public-health objective is not dietary perfection but a reliable pattern that supports growth, well-being, cultural identity, and long-term health.

10. Conclusion

Eating habits during youth are shaped at the intersection of development and environment. Regular meals, dietary diversity, fruit and vegetable intake, family or social eating, adequate hydration, and practical food skills can support growth and well-being. In contrast, habitual reliance on ultra-processed snacks, sugary or energy drinks, irregular meal timing, screen-linked eating, and restrictive or emotionally driven patterns can contribute to metabolic,

nutritional, dental, sleep, and mental-health risks. The evidence does not support reducing the problem to personal responsibility.

The most promising response is coordinated and multilevel. Schools and colleges should align curriculum with healthy food provision, water access, procurement, and marketing restrictions. Families need affordable options and practical support. Governments should use clear labelling, fiscal policies, social protection, and comprehensive controls on unhealthy food marketing. Digital interventions should be evidence-based and privacy-protective, while digital platforms should be accountable for commercial exposure. Health services must screen for micronutrient deficiency, food insecurity, and disordered eating as well as excess weight.

For India, action must address the double burden of malnutrition by protecting dietary diversity, strengthening school meals, improving iron intake, and preventing rapid displacement of traditional mixed meals by heavily promoted products. Research should become more longitudinal, culturally valid, and participatory. When youth are involved in designing solutions and healthier choices are affordable, convenient, and socially valued, eating habits can change without stigma or unrealistic demands for perfection.

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