

บทความวิชาการ

Academic Articles

การทำความเข้าใจความเชื่อมโยงระหว่างอาหารแปรรูปกับโรคเรื้อรัง
ในกลุ่มวัยรุ่นไทยในกรุงเทพมหานคร

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บทคัดย่อ

การบริโภคอาหารแปรรูปและอาหารแปรรูปขั้นสูง (Ultra-Processed Foods: UPFs) ในกลุ่มวัยรุ่นเพิ่มสูงขึ้นทั่วโลก ส่งผลต่อความเสี่ยงโรคอ้วน โรคเบาหวานชนิดที่ 2 และโรคหัวใจและหลอดเลือด วัยรุ่นในกรุงเทพมหานครมีความเปราะบางเป็นพิเศษ เนื่องจากการเข้าถึงร้านสะดวกซื้อ ร้านอาหารจานด่วน บริการส่งอาหาร และการตลาดออนไลน์แพร่หลายมากขึ้น การทบทวนครั้งนี้มีวัตถุประสงค์เพื่อสังเคราะห์หลักฐานระดับประเทศและต่างประเทศเกี่ยวกับการบริโภค UPFs ในวัยรุ่น โดยเน้นกรุงเทพมหานคร เพื่ออธิบายรูปแบบการบริโภค วิเคราะห์ปัจจัยทางสังคม สิ่งแวดล้อม และพฤติกรรมที่มีอิทธิพล และตรวจสอบความเชื่อมโยงกับปัจจัยเสี่ยงโรคไม่ติดต่อเรื้อรัง (NCDs) ทำการสืบค้นข้อมูลจากฐานข้อมูล PubMed, Scopus, Web of Science และ ThaiJo รวมทั้ง Grey Literature จากองค์การอนามัยโลก กระทรวงสาธารณสุข และการสำรวจสุขภาพแห่งชาติ เผยแพร่ช่วงเดือนมกราคม ปี 2558 ถึงเดือนมิถุนายน ปี 2568 คัดเลือกการศึกษาในกลุ่มวัยรุ่นอายุ 10-19 ปี ที่รายงานพฤติกรรมการบริโภค UPFs หรือผลลัพธ์ด้านสุขภาพที่เกี่ยวข้อง และสังเคราะห์ข้อมูลเชิงพรรณนา โดยเน้นผลลัพธ์ในกรุงเทพฯ และเปรียบเทียบกับแนวโน้มระดับโลก ผลการศึกษาพบว่า วัยรุ่นในกรุงเทพฯ บริโภคเครื่องดื่มหวาน บะหมี่กึ่งสำเร็จรูป อาหารทอด และเบเกอรี่เป็นประจำ โดยปริมาณน้ำตาลและโซเดียมมักเกินกว่าคำแนะนำ ปัจจัยที่เกี่ยวข้อง ได้แก่ อิทธิพลจากเพื่อน พฤติกรรมการซื้ออาหารของครอบครัว การตลาดออนไลน์ และความสะดวกในการเข้าถึงอาหารแปรรูป ซึ่งสอดคล้องกับแนวโน้มทั่วโลกและสัมพันธ์กับภาวะน้ำหนักเกิน ความดันโลหิตสูงและความผิดปกติของเมแทบอลิซึมในระยะเริ่มต้น การบริโภค UPFs ในกลุ่มวัยรุ่นกรุงเทพฯ อยู่ในระดับสูง และเป็นปัจจัยเสี่ยงสำคัญต่อการเกิดโรคไม่ติดต่อเรื้อรังในอนาคต ควรดำเนินการหลายระดับอย่างเร่งด่วน ทั้งการเก็บภาษีเครื่องดื่มหวาน ดัดแปลงคำเตือนด้านโภชนาการ ควบคุมการตลาดออนไลน์ที่มุ่งเป้ากลุ่มเด็กและวัยรุ่น และจำกัดความหนาแน่นของร้านอาหารจานด่วนใกล้โรงเรียน พร้อมทั้งจัดโครงการส่งเสริมโภชนาการในโรงเรียน กำหนดมาตรฐานโรงอาหาร และใช้เทคโนโลยีดิจิทัลเพื่อสนับสนุนการปรับพฤติกรรมการบริโภคอย่างยั่งยืนงานวิจัยเชิงติดตามเฉพาะในกรุงเทพฯ มีความจำเป็นเพื่อประเมินแนวโน้มและผลของมาตรการเชิงนโยบาย

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Understanding a Linkage Between Processed Foods and Chronic Diseases Among Thai Adolescents in Bangkok

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Abstract

Rising consumption of processed and ultra-processed foods (UPFs) among adolescents is a global public health concern, contributing to higher rates of obesity, type 2 diabetes, and cardiovascular diseases. Bangkok adolescents are particularly vulnerable due to high exposure to convenience stores, fast-food outlets, food delivery, and aggressive digital marketing. This review synthesized national and international evidence on UPF consumption among adolescents, with a focus on Bangkok, to characterize dietary patterns, analyzed social, environmental, and behavioral determinants, and examined associations with non-communicable disease (NCD) risk factors. A narrative review was conducted using PubMed, Scopus, Web of Science, and ThaiJo databases, and gray literature from WHO, the Thai Ministry of Public Health, and national surveys (January 2015–June 2025). Studies that included adolescents aged 10-19 years and reported UPF consumption patterns or NCD-related outcomes were included. Data were synthesized narratively, with emphasis on Bangkok-specific findings and comparisons with international trends. Bangkok adolescents frequently consume sugary drinks, instant noodles, fried snacks, and bakery products, often exceeding recommended sugar and sodium limits. Key determinants included peer influence, family purchasing habits, pervasive online marketing, and 24-hour retail access. These patterns mirrored global trends and were associated with increased BMI, hypertension risk, and early metabolic disturbances. UPF consumption among Bangkok adolescents is alarmingly high and poses significant long-term NCD risks. Multi-level strategies are urgently needed, including sugar-sweetened beverage taxation, front-of-pack warning labels, tighter controls on youth-targeted digital marketing, and zoning restrictions near schools. School-based nutrition education, healthy canteen standards, and technology-enabled behavior-change tools can further support healthier dietary choices. Bangkok-specific longitudinal studies are needed to monitor trends and evaluate intervention effectiveness.

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Introduction

The global nutrition transition characterized by a shift from traditional, minimally processed diets to energy-dense, nutrient-poor processed and ultra-processed foods (UPFs) has significantly contributed to rising rates of obesity and diet-related non-communicable diseases (NCDs), including cardiovascular disease, type 2 diabetes, hypertension, and certain cancers^(1,2). In Thailand, this shift has accelerated in recent decades, driven by rapid urbanization, economic growth, and increasingly aggressive food marketing^(1,3). Adolescents represent a particularly vulnerable group because they are undergoing rapid physical, cognitive, and social development, making them more susceptible to unhealthy dietary changes influenced by peer norms, convenience, and persuasive marketing strategies^(2,3).

Recent national data highlight the magnitude of the problem: the prevalence of childhood overweight and obesity has risen sharply, coinciding with higher consumption of high-fat, high-sugar, and high-sodium foods such as instant noodles, sugar-sweetened beverages, and processed meats^(3,4). This challenge is particularly pronounced in Bangkok, Thailand's largest metropolitan area, where adolescents are surrounded by a dense network of convenience stores, fast-food outlets, and targeted advertising that further promote UPF consumption⁽¹⁾.

Literature Review

A growing body of evidence consistently links the consumption of processed and ultra-processed foods (UPFs) to adverse health outcomes. The NOVA classification categorizes foods according to the extent and purpose of industrial processing into four groups: unprocessed or minimally processed foods, processed culinary ingredients, processed foods, and ultra-processed foods (UPFs)⁽¹⁾. According to the NOVA classification, UPFs are industrial formulations composed largely of refined ingredients and additives, with minimal whole-food content, making them typically high in added sugars, sodium, and saturated fats while low in essential nutrients^(1,2). Numerous studies in children and adolescents have reported that frequent UPF intake is associated with increased obesity risk, unfavorable cardiovascular profiles, insulin resistance, and micronutrient deficiencies⁽²⁾. These findings highlight the role of UPFs as a key driver of the global nutrition transition and its impact on early health risks.

In Thailand, national dietary surveys show that adolescents consume processed foods on a daily basis, with snacks, sugary beverages, and ready-to-eat meals forming a significant proportion of their diet^(3,4). These consumption patterns are strongly shaped by environmental and social factors. Exposure to unhealthy food marketing particularly through social media, celebrity endorsements, and visually appealing packaging has been shown to heighten adolescents' preference for and purchase of UPFs, reinforcing these dietary habits over time⁽³⁾.

Beyond nutrient imbalance, the health impacts of UPF consumption are increasingly well-documented. Excessive sodium intake from processed snacks, instant noodles, and condiment-heavy street foods has been identified as a contributor to elevated blood pressure, even among young populations⁽⁵⁾. Similarly, high sugar intake from soft drinks and confectionery has been linked to weight gain, increased adiposity, and metabolic disturbances⁽¹⁾. Emerging research also indicates that poor dietary quality may affect cognitive outcomes; adolescents

with higher UPF consumption have demonstrated poorer academic performance, possibly mediated by diet-related effects on cognitive function and attention⁽⁶⁾.

Rationale of the Study

While international evidence on the health risks of processed food consumption among youth is robust, localized research focusing specifically on Thai adolescents particularly in Bangkok is limited. Understanding dietary patterns, environmental influences, and associated chronic disease risks in this demographic is critical for guiding health promotion strategies. Bangkok is unique combination of high UPF availability, strong marketing exposure, and shifting lifestyle patterns places its adolescent population at elevated risk of NCDs. This study aims to inform targeted interventions in urban Thai settings where adolescent dietary habits are rapidly evolving.

Knowledge Gaps

Despite growing awareness of harmful health impacts of ultra-processed foods (UPFs), significant research gaps remain in the Thai context. Current dietary studies often present aggregated national data, which obscures variations within specific subpopulations. In particular, there is a lack of Bangkok-specific data on adolescent dietary patterns, even though urban adolescents are likely to have the highest exposure to and consumption of processed foods due to greater availability, marketing intensity, and convenience-store density^(3,4). This absence of targeted urban adolescent data limits an ability to design context-specific interventions and policies aimed at reducing UPF consumption and mitigating associated chronic disease risks.

Findings

This study aims to review national and international evidence on processed and ultra-processed food (UPF) consumption among adolescents, with a particular focus on Bangkok, Thailand, and to examine its associations with non-communicable disease (NCD) risk factors and health outcomes. The specific objectives are:

1. To describe and quantify dietary patterns and UPF consumption among Thai adolescents in urban settings, emphasizing food categories, nutrient profiles, and consumption frequency.
2. To identify and critically analyze socio-environmental and behavioral determinants of UPF intake in Bangkok adolescents, including marketing exposure, accessibility, family and peer influences, and lifestyle factors, to inform targeted public health interventions and policy development.

Methodology

A literature search was conducted in PubMed, Scopus, Web of Science, and ThaiJo, supplemented with gray literature from the World Health Organization, Thailand's Ministry of Public Health, and national health surveys, covering January 2015-June 2025. Search terms combined keywords and MeSH terms for adolescents, processed and ultra-processed foods (UPFs), fast food, sugary drinks, instant noodles, and non-communicable diseases (NCDs), using Boolean operators.

Eligible studies included adolescents aged 10-19 years and reported UPF consumption patterns, nutrient profiles, or health outcomes. Cross-sectional, cohort, randomized controlled trials, and systematic reviews with clear methodology were included, while non-academic sources, opinion pieces, and studies without adolescent-specific data were excluded. Data on study characteristics, dietary assessment methods, UPF definitions, consumption frequency,

and health outcomes were extracted and synthesized narratively, emphasizing Bangkok-specific evidence and comparing findings with global trends.

Results

1. Conceptual Framework and Definitions

UPFs are defined as industrial formulations predominantly made from substances extracted or derived from foods such as refined starches, added sugars, hydrogenated oils, combined with additives such as colors, flavors, emulsifiers, and thickeners, designed to be hyper-palatable and shelf-stable⁽²⁾.

Unlike minimally processed foods, UPFs undergo multiple industrial processing steps that alter their physical, chemical, and sensory properties, often resulting in products with high energy density, excess sodium, sugar, and saturated fats, but low in fiber, protein, vitamins, and minerals⁽¹⁾. Emerging evidence also suggests that UPFs may adversely affect health through mechanisms independent of nutrient composition, such as disrupting the food matrix, introducing contaminants like acrylamides, and altering gut microbiota⁽²⁾.

Understanding this classification is critical for dietary research and policy in Thailand, as it provides a standardized framework for identifying and tracking processed food consumption trends among adolescents.

2. Dietary Patterns of Thai Adolescents in Urban Settings

The dietary landscape of Thai adolescents has undergone substantial changes over the past two decades, reflecting broader shifts in the national food environment and lifestyle behaviors. Urban centers, particularly Bangkok, have experienced a rapid nutrition transition, characterized by increased consumption of industrially processed and ultra-processed foods (UPFs) alongside a decline in traditional, home-prepared meals^(1,3).

2.1 Prevalence and Frequency of UPF Consumption

National dietary surveys reveal alarmingly high levels of processed food consumption among Thai youth, with urban adolescents consistently reporting higher intakes than their rural counterparts^(3,4). Between 2017 and 2021, the proportion of Thai children aged 6-14 years who reported daily consumption of bakery products high in fat rose from 90.4% to 94.6%, and daily fast-food consumption increased from 46.8% to 64.8%⁽³⁾. Such figures reflect not only greater availability but also increased normalization of these foods as routine dietary staples.

Bangkok adolescents have unique exposure patterns due to the city's dense network of convenience stores, fast-food outlets, and street vendors, many operating 24 hours. These settings provide constant access to snacks, sweetened beverages, instant noodles, and ready-to-eat packaged foods, making processed options a default choice for many students⁽¹⁾.

2.2 Types of Processed Foods Commonly Consumed

The most prevalent UPF categories among urban Thai adolescents include:

- **Sugary beverages:** Carbonated soft drinks, sweetened teas, energy drinks, and flavored milks.
- **Savory snacks:** Potato crisps, extruded corn snacks, and instant noodles⁽⁴⁾.
- **Processed meats:** Sausages, ham, fish balls, and meatballs, often consumed as street food skewers.
- **Bakery items and confectionery:** Cakes, pastries, donuts, packaged bread, and candies.

- **Ready-to-eat or frozen meals:** Including microwaveable rice dishes and sandwiches available in convenience stores.

Many of these products are calorie-dense with nutrient-poor, contributing high levels of added sugars, sodium, and saturated fats⁽¹⁾. For example, nutrient profiling of popular UPFs in Thailand found that 94.3% exceeded the WHO Southeast Asia Region's sodium cutoff and 68.2% exceeded the sugar cutoff⁽¹⁾.

Nutrient Profile and Health Implications

Excess sodium intake is a particularly pressing concern. Adolescents frequently consume instant noodles, savory snacks, and condiment-heavy street foods, all of which contribute to sodium levels well above WHO recommendations⁽⁵⁾. High sugar intake from beverages and baked goods also adds significant empty calories to the daily diet, while displacing nutrient-rich foods such as fruits, vegetables, and whole grains. Over time, these patterns may contribute to weight gain, increased adiposity, and elevated cardiometabolic risk markers, even in adolescence⁽³⁾.

2.3 Temporal Trends and Urban-Rural Differences

Urban adolescents are at a forefront of Thailand's dietary shift toward UPFs. While rural areas are also experiencing increased processed food penetration, the pace and extent are greater in Bangkok due to higher purchasing power, more diverse retail outlets, and greater exposure to food marketing^(3,4). Moreover, the COVID-19 pandemic accelerated reliance on packaged and delivery-based meals, with urban adolescents reporting more frequent use of food delivery apps and higher daily snack consumption compared to pre-pandemic levels⁽⁴⁾.

2.4 Cultural and Behavioral Context

In urban environments, time constraints from academic demands, after-school activities, and commuting often lead adolescents to prioritize convenience and affordability over nutritional quality. This has fueled the popularity of grab-and-go foods from convenience stores and street vendors, where portion sizes are often small but nutrient density is low. Peer norms also reinforce these choices, as group snacking and fast-food outings are common social activities among Bangkok youth⁽³⁾.

3. Socio-Environmental Determinants of Processed Food Consumption

Marketing and Media Exposure

The consumption of processed and ultra-processed foods (UPFs) among Thai adolescents is shaped by a complex interplay of socio-environmental influences operating at individual, family, peer, school, and community levels. In Bangkok, where the food environment is highly commercialized and saturated with marketing stimuli, these determinants interact to create conditions that normalize and encourage frequent UPF consumption.

3.1 Marketing and Media Exposure

Marketing is one of the most powerful drivers of adolescents' dietary choices, particularly for UPFs. National data indicates that 84% of Thai children were exposed to unhealthy food marketing via social media in the past week, and 72.5% had seen a celebrity or influencer endorsement⁽³⁾. Visual cues such as cartoon characters on packaging, seen by 78.8% of surveyed children, further enhance product appeal to younger consumers.

Digital marketing strategies in Thailand are increasingly sophisticated, leveraging interactive content, gamification, and influencer partnerships on platforms like TikTok, Instagram, and YouTube. These campaigns often emphasize taste, fun, and social status rather than nutrition, reinforcing brand loyalty from a young age. This aligns with global evidence that repeated exposure to marketing significantly increases preference for, purchase of, and consumption of marketed UPFs⁽²⁾.

3.2 School Food Environment

Schools in Bangkok are embedded in dense food retail networks, with many surrounded by convenience stores, fast-food outlets, and street vendors offering affordable, ready-to-eat processed foods. Inside school grounds, canteens may sell packaged snacks, sweetened beverages, and instant noodles due to high student demand and limited enforcement of nutrition standards. Without clear policy restrictions and consistent monitoring, adolescents have easy access to low-cost UPFs during school hours, further integrating these foods into daily routines.

3.3 Household and Parental Influences

Parental food purchasing and preparation practices strongly influence adolescent consumption patterns. Many Bangkok families rely on ready-to-eat meals and packaged snacks for convenience, particularly in dual-income households where time for home cooking is limited⁽⁷⁾. Adolescents often mirror parental eating habits, and a permissive attitude toward processed foods in the home can normalize high UPF consumption. Conversely, lack of parental nutrition knowledge may lead to underestimation of the health risks associated with processed foods⁽⁷⁾.

3.4 Peer Influence and Social Norms

Adolescents' food choices are also shaped by peer norms and the social value attached to certain foods. Group outings to fast-food chains, bubble tea shops, and convenience stores are popular after-school activities in Bangkok⁽⁴⁾. Eating and sharing packaged snacks in social settings reinforces the perception that these foods are part of a modern, urban lifestyle. In some cases, selecting trendy, branded UPFs can serve as a form of social currency among peers.

3.5 Convenience and Accessibility

The Bangkok foodscape is characterized by high retail density and around-the-clock access to UPFs. Convenience stores such as 7-Eleven brand are within walking distance of most schools and residential areas, offering affordable snack packs, sweetened beverages, and microwavable meals⁽¹⁾. The expansion of app-based food delivery services has further increased UPF accessibility, allowing adolescents to order fast food or packaged drinks with minimal effort.

3.6 Socioeconomic Factors

Household income and parental education affect both the affordability and perceived desirability of UPFs. In some low-income households, inexpensive processed snacks and instant meals serve as budget-friendly, filling options despite low nutrient density. Conversely, in higher-income groups, premium branded UPFs, such as imported snacks and specialty beverages, may be consumed as status symbols⁽³⁾. Lower parental education levels are associated with reduced awareness of dietary guidelines, which can perpetuate higher UPF intake⁽⁴⁾.

3.7 Lifestyle Patterns

Sedentary lifestyles, high screen time, and irregular meal patterns correlate with greater UPF consumption. Skipping breakfast a habit reported by over 30% of Thai undergraduate students has been linked to increased reliance on energy-dense snacks later in the day⁽⁴⁾. Prolonged social media use not only increases exposure to food marketing but also encourages snacking during screen time, reinforcing habitual processed food consumption.

3.8 Cultural and Dietary Shifts

Bangkok adolescents are increasingly exposed to globalized food cultures that valorize Western-style fast foods, branded beverages, and convenience eating. Traditional Thai meals, typically balanced in flavor and nutrient content, are being displaced by high-sugar, high-fat processed foods positioned as trendy, modern, and aspirational⁽¹⁾. This cultural shift is both a cause and a consequence of active food industry marketing targeting urban youth.

4. Health Impacts of Processed Food Consumption in Adolescents

UPF consumption is linked to multiple chronic disease risk factors:

- **Obesity:** High UPF intake contributes to excessive calorie consumption and weight gain. Urban Thai adolescents show higher overweight and obesity prevalence compared to rural peers^(3,4).
- **Hypertension:** Excess sodium from processed snacks, instant noodles, and sauces is a significant driver of elevated blood pressure risk in youth⁽⁵⁾.
- **Diabetes and Insulin Resistance:** Diets high in added sugars and refined carbohydrates increase the risk of impaired glucose metabolism⁽¹⁾.
- **Dyslipidemia:** Saturated fats in processed meats and baked goods raise LDL cholesterol levels.
- **Cognitive and Academic Outcomes:** A Spanish adolescent study found that higher UPF consumption was associated with poorer academic performance across multiple subjects, suggesting a potential link to cognitive function⁽⁶⁾.

Long-term, these early-life dietary patterns can track into adulthood, significantly increasing the lifetime risk of NCDs such as cardiovascular disease, type 2 diabetes, and certain cancers⁽²⁾.

5. Policy and Intervention Landscape in Thailand

Thailand has dietary guidelines recommending limited sugar, salt, and fat intake for children, but UPF-specific policies remain underdeveloped. While there are marketing regulations restricting the promotion of certain high-fat, high-sugar foods to children, enforcement is inconsistent⁽³⁾.

Some school-based interventions aim to promote healthy eating, yet coverage is limited in Bangkok's diverse school system. Urban planning and zoning laws do not currently restrict the density of fast-food outlets or convenience stores near schools, further increasing exposure.

Internationally, policy options such as sugar-sweetened beverage taxes, front-of-pack labeling, and restrictions on digital marketing to minors have shown promise and could be adapted for the Thai context⁽¹⁾.

Discussion

This review highlights the high prevalence of processed and ultra-processed food (UPF) consumption among Thai adolescents, particularly in Bangkok, where dense retail networks, food delivery services, and digital marketing create ubiquitous access to UPFs^(1,3). Bangkok adolescents frequently consume sugar-sweetened beverages, instant noodles, fried snacks, and bakery products, typically exceeding recommended sugar and sodium limits⁽⁴⁾. These patterns mirror the global nutrition transition and are consistently associated with elevated risks of overweight, hypertension, dyslipidemia, and early metabolic disturbances^(2,9).

These patterns align with evidence from Brazil, Mexico, and other rapidly urbanizing middle-income settings, where adolescents' diets have shifted from traditional meals toward processed foods under the combined influences of urbanization, marketing exposure, and lifestyle change⁽²⁾. Similar associations with adiposity and cardiometabolic risk have been reported internationally, supporting the external validity of these conclusions⁽⁶⁾.

Most included studies were cross-sectional, limiting causal inference between UPF intake and NCD risk factors. Self-reported intake measures may introduce recall and reporting bias⁽³⁾. Furthermore, nationally aggregated estimates can mask variations across subpopulations and urban districts. Bangkok-specific longitudinal data are scarce, limiting trend analysis and policy evaluation. Future research should use standardized UPF definitions (e.g., NOVA), objective dietary assessment (24-hour recalls, purchase/transaction data, school sales records), and prospective cohort or quasi-experimental designs⁽¹⁾.

Implications for Policy and Practice: Short term (0-12 months): tighten youth-directed digital-marketing controls (including influencer and gamified content), implement school healthy-canteen standards, and pilot school-zone zoning within 200–500 m. Medium term (1–3 years): scale sugar-sweetened beverage (SSB) tax increments, adopt front-of-pack (FOP) warning labels for high sugar/sodium/saturated fat, and expand zoning to reduce UPF outlet density near schools. Long term (≥3–5 years): align urban planning and pricing structures to favor healthy foods, and build a city-level digital monitoring system linking sales, advertising, and school health data. Key stakeholders: Bangkok Metropolitan Administration (BMA), Ministry of Public Health (MoPH), Ministry of Education (MoE), private schools, and delivery/social-media platforms. Suggested indicators: per-capita SSB sales; share of products carrying FOP warnings; advertising-compliance rate on platforms; UPF outlet density within school zones; proportion of schools meeting canteen standards. Equity safeguards: earmark part of SSB-tax revenue to subsidize safe drinking water and fruit in low-income schools, and provide technical support for small vendors to reformulate menus.

At the practice level, schools should adopt nutrition standards for canteens, restrict on-campus UPF sales, and integrate nutrition and media-literacy modules into curricula⁽¹⁾. Parents can be engaged through family-based cooking and budgeting programs and community initiatives that promote healthier food preparation⁽⁷⁾.

Leveraging technology can enhance intervention effectiveness. Enable default healthier options and sugar warnings on delivery apps; create a public ad library and real-time takedown mechanism for violative ads; and use influencer-led campaigns to reposition healthy eating as aspirational⁽²⁾.

Future research should conduct Bangkok-specific longitudinal cohorts, evaluate natural experiments (e.g., phased SSB-tax changes, zoning rollouts), and use mixed-methods incorporating adolescent and parent perspectives, with explicit assessment of distributional (equity) effects of policies⁽⁸⁾.

Conclusion

This review revealed that Bangkok adolescents are experiencing a rapid nutrition transition characterized by high consumption of processed and ultra-processed foods, driven by convenience, peer influence, and pervasive digital marketing. These dietary patterns significantly increase vulnerability to obesity, hypertension, metabolic disturbances, and other non-communicable disease risks. Addressing this challenge requires urgent, multi-level interventions that combine structural policies such as sugar-sweetened beverage taxes, front-of-pack warning labels, marketing restrictions, and zoning regulations near schools with school-based nutrition education, healthy canteen standards, and family-centered initiatives. Innovative strategies that harness technology, including gamified health campaigns, influencer-led promotions, and mobile nutrition-tracking tools, should be leveraged to engage adolescents and make healthy eating aspirational. Future research should prioritize longitudinal, Bangkok-specific studies and policy impact evaluations to generate robust evidence for guiding public health strategies. By integrating policy reform, community engagement, and digital innovation, Thailand can create a healthier food environment for its youth and curb the rising burden of diet-related NCDs.

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