

Ultra-Processed Food Consumption in Urban and Rural India: Epidemiological Trends, Determinants, and Public Health Implications

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Abstract

India is undergoing a rapid nutrition transition characterized by increasing consumption of ultra-processed foods (UPFs). Traditionally considered an urban phenomenon, recent data indicate a growing penetration of UPFs in rural areas, narrowing the urban–rural dietary gap. This review examines patterns of UPF consumption in India, identifies socioeconomic and environmental determinants, and evaluates associated health risks. Drawing on national survey data and global epidemiological evidence, the paper highlights the emerging public health challenge posed by dietary industrialization in both urban and rural contexts. Policy implications and future research directions are discussed.

Keywords: Ultra-processed foods, Urban India, Rural India, Nutrition transition, non-communicable diseases, Food policy

1. Introduction

India’s dietary landscape is changing due to rapid urbanization, rising incomes, modernization of food retail systems, and aggressive food marketing. Traditional diets rich in coarse cereals, pulses, fruits, and vegetables are increasingly replaced by packaged, ready-to-eat, and convenience foods.

Processed foods exist on a spectrum ranging from minimally processed items to ultra-processed products. In the Indian context, the category includes everything from packaged dairy products and frozen vegetables to instant noodles, ready-to-eat curries, packaged snacks, and carbonated beverages. The growth in this sector has been remarkable, with market research indicating double-digit growth rates in various processed food categories over the past decade.

Traditional Indian diets typically consisted of regionally distinct, seasonally variable whole foods prepared at home. However, the current trend shows an increasing reliance on commercially processed alternatives that offer convenience but often come with nutritional trade-offs. This

shift has been more pronounced in urban centres but is gradually permeating semi-urban and rural areas as well.

The concept of nutrition transition explains this shift from traditional, minimally processed foods to industrialized dietary patterns associated with obesity and non-communicable diseases (NCDs). While urban populations were initially more exposed to UPFs, rural India is now experiencing similar trends due to improved market access and aspirational consumption patterns.

2. Urban–Rural Consumption Trends

Data from the National Sample Survey Office Household Consumption Expenditure Survey show a consistent rise in expenditure on processed and packaged foods in both rural and urban households.

Key Observations:

- Urban households historically allocate a higher proportion of food expenditure to processed foods.
- Rural consumption of packaged snacks, sugary beverages, and instant foods has increased substantially over the last decade.
- The urban–rural gap in food expenditure patterns is narrowing.
- Small-pack marketing strategies (“low unit packs”) have expanded UPF penetration in rural markets.

3. Determinants of Rising UPF Consumption

3.1 Economic Drivers

- Increased disposable income
- Expansion of organized retail chains
- Penetration of multinational food corporations

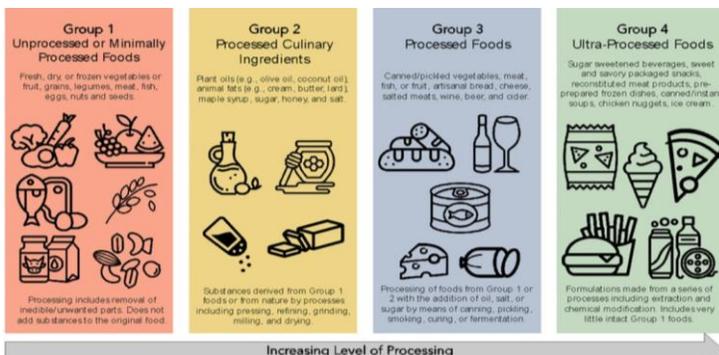
3.2 Sociocultural Factors

- Changing family structures
- Increased female workforce participation
- Aspirational food habits
- Youth-oriented marketing

3.3 Food Environment Transformation

- Growth of supermarkets and e-commerce
- Aggressive advertising
- Digital food delivery platforms
- Availability of shelf-stable convenience foods

4. Health Implications: Evidence from the World Health Organization and leading journals such as *The Lancet* links high UPF intake with:



- Obesity
- Type 2 Diabetes
- Hypertension
- Cardiovascular disease
- Metabolic syndrome
- India already faces a dual burden of malnutrition:
- Persistent undernutrition in vulnerable rural groups
- Rapid rise in overweight and obesity, particularly in urban populations

The convergence of UPF consumption in rural areas may accelerate NCD prevalence across socio-economic strata.

5. Regulatory and Policy Landscape in India

Key institutions involved:

- Food Safety and Standards Authority of India (FSSAI)
- Indian Council of Medical Research (ICMR)

Current policy considerations:

- Front-of-pack labeling regulations
- Sugar and salt reduction initiatives
- School food environment guidelines
- Public awareness campaigns

However, India lacks a standardized regulatory definition of UPFs aligned with the NOVA classification, limiting surveillance and taxation strategies.

6. Discussion: Urban–Rural Convergence and Public Health Risk

The narrowing urban–rural gap suggests India is entering an advanced phase of nutrition transition. Rural markets are increasingly integrated into industrial food supply chains.

Major Concerns:

- Rising childhood obesity

- Increased consumption among adolescents
- Long-term healthcare burden
- Economic productivity losses due to NCDs

The affordability and convenience of UPFs may undermine traditional dietary diversity.

7. Policy Recommendations

- Develop a nationally adapted UPF classification framework.
- Strengthen front-of-pack warning labels.
- Implement targeted taxation on sugar-sweetened beverages.
- Promote traditional and minimally processed foods (millets, pulses).
- Conduct rural nutrition literacy campaigns.
- Restrict marketing to children.

8. Future Research Directions

- Longitudinal cohort studies comparing rural vs urban dietary shifts
- Impact assessment of front-of-pack labeling
- Role of digital marketing in adolescent consumption
- Reformulation strategies by Indian food industries
- Integration of UPF surveillance into national nutrition surveys

9. Conclusion

Ultra-processed food consumption in India is no longer confined to metropolitan populations. Rural dietary patterns are rapidly transforming, driven by economic growth, market expansion, and lifestyle changes. Without comprehensive regulatory and educational interventions, UPF-driven dietary shifts may significantly exacerbate India’s non-communicable disease burden in the coming decades. Strategic policy action is essential to safeguard public health while preserving dietary diversity and traditional food systems.
