



Review Article

Implementation Research based Policy Reforms: The Deaccelerating Drivers of Obesity Epidemic

Dr Amit Bhedia¹, Dr Girjesh Gupta², Dr Raghvendra Gumashta³

¹Post Graduate Resident, Department of Community Medicine, Peoples's College and Medical Sciences and Research Centre, Bhanpur, Bhopal (M.P.)

²Professor, Department of Community Medicine, Peoples's College and Medical Sciences and Research Centre, Bhanpur, Bhopal (M.P.)

³Professor & Head, Department of Community Medicine, Mansarovar Medical College & MGU Hospital, Sehore (M.P.)

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Corresponding Author:

Dr Amit Bhedia

Post Graduate Resident,
Department of Community Medicine,
Peoples's College and Medical
Sciences and Research Centre,
Bhanpur, Bhopal (M.P.)

EMAIL: amitbhedia26@gmail.com

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ABSTRACT

Background: Obesity has emerged as a major public health challenge in India, driven by rapid urbanization, dietary transition, sedentary lifestyles, and socioeconomic changes. The rising prevalence of overweight and obesity contributes substantially to the burden of non-communicable diseases (NCDs), including type 2 diabetes mellitus, hypertension, cardiovascular diseases, metabolic dysfunction-associated steatotic liver disease (MASLD), certain cancers, and premature mortality. India simultaneously faces the dual burden of undernutrition and obesity, necessitating integrated policy inclusions and implementation across beneficiary horizons.

Objective: To critically review recent public health policies, national programmes, and contemporary strategies addressing obesity prevention and control in India.

Methods: A narrative review was conducted using recent literature published predominantly between 2020 and 2026. Evidence was synthesized from PubMed-indexed journals, policy documents of the Government of India, reports from international organizations, and consensus guidelines. Priority was given to studies evaluating epidemiology, public health interventions, food policies, digital innovations, and obesity management strategies relevant to the Indian context.

Results: India has strengthened its response through the National Health Policy 2017, National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD), Ayushman Bharat–Health and Wellness Centres, POSHAN Abhiyaan, Fit India Movement, and School Health and Wellness Programme. Recent advances include front-of-pack nutrition labelling initiatives, trans-fat elimination, digital health technologies, lifestyle medicine, and newer pharmacological therapies. Nevertheless, fragmented multisectoral coordination, inadequate obesity surveillance, obesogenic food environments, commercial determinants of health, and implementation gaps continue to limit programme effectiveness.

Conclusion: Sustainable obesity prevention in India requires a life-course, multisectoral, and equity-oriented approach integrating health promotion, food-system reforms, supportive urban environments, digital innovations, and evidence-based clinical management. Strengthened implementation research and policy evaluation are essential to reduce the growing burden of obesity, obesity-related NCDs and their subsequent complications including disabilities and death.

Keywords: Obesity; India; Non-communicable diseases; Public health policy; NP-NCD; Ayushman Bharat; Health promotion; Lifestyle medicine.

INTRODUCTION

Obesity has placed enormous public health challenges worldwide and is now recognized as a chronic, relapsing, multifactorial disease rather than merely a consequence of excessive body weight [1, 2, 3]. The increasing prevalence of obesity has contributed substantially to the global burden of non-communicable diseases (NCDs), including type 2 diabetes mellitus, hypertension, cardiovascular diseases, metabolic dysfunction-associated steatotic liver disease (MASLD), chronic kidney disease, osteoarthritis, obstructive sleep apnoea, and several cancers [4, 5, 6]. Beyond its health consequences, obesity imposes considerable economic costs through increased healthcare expenditure, reduced workforce productivity, disability, and premature mortality [2].

India is currently undergoing a rapid epidemiological and nutritional transition characterized by increasing urbanization, changing dietary patterns, declining physical activity, mechanization of labor, and expansion of processed food markets [7]. Consequently, obesity is rising across all age groups, socioeconomic strata, and geographical regions, affecting both urban and rural populations [7, 8]. Simultaneously, India continues to experience persistent undernutrition, creating a complex dual burden of malnutrition that poses unique challenges for public health policy and healthcare delivery [9]. Recent evidence suggests that obesity is influenced by individual behaviors, social, environmental, commercial, and policy determinants [10, 11]. Food systems, urban design, digital food marketing, socioeconomic inequalities, and limited opportunities for physical activity also collectively contribute to obesogenic environments [7, 8, 10]. Therefore, effective obesity prevention requires coordinated action extending beyond the healthcare sector to include education, agriculture, food regulation, transport, urban planning, and community participation [10, 11].

Therefore, India has implemented several national initiatives, including the National Health Policy 2017, National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD), Ayushman Bharat–Health and Wellness Centres, POSHAN Abhiyaan, Fit India Movement, and School Health and Wellness Programme [8, 12, 13]. While these programmes collectively address multiple determinants of obesity, evidence regarding their implementation, integration, and effectiveness remains variable [8, 13].

METHODS OF LITERATURE REVIEW

Literature published primarily between January 2020 and June 2026 was identified from PubMed, supplemented by policy documents from the Government of India, the World Health Organization (WHO), and the Food Safety and Standards Authority of India (FSSAI). Original research articles, systematic reviews, meta-analyses, clinical practice guidelines, and national policy documents addressing obesity epidemiology, determinants, public health interventions, national programmes, lifestyle management, food policies, and recent therapeutic advances were considered. Evidence was critically appraised and synthesized thematically to provide an integrated overview of India's current policy landscape, implementation challenges, and future directions.

Burden, Determinants, and Implications of Obesity in India

India is experiencing a rapid epidemiological and nutritional transition, resulting in a substantial increase in overweight and obesity across all age groups [7, 9]. Data from the National Family Health Survey-6 (2023–2024) indicate that approximately one in three among women and one in four among men is overweight or obese, with higher prevalence among women and urban residents, although the urban-rural gap is narrowing [7, 12]. Childhood and adolescent obesity are also increasing, reflecting unhealthy dietary behaviors, reduced physical activity, prolonged screen time, and changing lifestyles [8, 9, 14]. This coexistence of undernutrition and obesity represents the double burden of malnutrition, posing a major challenge to India's health system [9]. Obesity is a multifactorial disease resulting from the interaction of biological, behavioral, environmental, socioeconomic, and commercial determinants [15, 16]. The nutrition transition has shifted dietary patterns from traditional fiber-rich diets to increased consumption of ultra-processed foods, sugar-sweetened beverages, refined carbohydrates, and foods rich in saturated fat, sugar, and salt [8, 17]. Simultaneously, mechanization, motorized transport, sedentary occupations, and increasing digital screen exposure have substantially reduced physical activity [18]. Urbanization, aggressive food marketing, expanding online food delivery platforms, and obesogenic neighborhoods further reinforce unhealthy lifestyle [8, 11].

Marketing of foods high in fat, sugar, and salt (HFSS), pricing strategies, and digital advertising directed at children are increasingly recognized as major drivers of unhealthy food choices [8]. In addition, early-life exposures, maternal obesity, gestational weight gain, infant feeding practices, sleep disturbances, psychosocial stress, and genetic susceptibility influence obesity risk across the life course [5, 19, 20, 21, 22]. Consequently, contemporary obesity prevention requires interventions extending beyond individual responsibility to include supportive policies, healthy food environments, and multisectoral governance [10, 11].

The health consequences of obesity extend far beyond increased body weight. Excess adiposity, particularly abdominal obesity, is strongly associated with insulin resistance, type 2 diabetes mellitus, hypertension, dyslipidemia, metabolic dysfunction-associated steatotic liver disease (MASLD), cardiovascular disease, chronic kidney disease, obstructive sleep

apnoea, osteoarthritis, reproductive disorders, and several malignancies [4, 5, 6]. Obesity also adversely affects mental health through depression, anxiety, social stigma, and reduced quality of life [2, 23, 24]. Increasing evidence suggests that waist circumference and waist-to-height ratio, in addition to body mass index (BMI), provide better assessment of cardiometabolic risk. Furthermore, clinical investigations have established that increased adiposity can lead to impaired respiratory outcomes, as demonstrated by its significant association with a reduction in Peak Expiratory Flow Rate (PEFR) [25]. Rising healthcare expenditure, reduced productivity, absenteeism, disability, and premature mortality impose significant costs on individuals and health systems [2]. Without effective preventive strategies, the growing obesity epidemic threatens progress toward achieving Sustainable Development Goal (SDG) target 3.4 [6, 11].

These observations highlight that obesity in India is not merely a clinical problem but a complex public health issue requiring comprehensive, life-course, and equity-oriented interventions [7, 13]. Effective prevention depends on integrating nutrition, primary healthcare, education, agriculture, urban planning, food regulation, and digital health within a coordinated national strategy [10, 11].

Strategies for Obesity Prevention and Control

India's response to the obesity epidemic has progressively shifted from disease-specific interventions to a comprehensive framework emphasizing health promotion, risk reduction, and integrated management of non-communicable diseases (NCDs) [12, 13]. Thus adopted integrated approach recognizes obesity as a common upstream determinant of diabetes, cardiovascular disease, hypertension, several cancers, and other chronic disorders [4, 6].

The National Health Policy (NHP) 2017 provides the overarching strategic framework by advocating preventive and promotive healthcare, wellness, and community participation. Complementing this, the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD) and Ayushman Bharat–Health and Wellness Centres (HWCs) have strengthened primary healthcare through population-based screening, lifestyle counselling, and risk assessment [12, 13]. These initiatives promote routine assessment of body mass index (BMI), blood pressure, blood glucose, and behavioral risk factors, enabling early identification of individuals at high cardiometabolic risk. [12].

Nutrition-focused policies have also undergone significant transformation. The Food Safety and Standards Authority of India (FSSAI) has introduced the Eat Right India Movement, promoting healthier diets through food safety, nutrition literacy, elimination of industrial trans-fat, healthier food reformulation, and consumer awareness [8, 17]. Increasing emphasis is being placed on front-of-pack nutrition labelling (FOPL), improved nutrition information, and regulation of foods high in fat, sugar, and salt (HFSS). These measures seek to improve consumer decision-making. Simultaneously, POSHAN Abhiyaan and PM POSHAN continue to improve nutritional practices across the life course by strengthening maternal nutrition, complementary feeding, school meals, and behavior change communication. [8].

Promotion of physical activity has become another cornerstone of India's obesity prevention strategy. The Fit India Movement and the School Health and Wellness Programme encourage regular exercise, sports participation, yoga, active commuting, and reduction of sedentary behavior. [8, 18]. Schools increasingly serve as important settings for nutrition education, healthy canteen policies, and early lifestyle interventions, while workplace wellness initiatives and community fitness campaigns are gradually expanding opportunities for healthy living [8].

Recent years have witnessed important advances in obesity management that extend beyond conventional lifestyle modification. International and Indian clinical guidelines increasingly recommend risk-stratified obesity care [2, 10]. Lifestyle medicine remains the foundation of treatment, encompassing personalized dietary modification, regular physical activity, behavioral counselling, sleep optimization, and stress management [17]. For selected individuals with moderate-to-severe obesity, newer pharmacological therapies have demonstrated clinically meaningful weight reduction and improvements in metabolic outcomes [26]. Bariatric and metabolic surgery continues to play an important role in carefully selected patients with severe obesity and obesity-related complications.

Digital health technologies are emerging as valuable adjuncts for obesity prevention and management. Mobile health applications, wearable activity trackers, telemedicine, artificial intelligence (AI)-assisted decision support, and electronic health records facilitate personalized counselling, self-monitoring, remote follow-up, and improved continuity of care [16]. Integration of these technologies with Ayushman Bharat Digital Mission infrastructure has the potential to strengthen surveillance, patient engagement, and long-term management.

Despite these encouraging developments, substantial implementation challenges remain [10, 23]. Coverage and quality of lifestyle counselling vary considerably across states, obesity surveillance remains fragmented, and intersectoral coordination is often inadequate [10,27]. Commercial determinants continue to undermine healthy dietary behaviors [8]. Furthermore, inequalities related to socioeconomic status, gender, education, and urbanization contribute to differential obesity risk and access to preventive services [7].

The success of country's obesity prevention initiatives will depend on effective implementation, stronger regulatory frameworks, multisectoral collaboration, evidence-based monitoring, and sustained community engagement [10, 11]. Transitioning from programme implementation to measurable population-level outcomes remains the next major challenge in addressing the growing obesity epidemic [11,28].

Implementation Challenges and Future Directions

Translating policy into measurable health outcomes remains challenging. The implementation of obesity-related interventions varies considerably across states [10]. Lifestyle counselling is often constrained by heavy patient loads, while routine assessment of obesity indicators such as waist circumference is inconsistently performed in primary care [23,29]. Obesity surveillance relies largely on periodic surveys, limiting the availability of real-time data for programme planning and evaluation [10].

The expanding influence of commercial determinants of health poses another major challenge. Aggressive marketing of foods high in fat, sugar, and salt (HFSS), increasing availability of ultra-processed foods, online food delivery platforms, and targeted digital advertising continue to promote unhealthy dietary behaviors [8]. Rapid urbanization, inadequate walkable infrastructure, limited recreational spaces, and sedentary occupations further contribute to obesogenic environments [11, 18]. These challenges cannot be addressed by the health sector alone and require coordinated action across food systems, education, urban planning, transport, agriculture, finance, and media [10, 11].

Future strategies should adopt a life-course, precision public health, and Health-in-All-Policies approach [11]. Strengthening primary healthcare through NP-NCD and Ayushman Bharat–Health and Wellness Centres should include standardized obesity risk assessment, behavior-change counselling, and referral pathways for advanced obesity care [12, 23, 30,31]. Digital health innovations offer opportunities to improve surveillance, continuity of care, and patient engagement [16]. Fiscal measures to discourage unhealthy food consumption, and supportive urban environments promoting active transport are likely to yield substantial population-level benefits [8, 10, 11,32]. Future implementation research should evaluate the effectiveness, equity, and cost-effectiveness of these interventions within diverse Indian settings [8, 13,33,34].

CONCLUSION

Obesity has emerged as one of the most important determinants of non-communicable diseases in India and requires coordinated multisectoral action [4,7,12]. Considerable progress has been achieved through national policies, nutrition programmes, health promotion initiatives, and strengthened primary healthcare services [8, 13, 17]. Increasing obesity prevalence highlights persistent implementation gaps, commercial influences, and environmental determinants [8, 10, 23]. Sustainable reductions in obesity will depend on integrating evidence-based clinical management with population-level prevention, digital innovations, healthier food systems, supportive built environments, and community participation [8, 10, 16]. A comprehensive, life-course, and equity-oriented strategy is essential for reducing obesity-related morbidity, improving population health, and achieving India's long-term NCD prevention goals [6, 7].

Table 1. Comprehensive Framework of Determinants, Consequences, and Evidence-Based Strategies for Obesity Prevention and Control

Domain	Major determinants	Public health implications	Evidence-based interventions
Biological	Genetics, epigenetics, endocrine disorders, gut microbiome, sleep disorders	Metabolic dysfunction, insulin resistance	Risk stratification, individualized care
Behavioural	Poor diet, physical inactivity, prolonged screen time, stress	Positive energy balance	Lifestyle medicine, behavioural therapy
Nutritional	Ultra-processed foods, HFSS foods, sugar-sweetened beverages	Obesity, diabetes, hypertension	Front-of-pack labelling, food reformulation
Commercial	Food marketing, digital advertising, food delivery platforms	Increased unhealthy food consumption	HFSS regulation, marketing restrictions
Environmental	Urbanisation, poor walkability, limited recreational spaces	Sedentary lifestyles	Active transport, healthy city planning
Socioeconomic	Poverty, education, occupation, gender inequity	Health disparities	Equity-oriented public health interventions

Life-course	Maternal obesity, childhood obesity, adolescent risk behaviours	Intergenerational obesity	Maternal nutrition, school interventions
Clinical	Abdominal obesity, metabolic syndrome	NCDs, MASLD, cardiovascular disease	BMI plus waist circumference, integrated NCD care

HFSS: High fat sugar and salt, MASLD: Metabolic dysfunction associated steatotic liver disease, BMI: Body mass index, NCD: Non-communicable disease.

Table 2. Contemporary Framework for Obesity Prevention and Management in India

Level	Contemporary strategy	Recent advances	Indian initiatives
Population policy	Health-in-All-Policies	Multisectoral governance	National Health Policy 2017
Primary prevention	Healthy food environment	Front-of-pack nutrition labelling, trans-fat elimination	Eat Right India, FSSAI
Community prevention	Lifestyle promotion	Community engagement, digital IEC/BCC	Fit India, NHM
School interventions	Childhood obesity prevention	Healthy canteens, nutrition education	PM POSHAN, School Health and Wellness Programme
Primary healthcare	Early detection	Risk-based obesity screening	NP-NCD, Health and Wellness Centres
Clinical management	Lifestyle medicine	Personalized nutrition, behavioural therapy	NCD Clinics
Pharmacotherapy	Anti-obesity medications	GLP-1 receptor agonists, dual GIP/GLP-1 agonists	Specialist obesity care
Surgical management	Metabolic surgery	Personalized patient selection	Tertiary referral centres
Digital health	AI, telemedicine, wearables	Digital therapeutics, remote monitoring	Ayushman Bharat Digital Mission
Future priorities	Precision public health	AI-supported surveillance, implementation research	Multisectoral obesity strategy

FSSAI- Food safety standard authority of India GLP-1 -Glucagon like peptide-1

IEC/BCC- Information education communication / Behaviour change communication

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