THE RISE

Foreword by:
Dr. B.K.S. Sanjay

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Pharmaceuticalisation of Obesity:

The Promise, Perils & Policy Choices

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Foreword

Health, education and nutrition are the fundamental pillars of human development. Whatever the circumstances—favorable or adverse, natural or man-made—life can be fully enjoyed only when we are healthy. Therefore, every individual must strive to maintain good health through informed choices and disciplined living. Maintaining a healthy body weight is key to this.

Obesity, often regarded as the "mother of all diseases," significantly increases the risk of multiple lifestyle-related disorders such as diabetes, hypertension, high cholesterol, and arthritis. Managing obesity is, thus, not only desirable. It is imperative. It is foundational to India's *Swasth Bharat, Viksit Bharat* aspirations.

Of late, however, obesity management has come to be dominated by pharmacotherapy. New anti-obesity drugs are now becoming increasingly popular. What's even more glaring is the new trend - of drugs originally developed to treat diabetes now being commercialised as weight-loss drugs. The concern is not the sale of these drugs for obesity management purposes. The concern is their increasing massification without doctor's prescription. The concern is their over-glamourisation by social media influencers. The concern is their potential to deepen health inequity without addressing the structural challenges underlying the obesity epidemic. Obesity cannot, and must not, transform from a condition to a commodity.

Obesity needs to be addressed structurally, not merely pharmaceutically. Sedentary lifestyle, rising consumption of ultra-processed foods, disturbed sleep cycle, unwalkable cities, excessive screen time, lack of physical activity, etc. are the structural reasons behind obesity.

To promote holistic well-being, I gave an acronym – DEWS. It provides a simple and effective guide:
D – Diet | E – Exercise | W – Work | S – Sleep

A balanced and nutritious diet, regular physical activity, productive work habits, and adequate sleep form the foundation of an obesity-free lifestyle and good health. Nutritious foods such as fruits, vegetables, whole grains, and protein sources, along with daily physical movement like walking, climbing stairs, or household activity, are sufficient to maintain fitness and cardiovascular health.

Furthermore, awareness of regular health screening and early identification of risk factors are vital. Timely diagnosis enables effective treatment, better management, and improved health outcomes.

A simple weighing scale is one of the most affordable and effective tools for regular body weight monitoring. Developing the habit of monitoring body weight from childhood helps maintain lifelong health. Along with the scale, a measuring tape aids in assessing waist and hip circumference, while a full-length mirror helps in detecting visible bodily changes at an early stage. Essential household tools should also include a thermometer, glucometer, pulse oximeter, and blood pressure monitor. If affordable, households must also have a 5 para monitor. It can greatly strengthen early detection and continuous health monitoring.

India is often called the 'diabetes capital of the world', with nearly 10-20 crore Indians affected by diabetes, particularly type 2 diabetes. Medical studies suggest strong links between abdominal obesity and diabetes in Indians. This 'diabesity' challenge is a major public health challenge and is largely preventable. Strong focus on preventing abdominal obesity can help prevent individuals from being pre-diabetic and eventually diabetic.

Preventive obesity management is, thus, not merely an option—it is a necessity for building a healthier, stronger, and more productive nation. It is the path forward for a Fit India, for a Swasth Bharat, for a Viksit Bharat. Pharmaceuticalising obesity through commercially available anti-obesity drugs is merely a distraction in this journey.

I commend the authors for researching and writing an extensive report on this critical public health issue. I am confident that their deeply researched perspectives and policy recommendations will leave a lasting impact on how India deals with the increasing pharmaceuticalisation of obesity, its promise and its perils.

Prof. Dr. B. K. S. Sanjay
President, AIIMS Guwahati
January 30, 2026

Prof. Dr. B. K. S. Sanjay is a Padma Shri awardee, a Guinness World Records holder, an eminent orthopaedic surgeon and currently, the President of AIIMS Guwahati. An academician, author, poet, orator, and road safety activist, he exemplifies medicine's broader commitment to public welfare beyond the operation theatre.

Executive Summary

Obesity has emerged as a defining public health challenge of the twenty-first century, with rising prevalence across the globe. Advances in endocrinology, metabolism, and neurobiology have shifted obesity from a behaviourally framed condition to a chronic, relapsing disease, a reconceptualisation endorsed by global health authorities. This shift has not only reduced moral blame, but it has also accelerated pharmaceutical approaches, particularly with the advent of highly effective anti-obesity drugs such as GLP-1 receptor agonists and dual incretin therapies.

This report critically examines the global and regional forces driving the pharmaceutical pathologisation of obesity and its clinical, ethical, economic, and policy implications, with particular focus on low- and middle-income countries (LMIC), especially India. While obesity pharmacotherapy represents a major scientific advancement for individuals with severe obesity and metabolic disease, its rapid mainstreaming raises concerns about equity, long-term safety, stigma, and the narrowing of public health priorities.

Globally, obesity's disease classification reflects evidence that body weight is regulated by complex hormonal, neural, and genetic systems that actively resist sustained weight loss. Formal recognition has catalysed innovation, positioning obesity drugs as a highly lucrative pharmaceutical market. New agents, such as semaglutide and tirzepatide, achieve weight loss comparable to that of bariatric surgery, and improve key cardiometabolic risk markers. However, discontinuation commonly leads to weight regain, implying the need for long-term or lifelong use, even while evidence on the safety of such use over decades remains limited.

These issues are amplified in India, where obesity coexists with undernutrition, micronutrient deficiencies, and profound socio-economic inequalities. Earlier metabolic risk at lower BMI thresholds creates a greater imperative for anti-obesity intervention, while simultaneously increasing the risk of over-medicalisation.

High costs, limited insurance coverage, and private-sector dominance restrict access to affluent urban groups, widening health inequities while structural drivers of obesity remain largely unaddressed.

Beyond economics, pharmaceuticalisation carries ethical and social risks. Although medical framing may reduce overt blame, it can reinforce stigma, aesthetic pressure, and expectations of treatment compliance. Regulatory oversight of marketing, off-label use, and pharmacovigilance has lagged, particularly in India's fragmented and rapidly expanding digital health landscape.

The report argues for a balanced approach: pharmacotherapy as one component within integrated, multidisciplinary care focused on metabolic health, quality of life, and equity. Upstream interventions—food regulation, urban design, school nutrition, and action on broader socio-economic determinants of health remain essential. Sustainable obesity care requires integrating biomedical advances with robust public health strategies that protect dignity, justice, and long-term population health.

Introduction

Obesity has emerged as one of the most significant public health challenges of the twenty-first century, with its global prevalence having nearly tripled since the late 1970s. Traditionally obesity was predominantly interpreted through a behavioural lens, attributed to individual lifestyle choices, lack of willpower, and caloric imbalance. Over recent decades, scientific advances in endocrinology, metabolism, and appetite regulation have transformed this narrative. This evolving body of evidence has increasingly framed obesity as a chronic, relapsing, multifactorial disease, a shift endorsed by global health authorities such as the World Health Organization (WHO) and several national medical associations.[1]

This redefinition has marked a critical shift in both clinical practice and public discourse. On one hand, conceptualising obesity as a disease helps reduce moral blame and legitimises access to structured medical care. On the other, it has paved way for the expansion of pharmaceutical solutions as the dominant response to obesity. The rise of modern obesity drugs—particularly glucagon-like peptide-1 (GLP-1) receptor agonists such as semaglutide (Ozempic/Wegovy) and dual-agonists therapies like tirzepatide (Mounjaro)—has accelerated this biomedical transformation.[2] Originally developed for diabetes management, these drugs have demonstrated unprecedented weight-loss outcomes in clinical trials, sparking widespread interest among clinicians, policymakers, investors, and the general public. This pharmaceutical momentum represents a paradigm shift not only in therapeutic strategy, but also in the social and political understanding of obesity as a medically 'manageable' condition.[3]

The idea that obesity can be 'treated' or even 'solved' pharmacologically has generated enthusiasm, but also controversy. While the scientific rationale for pharmacotherapy is increasingly strong, its rapid mainstreaming reflects broader structural forces beyond medical necessity alone.

Pharmaceutical companies, regulatory agencies, and global healthcare markets have played key roles in reinforcing a biomedical narrative that increasingly defines obesity through pharmaceutical dependency rather than public-health reform or population-level prevention strategies.[4]

Industry forecasts predict that the anti-obesity drug market may soon reach tens of billions of dollars annually, making it one of the fastest-growing sectors in the pharmaceutical industry. Parallel to these developments, media portrayals of drugs like Ozempic have created a cultural moment that links body image, health aspirations, and pharmaceutical consumption in unprecedented ways.[5]

However, this pharmaceuticalisation of body weight risks narrowing the focus of obesity discourse. By positioning excess weight primarily as a biological dysfunction requiring drug correction, important structural determinants risk being overshadowed.

Food, environment, income inequality, urban planning, cultural eating patterns, and mental health factors remain critical drivers of obesity, yet they receive far less attention and funding compared to pharmacological research. This imbalance has major consequences: it may reinforce societal stigma by framing larger bodies as pathological while also diverting policy resources away from preventive and community-based interventions.[6]

The implications of this shift vary globally. High-income countries may benefit from improved therapeutic options, but low- and middle-income countries (LMIC) face unique challenges. In Asia, and particularly in India, the epidemiology of obesity is complicated by the coexistence of undernutrition and overnutrition, varying cultural norms about body size, and rapidly changing food systems. Asian populations develop metabolic complications at lower BMI due to higher body fat and visceral adiposity, leading to lower region-specific BMI cut-offs that enhance early risk detection but may also accelerate the medicalisation of body weight.[7]

At the same time, access to advanced obesity medications is limited by cost, uneven healthcare infrastructure, and lack of insurance coverage. The result is a widening equity gap: pharmacological solutions may become the norm in wealthier populations while broader public health needs remain unmet in resource-constrained settings.[8]

Additionally, the rise of obesity pharmacotherapy intersects with social concerns regarding body image, morality, and stigma. Public narratives increasingly equate thinness with health, discipline, and success, while associating larger bodies with disease and risk. Weight-loss drugs, by promising rapid and significant results, may reinforce these cultural pressures. The growing acceptance of such medications, even among people without obesity, raises ethical questions about the boundaries between therapeutic use and enhancement, and about the societal expectations placed on individuals to conform to normative body sizes.[9]

Against this backdrop, this report aims to critically examine the global and regional dynamics that have contributed to the pathologisation of obesity through drugs. It explores the scientific, economic, ethical, and socio-political forces shaping this shift and evaluates its consequences for public health, equity, and society at large. By investigating both the benefits and limitations of obesity pharmacotherapy, the report calls for a balanced, integrated approach that recognises obesity's complexity without reducing it to a solely biomedical condition.[10]

Part 1

Pharmaceuticalising Obesity:
From Condition to Commodity

Chapter 1:
The Obesity Challenge
Rising Burden, Pathologisation & the Forces Behind It

Chapter 2:
Rise of Anti-Obesity Pharmacotherapy
Ozempic, Wegovy, Mounjaro & Beyond

Chapter 3:
Equity, Access, Global Disparities in Obesity Care
Rising Pharmaceuticalisation, Deepening Divides

This part maps the global dynamics behind the transformation of obesity from a relatively neglected public health issue to a central concern of global health governance, biomedical research, and pharmaceutical innovation. It examines how scientific evidence, regulatory frameworks, market forces, and socio-cultural narratives converge to shape the modern pathologisation and pharmaceuticalisation of obesity. It also analyses how these shifts differentially affect high-income and low- and middle-income countries (LMIC), with particular attention to Asia, especially India, and highlights emerging critiques regarding medicalisation, stigma, and long-term uncertainties.[11]

Chapter 1

The Obesity Challenge:

Rising Burden, Pathologisation & the Forces Behind It

The global burden of obesity has increased dramatically since the late twentieth century. According to WHO estimates, more than 1 billion people worldwide now fall within the categories of overweight or obese, with obesity rates rising across both affluent and economically developing regions. What began as a concern concentrated in high-income countries has evolved into a global phenomenon affecting adults, adolescents, and children.[12] Urbanisation, industrialised food systems, reduced physical activity, sedentary work patterns, and socio-economic inequality have collectively accelerated this trend.[13]

Alongside the rising global burden, obesity itself has undergone significant conceptual shifts: from viewing it primarily as a lifestyle-related outcome to framing it as a chronic, relapsing, physiological disease requiring lifelong medical management.

Pathologisation of Obesity: A Historical Context

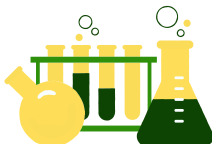
Historically, obesity was not classified as a disease but rather as a modifiable behavioural risk factor. It was understood largely in terms of excess calorie intake, low physical activity, and perceived lapses in individual responsibility. This framing dominated public discourse for decades and shaped public health interventions that emphasised lifestyle modification as the primary approach to weight management. However, this paradigm underestimated the complexity of metabolic regulation and largely ignored the powerful interactions between environment, physiology, psychology, and socio-economic structures.[14]

Scientific advances in endocrinology, genetics, and neurobiology fundamentally altered how obesity was understood within biomedical science. By the late twentieth century, accumulating evidence showed that energy balance and body weight are regulated by complex, tightly controlled physiological systems rather than by willpower alone. Research demonstrated that hormonal and neural pathways involving insulin, leptin, ghrelin, and incretin hormones integrate signals from adipose tissue, the gut, pancreas, and central nervous system to regulate appetite, satiety, energy expenditure, and fat storage. Genetic and epigenetic studies further revealed strong heritable components of body weight regulation, while neurobiological research showed adaptive responses to weight loss that increase hunger and reduce resting energy expenditure. Together, these findings explained why sustained weight loss is biologically resisted and why weight regain is common, even with continued lifestyle effort.

Before formally classifying obesity as a chronic condition, the World Health Organization (WHO) approached obesity primarily as a risk factor for non-communicable diseases such as type 2 diabetes, cardiovascular disease, and certain cancers.

Early WHO reports in the 1970s and 1980s framed excess body weight largely in epidemiological terms, focusing on population-level trends, nutrition transition, and lifestyle change. Obesity was treated as an intermediate determinant rather than a disease entity in itself, and policy emphasis remained on prevention through diet and physical activity.

This position evolved as evidence mounted that obesity independently causes pathophysiological changes and fulfils key criteria of chronic disease.



Analyses by WHO highlighted that obesity has identifiable diagnostic criteria, a progressive course, multisystem complications, and requires long-term management rather than short-term correction. Importantly, WHO acknowledged that obesity involves dysregulation of normal physiology, not merely exposure to unhealthy environments or behaviors. This shift aligned obesity with other chronic non-communicable diseases that arise from interactions between biology, environment, and social context.

WHO's formal classification of obesity occurs through its normative and technical processes rather than a single declaration. Expert committees and consultations are convened, drawing on systematic reviews of global evidence, burden of disease analyses, and consensus among multidisciplinary specialists. One key mechanism is the International Classification of Diseases (ICD), which the WHO maintains through revision committees, working groups, and member-state consultation. In the ICD, obesity is classified as a disease entity, defined by excess fat accumulation that presents a health risk, and operationalised primarily using body mass index (BMI) thresholds, while explicitly recognizing the limitations of BMI across populations.

By embedding obesity within the ICD and within its non-communicable disease frameworks, WHO effectively positioned obesity as a chronic health condition requiring ongoing clinical care, surveillance, and policy action. This classification provided scientific and institutional legitimacy for medical management, including pharmacotherapy and surgery, while also reinforcing the need for prevention at the population level. Consequently, WHO's stance accelerated the transition from viewing obesity as a lifestyle issue to recognizing it as a chronic, relapsing disease shaped by biological, social, and environmental determinants.[15]

This pathologisation of obesity carries important consequences. On the positive side, classifying obesity as a disease helps reduce moral blame and encourages investment in research, insurance coverage, and clinical care. However, it also opens the pathway for pharmaceutical management to take a central role. Once obesity becomes codified as a chronic biomedical condition, pharmaceutical companies, healthcare systems, and regulatory agencies increasingly orient their strategies toward therapeutic intervention rather than addressing broader structural determinants.[16]

Pharmaceutical Industry & Regulatory Forces Behind Pathologisation

The pathologisation of obesity cannot be understood in isolation from the economic and political forces shaping global health. Pharmaceutical innovation has played an undeniable role, but equally important are the regulatory decisions and market pressures that legitimise and expand drug-based approaches.[17]

Pharmaceutical companies have strategically promoted obesity as a disease requiring lifelong management, aligning scientific narratives with commercial interests.

The profitability of chronic-use drugs creates strong incentives to expand diagnostic criteria, medical eligibility, and therapeutic indications.

As a result, marketing strategies are designed to emphasise biological determinism ("It's your hormones, not your willpower"), appealing to both clinicians and patients. While such messaging can reduce the stigma associated with moral blame, it also reinforces the idea that biological correction via medication is the primary pathway to improved health.

Regulatory bodies, too, have a role in the increasing pathologisation of obesity. Regulatory decisions on obesity pharmacotherapies are typically made through structured but imperfect processes involving expert committees, systematic evidence review, and formal risk–benefit assessment. Agencies such as the Food and Drug Administration (FDA), the European Medicines Agency (EMA), and norm-setting bodies like the World Health Organization (WHO) rely on clinical trial data, surrogate endpoints, and advisory panel recommendations when making approval or classification decisions. Although these processes are designed to be evidence-based, bias can enter at several levels: pivotal trials are frequently industry funded, trial populations may not reflect real-world diversity, and regulatory endpoints prioritise quantifiable biomedical outcomes such as percentage weight loss over long-term social, behavioural, and equity implications.

Accelerated approval pathways further increase reliance on short-term efficacy and safety data, while broader public health consequences receive limited evaluation. In addition, commercial lobbying, geopolitical influence, and the prevailing biomedical paradigm in global health can subtly steer regulatory judgment toward pharmacological solutions over structural or preventive approaches.[18]

Regulatory frameworks also lag behind emerging concerns, with significant downstream repercussions. The long-term effects of lifelong drug use remain uncertain, particularly as obesity is increasingly framed as a chronic condition requiring continuous treatment. This raises unresolved questions about cumulative adverse effects, hormonal adaptation, and the safety of prolonged appetite suppression over decades. Post-market surveillance remains fragmented and uneven, especially in low- and middle-income countries (LMIC), where pharmacovigilance systems are weaker and adverse events are underreported, limiting the ability to detect rare or delayed harms.

Off-label use, particularly for cosmetic weight loss in individuals without clear medical indications, is poorly regulated, contributing to drug shortages, widening inequities in access, and further medicalisation of body weight.

Together, these gaps reveal a growing mismatch between the rapid regulatory acceptance of obesity pharmacotherapy and the slower development of long-term safety monitoring, ethical oversight, and population-level governance.

Chapter 2

Rise of Anti-Obesity Pharmacotherapy:
Ozempic, Wegovy, Mounjaro & Beyond

One of the most transformative shifts in obesity management has been the rapid rise of pharmacotherapy. Earlier generations of anti-obesity drugs, such as orlistat, sibutramine, and lorcaserin, showed limited efficacy or concerning safety profiles. Over the past decade, however, breakthroughs in incretin-based therapies, particularly glucagon-like peptide-1 (GLP-1) receptor agonists, have revolutionised the field. [19]

Mechanisms of Action

GLP-1 receptor agonists (e.g., semaglutide in Ozempic and Wegovy) mimic the action of endogenous incretin hormones that regulate appetite, glucose metabolism, and gastric emptying. These drugs reduce hunger, increase satiety, and improve glycaemic control. Tirzepatide (Mounjaro/Zepbound), a dual GLP-1/GIP agonist, enhances this effect by simultaneously engaging two metabolic pathways.[20]

To illustrate this mechanism, consider a practical physiological example. In a person not receiving GLP-1–based therapy, food intake stimulates the gut to release incretin hormones, which signal the pancreas to secrete insulin, the stomach to slow gastric emptying, and the brain to promote satiety.

In individuals with obesity or type 2 diabetes, these signals are often blunted or dysregulated, leading to persistent hunger, rapid gastric emptying, and exaggerated post-meal glucose excursions.

When semaglutide is administered, it amplifies and prolongs the normal GLP-1 signal. After eating a standard meal, gastric emptying slows, so glucose enters the bloodstream more gradually. At the same time, appetite centres in the hypothalamus receive stronger satiety signals, resulting in earlier fullness and reduced portion size at subsequent meals. Clinically, a patient may report feeling satisfied after eating half their usual portion and experiencing less urge to snack between meals, contributing to sustained caloric reduction and weight loss.

Tirzepatide extends this effect further by also activating the glucose-dependent insulinotropic polypeptide (GIP) receptor. For example, after the same meal, dual receptor activation enhances insulin secretion in a glucose-dependent manner while improving insulin sensitivity in peripheral tissues and adipose tissue. This dual action not only improves postprandial glucose control but also augments fat metabolism and weight reduction beyond what is typically seen with GLP-1 agonism alone. As a result, patients using tirzepatide often demonstrate greater reductions in body weight and HbA1c, reflecting the synergistic engagement of two complementary metabolic pathways rather than reliance on appetite suppression alone.

Clinical Trial Results and Efficacy

Clinical trials published in the New England Journal of Medicine between 2022 and 2024 demonstrated unprecedented outcomes in pharmacological weight management.

Semaglutide produced average weight reductions of approximately 10–15%, while tirzepatide achieved reductions approaching or exceeding 20%, levels previously observed mainly after bariatric surgery. These findings marked a decisive shift in expectations regarding what drug therapy for obesity could realistically accomplish.[21]

The difference between semaglutide and tirzepatide lies primarily in their mechanism of action and metabolic breadth.

Semaglutide is a selective GLP-1 receptor agonist. It enhances satiety, reduces appetite, slows gastric emptying, and improves glucose-dependent insulin secretion. Its effects are largely mediated through central appetite regulation and improved postprandial glucose handling. As a result, weight loss with semaglutide is driven mainly by reduced caloric intake, with additional benefits in glycaemic control and modest improvements in cardiovascular risk markers such as blood pressure and lipid profiles.

Tirzepatide, by contrast, is a dual GLP-1 and GIP receptor agonist, engaging two complementary incretin pathways simultaneously. In addition to appetite suppression and delayed gastric emptying, GIP receptor activation enhances insulin sensitivity in adipose tissue and skeletal muscle and may promote more favourable fat partitioning. This dual mechanism leads to stronger metabolic effects, translating clinically into greater reductions in body weight, larger improvements in HbA1c, and more pronounced decreases in waist circumference compared with GLP-1 agonists alone.

From a clinical perspective, this distinction is important. Semaglutide represented the first pharmacotherapy to produce double-digit percentage weight loss reliably.

Tirzepatide further extended this boundary, blurring the traditional divide between pharmacological therapy and surgical intervention.

Consequently, these agents have repositioned obesity treatment within chronic disease management, offering sustained weight loss alongside improvements in insulin resistance, cardiometabolic risk, and overall metabolic health, rather than short-term or purely cosmetic effects.

Global Market Expansion

Demand for GLP-1–based medications has surged worldwide. Market analyses from IQVIA and major financial institutions predict that the global obesity pharmacotherapy market could exceed tens of billions of dollars annually within the coming decade. Semaglutide and tirzepatide have become among the most sought-after drugs globally, leading to supply constraints and international debate over equitable distribution.

Pharmaceutical companies have responded with substantial investment into next-generation incretin agonists and combination therapies, signalling a long-term commercial trajectory in which obesity treatment becomes a cornerstone of global drug markets.[22]

Chapter 3

Equity, Access, and Global Disparities in Obesity Care:
Rising Pharmaceuticalisation, Deepening Divides

While obesity medications are reshaping treatment in high-income countries, their adoption in low- and middle-income countries (LMICs) is far more complicated. The high cost of GLP-1–based drugs makes them inaccessible to most populations in LMICs, where healthcare spending and insurance coverage are limited.[23]

High-Income Countries versus Low- and Middle-Income Countries

In high-income settings such as the United States, Canada, and several European countries, obesity pharmacotherapy is becoming increasingly normalised within routine clinical care. Insurance coverage for anti-obesity drugs has expanded, particularly for individuals meeting defined BMI and comorbidity criteria, reducing out-of-pocket costs and accelerating uptake.

Regulatory frameworks in these regions support rapid market entry through expedited or conditional approval pathways, enabling new agents to achieve widespread availability soon after trial publication.

High levels of consumer awareness, amplified by direct-to-consumer advertising and media coverage, further drive demand, sometimes extending beyond medical indications into cosmetic weight loss. As pharmacological solutions gain prominence, there is concern that preventive public health strategies focused on food systems, physical activity environments, and social determinants of health may receive comparatively less policy attention and funding.[24]

In contrast, low- and middle-income countries face a markedly different reality. These settings experience a dual burden of persistent undernutrition alongside rising obesity rates, placing additional strain on already limited healthcare budgets. The high cost of newer obesity drugs, often exceeding average annual household income, makes them inaccessible to most of the population. In the absence of comprehensive insurance coverage or public reimbursement, advanced pharmacotherapy is effectively restricted to small section of wealthy elites. This risks widening health inequities, as biomedical obesity treatment becomes concentrated among those with financial means, while the majority remains reliant on under-resourced public health services and lifestyle-based interventions.[25]

Asia and India: A Closer Look

Asia presents distinctive epidemiological and socio-cultural patterns that shape the obesity landscape in ways that differ from Western contexts. Asian populations tend to develop insulin resistance, type 2 diabetes, dyslipidaemia, and cardiovascular disease at lower body mass index thresholds, reflecting differences in body fat distribution, visceral adiposity, and genetic susceptibility.

Rapid urbanisation across Asia has been accompanied by a marked dietary transition characterised by increased consumption of ultra-processed foods, refined carbohydrates, sugar-sweetened beverages, and edible oils, alongside declining physical activity due to sedentary occupations, motorised transport, and reduced open spaces. These shifts have driven a sharp rise in overweight and obesity within a single generation. At the same time, social stigma surrounding body size remains significant, although beauty norms vary widely across cultures, with some contexts simultaneously valorising thinness while normalising central adiposity in everyday life.[26]

In India, these trends are particularly pronounced. National surveys indicate that adult overweight and obesity prevalence has risen steadily, with recent estimates suggesting that around 24–25% of women and 22–23% of men are overweight or obese, with substantially higher rates in urban and peri-urban areas compared to rural regions. Urbanisation, changing food environments, and declining physical activity have contributed to this rapid increase, especially among younger adults.

Obesity care in India is largely delivered through the private healthcare sector, where out-of-pocket expenditure dominates, creating substantial financial barriers to long-term management. Access to newer anti obesity drugs such as semaglutide remains extremely limited, and when available, costs are prohibitive. For example, monthly treatment with semaglutide can range from approximately INR 15,000 to 25,000, placing it far beyond the reach of average households and effectively restricting use to affluent populations. Meanwhile, public health systems continue to prioritise infectious diseases, maternal and child health, and undernutrition, with comparatively limited investment in obesity prevention, lifestyle counselling infrastructure, or chronic disease management.[27]

In this context, the introduction of obesity pharmacotherapy and the rising pharmaceuticalisation of obesity risks exacerbating existing socio-economic divides by privileging individuals who can afford lifelong medication, while the structural determinants of obesity, such as food systems, urban design, poverty, and social inequity, remain largely unaddressed.

Emphasis on drug-based solutions may reduce urgency for food system reform, including improving access to affordable, nutritious foods and addressing the widespread availability and marketing of ultra-processed products. Regulatory oversight of processed food industries, including taxation, labelling, and marketing restrictions, may also face resistance when pharmacological treatment is positioned as an alternative solution.

Similarly, investment in active urban design, such as walkable neighbourhoods, safe public transport, and recreational spaces, may be deprioritised if obesity is framed primarily as a condition manageable through medication rather than through supportive environments.

A drug-centric model further risks sidelining socio-economic determinants such as poverty, job insecurity, chronic stress, and unequal access to healthcare, all of which strongly shape dietary choices, physical activity patterns, and metabolic health.

Community-based prevention strategies that promote collective behaviour change, social support, and culturally appropriate interventions may receive less funding compared to individual-level medical treatment. Over time, this approach can entrench an individualised understanding of obesity, framing it primarily as a personal biomedical problem rather than a consequence of broader social, economic, and environmental systems.[28] Such a shift risks perpetuating unequal health outcomes across populations.

Part 2

When Obesity Meets Big Pharma:

Clinical, Social, Economic, and Policy Implications

Chapter 4:
Clinical & Safety Concerns
Long-Term Dependence, Weight Regain, Uncertain Outcomes

Chapter 5:
Stigma, Body Politics & Socio-cultural Implications
From Fatphobia to the Medicalisation of Normality

Chapter 6:
Economic and Policy Challenges
Cost Burden, Shifting Public Health Focus, Regulatory Gaps & Market Prioritisation

The reclassification of obesity as a chronic disease and the parallel rise of pharmacological interventions such as GLP-1 receptor agonists have sparked wide-ranging debates across clinical, social, ethical, economic and policy domains[29]. While these developments have expanded therapeutic options and shifted the narrative away from individual blame, they have also produced new forms of medicalisation and inequality. Treating obesity as a disease reshapes clinical practice, public policy, and cultural expectations regarding body size and health. This part analyses consequences of this shift, with specific attention to clinical uncertainties, stigma, economic burdens, and the need for integrated health models, especially in the Indian context.[30]

Chapter 4

Clinical & Safety Concerns:

Long-Term Dependence, Weight Regain, Uncertain Outcomes

Pharmacotherapy has become central to obesity treatment because newer medications demonstrate significant short- to medium-term efficacy. However, obesity drugs—particularly GLP-1 and dual agonists—pose several clinical and safety concerns that complicate their widespread adoption.[31]

Long-Term Dependence and Chronic Use

Obesity is increasingly framed as a chronic, relapsing disease, and pharmacotherapy is therefore often conceptualised as a long-term or even lifelong intervention. Clinical evidence indicates that the neurohormonal and metabolic pathways modulated by GLP-1 receptor agonists revert once medication is discontinued, with appetite, hunger signalling, and energy conservation mechanisms reasserting themselves.

As a result, most patients regain a substantial proportion of the lost weight within months of stopping therapy, reinforcing the perception that sustained benefit depends on continuous drug use. This creates an implicit expectation of prolonged treatment, which raises fundamental questions about the safety of exposure over several decades, particularly given the absence of lifetime data on endocrine, cardiovascular, gastrointestinal, and neuropsychiatric effects.

Long-term adherence in routine clinical practice also remains uncertain. Maintaining consistent use requires ongoing medical supervision, reliable supply chains, and patient motivation over many years, conditions that are difficult to guarantee even in well-resourced health systems.

Interruptions due to side effects, cost, supply shortages, or life transitions may compromise outcomes and increase the likelihood of weight cycling, with potential metabolic and psychological consequences. In parallel, the psychological burden of lifelong medication use deserves attention, as over-reliance on pharmacotherapy for weight control may heighten anxiety about discontinuation, reinforce weight-centred self-evaluation, and contribute to long-term stress.[32] It may foster a sense of dependency, particularly in individuals with pre-existing body image concerns or disordered eating patterns. In some cases, self-worth may become closely tied to continued pharmacological control rather than broader measures of health and well-being.

These challenges are magnified in low- and middle-income countries such as India, where continuous access to expensive obesity medications is unrealistic for most of the population. Out-of-pocket expenditure accounts for approximately 48–55% of total health spending in India, according to NITI Aayog and National Health Accounts data.

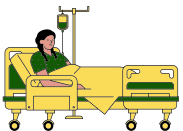
Although insurance coverage has expanded, less than half of the population is insured, and obesity treatment is typically excluded unless associated with comorbidities. High monthly drug costs and limited availability in public facilities mean that lifelong pharmacotherapy remains feasible only for a small, affluent minority, reinforcing existing health inequities.

In such contexts, a treatment model that assumes indefinite pharmacotherapy risks deepening health inequities and diverting attention from scalable, population-level strategies that address the structural and social drivers of obesity.[33]

Weight Regain After Drug Withdrawal

Studies consistently demonstrate that discontinuing GLP-1 receptor agonists leads to substantial weight regain, underscoring the chronic and relapsing nature of obesity. The STEP 1 trial extension revealed that participants who discontinued semaglutide regained approximately two-thirds of the weight they had lost within one year, accompanied by deterioration of cardiometabolic risk markers, such as blood pressure, lipid profiles, and glycaemic control.[34] Similar findings were reported in the STEP 4 randomised withdrawal study, where participants who continued semaglutide maintained weight loss, while those who switched to placebo experienced rapid and clinically significant regain, despite ongoing lifestyle counselling.[35] These findings suggest that pharmacotherapy suppresses, rather than permanently correcting the underlying biological drivers of obesity.

Real-world observational studies from the United States and Europe further corroborate these trial findings, demonstrating high rates of rebound weight gain following discontinuation of GLP-1 therapy.[36]



Mechanistically, this phenomenon reflects hormonal counter-regulation, increased appetite, reduced satiety signalling, and metabolic adaptation that favour weight regain once pharmacological support is withdrawn.

Importantly, the clinical implications extend beyond physical health. Weight regain can generate emotional distress, reduced self-efficacy, and loss of trust in medical treatment, particularly among individuals who have invested significant financial and psychological resources into therapy.

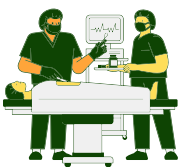
In socio-cultural environments where weight loss is strongly moralised, and thinness is equated with health, discipline, and social success - such as urban India - this cycle may be especially damaging. Recurrent weight regain risks reinforcing internalised stigma and psychological narratives of personal failure and inadequacy, despite obesity being biologically mediated.[37] Without careful counselling and realistic expectation-setting, pharmacotherapy may inadvertently intensify weight stigma and emotional harm, highlighting the need for long-term, integrated support models rather than medication-focused solutions alone.

Side-Effects and Adverse Events

Common adverse effects associated with obesity pharmacotherapy are predominantly gastrointestinal and include nausea, vomiting, diarrhoea, constipation, dizziness, and generalised digestive discomfort, particularly during dose escalation. While these symptoms are often described as mild to moderate and tend to improve with continued use, they can negatively affect adherence and quality of life, especially during long-term treatment.

More serious but less frequent safety concerns have also been reported. Cases of pancreatitis and gallbladder disease have raised clinical caution, potentially related to rapid weight loss and altered biliary physiology. Hypoglycaemia, defined as an abnormally low blood glucose level that can impair cognitive and physical function, is an important risk in patients with diabetes, particularly when these agents are used in combination with insulin or sulfonylureas, necessitating careful dose adjustment and monitoring. Thyroid-related abnormalities, including C-cell tumours, have been observed in animal studies, prompting regulatory warnings, although their relevance to humans remains uncertain. Emerging reports of mood changes and suicidal ideation are currently under investigation, highlighting the need for closer neuropsychiatric surveillance as use expands.[38]

Although short-term clinical trials generally report acceptable safety profiles, the lack of robust long-term data remains a major limitation. This uncertainty is amplified by the anticipated scale of use, as these drugs are increasingly prescribed not only for medically indicated obesity but also for cosmetic or preventive purposes in otherwise healthy individuals. Widespread, prolonged exposure across diverse populations increases the likelihood that rare, delayed, or cumulative adverse effects may emerge, underscoring the need for stronger post-market surveillance and extended-duration safety studies.



Unknown Lifetime-Use Outcomes

Clinical trials for obesity pharmacotherapies typically span one to two years, leaving the consequences of decades-long use largely unexplored. Regulatory approvals have been granted primarily based on intermediate endpoints such as percentage weight reduction and short-term metabolic improvements, rather than hard long-term outcomes. As a result, critical questions remain unanswered, including the effects of prolonged use on cardiovascular morbidity and mortality across diverse populations, particularly outside high-income Western settings.

Evidence is also limited regarding the impact of these drugs on fertility, pregnancy outcomes, and child development, despite the likelihood that many users will be of reproductive age. In addition, sustained modulation of appetite and gut hormones raises unresolved concerns about long-term alterations in the gut microbiome and neuroendocrine function, systems that play central roles in immunity, mental health, and metabolic regulation. The risk of rare but serious adverse effects emerging only after widespread, long-duration use also cannot be excluded, as such events are unlikely to be detected in relatively small, time-limited trials.

For India, these uncertainties are especially consequential. South Asian populations exhibit a distinct metabolic phenotype characterised by higher levels of insulin resistance, greater visceral and hepatic fat deposition, lower lean muscle mass, and increased cardiometabolic risk at comparatively lower BMI thresholds than Western populations. This so-called “thin–fat” phenotype means that metabolic dysfunction often precedes overt obesity, altering both the baseline risk profile and therapeutic response.

As a result, pharmacological agents developed and tested predominantly in Western populations may demonstrate differential efficacy, dosing requirements, and adverse effect profiles in Indian patients. For instance, enhanced insulin resistance and altered incretin responses could influence glycaemic outcomes and hypoglycaemia risk, while higher central adiposity may modify weight-loss trajectories and cardiometabolic benefits.

Additionally, genetic polymorphisms affecting drug metabolism, appetite regulation, and insulin signalling pathways may further contribute to inter-population variability in response and safety. These biological differences are compounded by contextual factors such as dietary patterns, micronutrient deficiencies, coexistence of undernutrition, and variable access to follow-up care. In the absence of region-specific clinical trials, long-term cohort studies, and robust pharmacovigilance systems, extrapolating safety and effectiveness data from Western populations may therefore be inadequate.

This underscores the need for India-specific research and surveillance frameworks to ensure that obesity pharmacotherapy is evaluated within local biological, social, and healthcare contexts, rather than assuming universal applicability of global trial data.[39]

Chapter 5

Stigma, Body Politics & Socio-cultural Implications

From Fatphobia to the Medicalisation of Normality

One of the paradoxical outcomes of medicalising obesity is the simultaneous reduction and reinforcement of stigma. Although framing obesity as a disease can decrease moral blame, pharmacological solutions may intensify pressures to conform to societal norms of thinness.

Fatphobia and Aesthetic Conformity

Drug-centric obesity treatment risks reinforcing the idea that larger bodies are abnormal, flawed, and urgently in need of medical correction. The widespread cultural fascination with rapid weight-loss drugs like Ozempic—fueled by social media, celebrity endorsements, and global media—reinforces narrow and often unrealistic aesthetic standards.

In India, where colourism, body-shape ideals, and urban consumerism shape self-image, exposure to weight-loss medications may exacerbate body dissatisfaction. The growing wellness industry amplifies these pressures by marketing thinness as a symbol of discipline, beauty, and success.[40]

Moral Pressure to Lose Weight

As pharmacotherapy becomes mainstream, choosing not to pursue weight loss—even for personal, cultural, or health-related reasons—may increasingly be framed as irresponsible or non-compliant. This moralisation of weight loss does not operate uniformly across populations. Obesity stigma is strongly gendered, falling more heavily on women than men. Women with larger bodies face heightened scrutiny, social policing, and moral judgment, particularly in relation to appearance, fertility, marriage prospects, and caregiving roles. In contrast, while men with obesity experience stigma, it is more often framed in terms of productivity or health risk rather than moral or aesthetic failure. These gendered expectations intensify pressure on women to seek weight-loss interventions, including pharmacotherapy, even in the absence of medical necessity.

At the same time, the question of who defines a “healthy” weight is deeply political rather than purely scientific. Metrics such as BMI, though widely used, are imperfect and reductionist tools that fail to capture metabolic health, body composition, or functional well-being. Yet these measures continue to guide clinical thresholds, insurance eligibility, and drug indications.

Decisions about what constitutes “treatable” body weight are increasingly shaped by regulatory agencies, expert panels, and pharmaceutical interests, raising concerns about the growing influence of corporate actors in defining disease categories. As obesity is reframed as a chronic condition requiring long-term drug therapy, commercial imperatives risk narrowing the definition of health to weight-centric outcomes that align with pharmaceutical markets.

Within this framework, stigma is not eliminated but transformed. Medicalisation shifts judgment away from overt moral blame toward expectations of treatment adherence.

Individuals who decline medication, discontinue therapy, or regain weight may be perceived as failing to comply with medical advice rather than exercising autonomy. This reframing preserves stigma while embedding it within clinical discourse, reinforcing social hierarchies and obscuring the broader structural determinants of health, including inequality, food environments, and psychosocial stress.

Body Autonomy and Identity

Weight-loss medications can also reshape how individuals view their bodies. Some may feel empowered by newfound control over appetite and weight, while others may experience:

- Alienation from their natural body cues
- Anxiety about dependency on medication
- Internalised stigma that equates self-worth with thinness

The danger is that health becomes over-identified with weight, undermining concepts of body diversity and holistic well-being, and reinforcing narrow size norms. It risks reducing complex identities and wellness experiences to a single medical metric.

Risk of Medicalising Normal Variations

Not all larger bodies are unhealthy, yet the pharmaceuticalisation of obesity risks reclassifying normal variations within human diversity as pathological. This process reflects a broader pattern of diagnostic expansion observed historically in medicine, where social discomfort, moral anxiety, and institutional interests have contributed to redefining the boundaries of disease. In psychiatry, for example, the progressive expansion of diagnostic categories has been criticised for pathologising ordinary emotional states such as grief, shyness, or childhood behavioural variation. Similarly, in endocrinology, conditions such as prediabetes and subclinical hypothyroidism illustrate how biological variation and risk states have increasingly been medicalised, often leading to long-term pharmacological intervention despite uncertain benefit for many individuals. These precedents demonstrate how disease categories can extend beyond clear pathology into zones of probabilistic risk, shaped as much by social and institutional forces as by biological necessity.

Obesity pharmacotherapy appears to follow a comparable trajectory. As drug efficacy improves, thresholds for treatment eligibility may progressively shift downward. This risks transforming weight diversity into a continuum of treatable pathology, sidelining functional capacity, metabolic markers, and lived experience.

An additional and critical dimension emerges when obesity pharmacotherapy is examined alongside the rapid growth of ultra-processed food systems. Contemporary food environments are dominated by energy-dense, highly palatable products aggressively marketed by multinational corporations. These same environments that promote excess caloric intake and metabolic dysfunction coexist with a booming weight-loss drug market that profits from managing the very consequences they create downstream.

This creates a circular political economy in which corporate food practices remain weakly regulated, while pharmaceutical interventions are promoted to adapt individual bodies to obesogenic environments. Rather than correcting the structural drivers of obesity, such as food formulation, marketing, and affordability, health systems risk medicalising bodies to accommodate unhealthy systems.

Together, these dynamics suggest that the pharmaceuticalisation of obesity may function less as a solution to unhealthy environments and more as an adaptive response to them.

Without parallel regulation of ultra-processed food industries and sustained investment in preventive public health strategies, weight-loss drugs risk normalising obesogenic systems while redefining bodily diversity itself as disease.[41]

Chapter 6

Economic and Policy Challenges

Cost Burden, Shifting Public Health Focus, Regulatory Gaps & Market Prioritisation

The rise of obesity pharmacotherapy presents significant economic and policy challenges, particularly for resource-constrained health systems.

Cost Burden on Patients

GLP-1 receptor agonists are among the most expensive chronic medications currently in clinical use. In India, the monthly cost of drugs such as semaglutide and related agents typically ranges from INR 8,000 to INR 15,000, depending on dose and formulation, translating to an annual expenditure of approximately INR 1-2 lakh for continuous therapy. When considered over the long-term, particularly given the likelihood of prolonged or lifelong use, the cumulative financial burden becomes prohibitive for most households. This is especially significant in a health system where out-of-pocket expenditure accounts for a substantial share of total healthcare spending, and insurance coverage for obesity treatment remains minimal.

As a result, the financial burden of obesity pharmacotherapy falls almost entirely on individuals and families. Long-term dependence further amplifies costs, making sustained treatment economically unviable for the majority of the population. Available prescription and market data suggest that uptake of GLP-1-based therapies in India is largely concentrated among affluent urban populations accessing private healthcare, often for combined metabolic and weight-related indications. In contrast, lower-income groups, despite having higher vulnerability to obesity due to food insecurity, chronic stress, and constrained living environments, are largely excluded from these treatments due to cost, access, and awareness barriers. This creates a pronounced treatment class divide in which medicalised solutions are available primarily to socio-economically privileged groups, while structurally driven obesity among disadvantaged populations remains inadequately addressed.[42]

Shift in Public Health Funding

As obesity drugs increasingly dominate global health narratives, there is a growing risk that attention, political will, and financial investment may be diverted away from preventive strategies that address the upstream drivers of weight gain.

Core preventive approaches such as nutrition education, regulation of processed and ultra-processed foods, urban infrastructure that supports routine physical activity, taxation of sugar-sweetened beverages, and community-based lifestyle programmes play a crucial role in shaping long term population health. However, these interventions require multi-sectoral coordination, long implementation horizons, and sustained political commitment, and their benefits accrue gradually rather than producing rapid, easily measurable outcomes. In contrast, pharmacological treatments deliver visible and quantifiable results within months.

This makes them more attractive to policymakers, healthcare systems, and commercial stakeholders. As a result, prevention is often underfunded despite strong evidence of cost-effectiveness and broader public health impact. This imbalance risks reinforcing a reactive, treatment-focused model of obesity care, while neglecting the environmental, economic, and social conditions that drive rising obesity rates across populations.[43]

Insurance and Regulatory Gaps

In India, most health insurance policies do not cover obesity pharmacotherapy unless it is prescribed for associated comorbidities such as type 2 diabetes, leaving the cost burden largely on individuals.

As demand for obesity pharmacotherapy rises, regulatory oversight has struggled to keep pace, particularly in relation to off-label prescribing for cosmetic weight loss, unregulated online procurement, and informal market circulation. In India, GLP-1 receptor agonists are increasingly accessed through e-pharmacies, social media intermediaries, and informal networks that advertise rapid weight loss without adequate medical assessment. These platforms often bypass prescription verification, clinical screening, and follow-up, enabling use among individuals without medical indications. Supply shortages and high prices in formal channels further fuel parallel markets, increasing the risk of counterfeit products, inappropriate dosing, unsafe storage, and unsupervised escalation of dose, all of which heighten the likelihood of adverse effects.

Regulatory gaps contribute significantly to this problem. Although drug approval and marketing are governed by the Drugs and Cosmetics Act 1940 and the Drugs and Cosmetics Rules 1945, these frameworks were not designed for chronic lifestyle-related pharmacotherapy or digital medicine delivery.

Oversight of e-pharmacies remains fragmented, with draft e-pharmacy rules yet to be fully enforced, allowing platforms to operate in regulatory grey zones.

The Central Drugs Standard Control Organisation regulates drug approval but has limited capacity for post-marketing surveillance at scale, particularly for off-label use. Pharmacovigilance in India relies largely on voluntary adverse drug reaction reporting under the Pharmacovigilance Programme of India, resulting in substantial underreporting, especially for medications used outside formal clinical settings.

Furthermore, there is no clear legal mechanism to regulate promotional content on social media platforms where influencers and non-medical actors actively market weight-loss drugs. Enforcement against off-label promotion is weak, and accountability for digital intermediaries is poorly defined. These loopholes collectively undermine patient safety and weaken the ability of health systems to detect population-level harms.

In the absence of stronger regulatory frameworks, clearer enforcement authority, and robust pharmacovigilance systems adapted to digital health realities, the expanding use of obesity pharmacotherapy in India risks amplifying misuse, compromising safety, and deepening inequities in access and health outcomes.[44]

Global Market Prioritisation Over Local Needs

The global expansion of obesity drugs is driven by pharmaceutical markets in high-income countries. As a result, LMIC-specific concerns, such as the coexistence of undernutrition, micronutrient deficiencies, and socio-economic determinants of obesity risk, are being marginalised within policy discussions dominated by biomedical solutions.[45]

To conclude, treating obesity as a disease and embracing pharmacotherapy offer clear clinical benefits, including reductions in stigma associated with personal blame and providing effective tools for high-risk and clinically vulnerable individuals. However, these advantages coexist with significant ethical, social, and policy challenges. Medicalisation may inadvertently increase long-term dependence on medications, reinforce fatphobia, and divert resources from preventive public-health strategies. In countries like India, the tension is even more pronounced due to cost-barriers, cultural pressures, and inequitable health infrastructure.

Part 3

Dealing With Obesity:
The Path Forward

Chapter 7:
Moving Beyond Pharmacotherapy
The Case for Integrated Models of Obesity Care

Chapter 8:
Policy Recommendations

Having examined the gradual medicalisation, pathologisation, and pharmaceuticalisation of obesity in Part 1, and the ensuing clinical, social, economic, and policy implications in Part 2, this part shifts the focus from analysis to action. Pharmacological advances, though significant, cannot operate in isolation. Rather, they must be situated within integrated models of care that redefine health beyond weight - addressing metabolic health, mental well-being, and social determinants of health. Building on this integrated framing, this part also discusses actionable policy recommendations, outlining how policymakers can tackle the brewing obesity epidemic, safeguard public health and avoid the pitfalls of over-pharmaceuticalisation of obesity.

Chapter 7

Moving Beyond Pharmacotherapy

The Case for Integrated Models of Obesity Care

Given the limitations and risks of a drug-centric approach, there is increasing consensus that obesity management requires integrated, multidimensional models.

Metabolic Science and Clinical Care

Pharmacotherapy should be positioned as one component within a comprehensive metabolic care framework rather than as a standalone solution for obesity. Evidence from large clinical trials of GLP-1 receptor agonists demonstrates that while medications can produce substantial short- term weight loss, long-term maintenance of metabolic benefits depends heavily on concurrent lifestyle and behavioural interventions. Trial extension studies and real-world analyses consistently show that discontinuation of medication without supportive dietary and behavioural strategies leads to weight regain and reversal of cardiometabolic improvements, underscoring the limits of drug-only approaches.

Similarly, multidisciplinary obesity management programmes that combine medication with nutrition counselling, physical activity, and psychological support have been shown to improve adherence, reduce relapse, and enhance quality of life compared to pharmacotherapy alone. Effective long-term management, therefore, requires integration with personalised nutrition plans that account for cultural context, dietary patterns, metabolic risk, and sustainability, alongside structured physical activity interventions that improve cardiorespiratory fitness, muscle mass, and insulin sensitivity. Behavioural and psychological support is equally essential to address eating behaviours, stress, sleep, body-image concerns, and treatment adherence, particularly given the emotional burden and stigma associated with obesity.

In addition, clinical monitoring should extend beyond BMI to include metabolic indicators such as waist circumference, glycaemic control, lipid profile, blood pressure, and functional capacity, providing a more meaningful and patient-centred assessment of health outcomes. Clinicians must therefore avoid equating weight loss with health, a simplification that remains common in both medical practice and public discourse. Reductions in body weight do not uniformly translate into improved metabolic or psychosocial wellbeing, particularly if achieved through unsustainable or narrowly biomedical approaches. A holistic model that prioritises overall metabolic health, functional outcomes, and quality of life is essential to ensure that pharmacotherapy supports, rather than distorts, the goals of obesity care.[46]

Mental Health and Behavioural Support

Emotional eating, chronic stress, trauma, and depression play a substantial role in the development and persistence of obesity, yet these factors are often under-recognised within conventional weight-management strategies.

Integrated care models emphasise the importance of counselling to explore emotional drivers of eating behaviour, alongside cognitive behavioural approaches that help individuals identify and modify maladaptive thought patterns related to food, body image, and self-control.

Mindfulness-based techniques and stress-reduction strategies are increasingly recognised for their role in improving eating awareness, regulating emotional responses, and reducing stress-induced overeating.

Peer-support groups further contribute by providing shared understanding, accountability, and social reinforcement, which can enhance long-term adherence and psychological well-being.

This integrated approach is particularly relevant in India, where mental health services remain limited in availability and unevenly distributed, and where stigma continues to discourage individuals from seeking psychological support. Without addressing underlying mental health and psychosocial factors, pharmacological or lifestyle interventions alone are unlikely to produce sustained benefits. Incorporating mental health care into obesity management is therefore essential to achieving durable, equitable, and culturally appropriate outcomes.[47]

Public Health Infrastructure and Social Determinants

A sustainable response to obesity must extend beyond individual-level treatment and address the environments that shape everyday behaviour.

This includes ensuring affordable and reliable access to healthy foods through supportive food policies, strengthened public distribution systems, and incentives for nutritious food production. Urban planning that prioritises green spaces, safe walking paths, and accessible public transport can facilitate routine physical activity as part of daily life rather than as an added burden. Reducing the marketing and availability of ultra-processed foods, particularly to children and vulnerable populations, is also critical in reshaping dietary norms and consumption patterns.

Equally important are policies that address broader socio-economic determinants such as poverty, employment insecurity, and gender inequality, all of which influence stress levels, food choices, time availability, and health-seeking behaviour. By operating upstream, these interventions aim to prevent obesity before it develops, rather than relying on downstream medical responses after metabolic disease has already taken hold. Such an approach is essential for achieving long-term, equitable improvements in population health.[48]

Equity-Focused Approach

Equity must anchor obesity management to avoid widening disparities between populations that can afford pharmacotherapy and those that cannot. In India, existing public health and social welfare platforms offer important opportunities for integrated, culturally grounded interventions. National programmes such as POSHAN Abhiyaan and the Integrated Child Development Services (ICDS) scheme, although historically focused on undernutrition, increasingly emphasise diet quality, behavioural change communication, and life-course nutrition, which are relevant to obesity prevention.

The National Health Mission, through its network of Accredited Social Health Activists (ASHA) and Health and Wellness Centres (HWC) under Ayushman Bharat, provides a scalable platform for community-based screening, counselling, and follow-up for metabolic risk.

In addition, women's self-help groups under the National Rural Livelihoods Mission (NRLM) have demonstrated success in improving food security, dietary diversity, and health literacy among low-income households. Leveraging these programmes to incorporate obesity prevention, nutrition education, and physical-activity promotion can support equitable, non-pharmacological approaches that complement clinical care while remaining accessible to vulnerable populations.[49]

Reframing Health Beyond Body Weight

A critical shift involves redefining health as a holistic state rather than reducing it to body weight or a single numerical metric. Weight-neutral frameworks challenge the assumption that weight loss is the primary or necessary pathway to improved health.

Approaches such as Health at Every Size (HAES) emphasise health-promoting behaviours independent of weight change, focusing on metabolic markers, mental well-being, physical fitness, functional capacity, and quality of life. Evidence from behavioural and public health research suggests that improvements in dietary quality, physical activity, stress management, and sleep can lead to meaningful gains in glycaemic control, blood pressure, lipid profiles, and psychological health even in the absence of significant weight loss.

Weight-neutral models also prioritise body respect, autonomy, and reduction of weight stigma, which may improve healthcare engagement and adherence. By shifting the focus from weight reduction to overall well-being and functional health, such frameworks offer a more inclusive and ethically grounded approach to obesity-related care that complements metabolic science without pathologising body diversity. Integrated models must balance metabolic science with respect for body diversity and patient autonomy.[50]

To move forward, a balanced and integrated model is essential—one that recognises biological factors without reducing obesity solely to a pharmacological problem, supports mental and social well-being, and prioritises equity, prevention, and population-level public health. Only such holistic approaches can address the complexity of obesity without reproducing the inequalities and stigmas that medicalisation seeks to resolve.

Chapter 8
Policy Recommendations

The growing medicalisation of obesity, combined with the rapid expansion of pharmacotherapeutic options, demands a balanced, multi-layered policy response that integrates biomedical innovation with public health, equity, and social justice perspectives. The following recommendations aim to guide policymakers and public health systems towards a comprehensive, ethical, equitable and sustainable approach to obesity management and prevention.

1. Adopt a Balanced Framework: Integrate Treatment with Prevention

As discussed in the previous chapter, pharmacotherapy should complement—not replace—prevention and health-promotion strategies. Public health systems must reinforce a dual approach of:

- Clinical care for individuals with severe obesity or metabolic complications.
- Population-level interventions that address structural determinants such as food environments, urban design, and socio-economic inequality.

Ministry of Health & Family Welfare (MoHFW), Ministry of AYUSH, National Medical Commission (NMC), food regulation agencies like FSSAI, and urban development authorities across the country should coordinate initiatives to ensure that drug-based strategies do not overshadow foundational public health measures.

2. Strengthen Long-Term Safety Monitoring and Research

Given the limited long-term data on GLP-1 and dual agonist therapies, the Central Drug Standards Control Organisation (CDSCO), the Indian Pharmacopoeia Commission (IPC), the Indian Council of Medical Research (ICMR), and other research institutions should collaboratively implement:

- Robust post-marketing surveillance systems tracking long-term adverse events, dependence patterns, and long-term metabolic outcomes.
- Studies that include diverse ethnicities, particularly underrepresented ethnic populations, whose metabolic responses may differ.
- Dedicated research to evaluate drug interactions, safety profiles, and outcomes in populations with high burdens of diabetes, cardiovascular disease, other comorbidities, and nutritional duality.
- Public funding for non-pharmacological obesity control research must be enhanced.

Such efforts will ensure that pharmaceutical enthusiasm does not outpace scientific evidence and long-term safety considerations.

3. Regulate Marketing and Media Narratives Around Weight-Loss Drugs

The glamorisation of medications such as Ozempic, Wegovy and Mounjaro risks normalising off-label use, cosmetic consumption, and the reinforcement of unhealthy body ideals. Addressing these concerns requires regulatory precision with clear attribution of responsibility on violators:

- Misleading anti-obesity pharmaceutical advertising should be explicitly prohibited under the Drugs and Cosmetics Act, 1940, through legislative amendment or subordinate rules.
- Enforcement must be strengthened. Although prescription-only medicines are formally prohibited from direct-to-consumer advertising, enforcement gaps allow indirect promotion through lifestyle narratives, celebrity endorsements, and new media like influencer content.
- The Advertising Standards Council of India (ASCI) Code should be revised to explicitly include influencer-driven promotion of prescription drugs, with enforceable penalties and mandatory content removal for violations.
- Ethical communication guidelines must be issued by NMC to prevent registered medical practitioners from promoting weight-loss drugs without transparent disclosure of risks and non-pharmacological alternatives.

- Finally, media and digital platforms should be encouraged, and where necessary required, to present nuanced health information, including visible risk disclosures and contextualisation of benefits versus harms.

This can prevent the commercial distortion of obesity science and reduce pressure on individuals to pursue rapid pharmacological weight loss. It would also prevent prioritising cosmetic use over therapeutic use in an already diabetes-burdened India.

4. Prioritise Equity in Access and Policy Design

Ensuring equitable access while preventing inappropriate use requires carefully calibrated policy design, especially in India, where both under-treatment and over-medicalisation coexist:

- A tiered pricing model can be extended to anti-obesity pharmaceuticals, identifying select drugs as essential for defined clinical indications while permitting differential pricing across other formulations.
- Explore insurance coverage expansion to evidence-based indications like obesity with established comorbidities, including type 2 diabetes or cardiovascular risks. Cosmetic or short-term weight loss use should be explicitly excluded.
- Subsidised access to anti-obesity medication for low-income populations at high metabolic risk could be operationalised through targeted public health programmes.
- Clearly defined criteria for stopping the medication to prevent indefinite use without demonstrable benefit must be formulated.

This would help prevent anti-obesity pharmacotherapy from becoming a marker of social privilege and aesthetic aspiration while supporting patients with genuine clinical needs.

5. Reinforce Structural and Environmental Interventions

The Union, State, and Local Governments must prioritise upstream, structural interventions that reduce obesogenic exposures rather than relying predominantly on pharmacotherapy to shape population-level obesity outcomes.

- FSSAI must strengthen restrictions on the marketing of foods high in fat, sugar, and salt (HFSS foods), particularly to children, and tighten standards for school and institutional meals.
- High taxation of sugar-sweetened beverages is a well-established population-level intervention, recommended by the WHO, and should be adopted in India. Further, the tax revenue from these sources can be explicitly earmarked for health promotion, obesity prevention programmes, and the subsidisation of healthier food options, thereby aligning revenue generation with public health goals.
- Strengthen the current labelling rules under FSSAI toward visible, consumer-facing warnings would improve informed choice and reduce deceptive health halo effects. Mandatory front-of-pack warning labels for HFSS foods, and simplified interpretive labels should be adopted.
- Align anti-obesity strategies with the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke to help shift emphasis from treatment to prevention, early intervention, and social determinants of health.
- Promote shifts away from a sedentary lifestyle through public campaigns on the lines of Lifestyle of Environment (LiFE). ‘Eat Right India’ and ‘Fit India’ Campaigns can be revitalised in a larger anti-obesity framework campaign.
- Invest in safe, walkable, and green urban spaces to directly reshape daily behaviour patterns and make healthy choices socially normative.
- Initiatives like the CBSE-mandated sugar boards can be emulated across other state boards, along with school-based healthy nutrition and physical activity programmes

Together, such structural measures generate durable public health benefits that no medication alone can achieve, ensuring that obesity prevention and management are grounded in equity, sustainability, and collective well-being rather than individualised medical consumption.

Conclusion

The global pathologisation of obesity through pharmacological intervention represents one of the most significant shifts in contemporary health discourse and practice. What was once framed primarily as a lifestyle-driven condition has increasingly been recast as a chronic biomedical disease requiring continuous clinical management.

This reclassification reflects genuine scientific progress, particularly in understanding metabolic regulation and developing effective therapies such as GLP-1 and dual agonists. For many individuals living with severe obesity and related metabolic complications, these medications offer a degree of weight loss and health improvement previously unattainable through lifestyle approaches alone.

Yet, the rapid expansion of obesity pharmacotherapy risks narrowing the field of vision through which obesity is understood. When weight becomes primarily a biomedical problem to be solved through drugs, structural determinants, such as food systems, socio-economic inequities, stress, cultural norms, and environmental constraints, are deprioritised.

Further, long-term clinical uncertainties associated with obesity medications—dependence, weight regain, side-effects, high cost, and the absence of lifetime safety data—underscore the need for caution about overdependency on these drugs.

Simultaneously, the cultural glamour surrounding weight-loss drugs risks reinforcing fatphobia, deepening aesthetic pressure, and further entrenching societal obsession with thinness.

A sustainable, ethical, and effective response to obesity must therefore extend far beyond pharmacotherapy. While medications have a meaningful place in treatment, they must be integrated within multidisciplinary models that value nutrition, mental health, behavioural science, public health infrastructure, and social equity. Policies must address the upstream determinants of obesity and work to dismantle stigma rather than reproduce it. Equity must guide the distribution of clinical resources; education must counter misinformation and unrealistic expectations; and healthcare systems must uphold patient autonomy and dignity in all obesity-related care.

Ultimately, obesity is not solely a biological dysfunction nor merely a social construct—it is a complex biopsychosocial phenomenon shaped by biology, environment, culture, and policy. Recognising this complexity is essential to avoid the pitfalls of over-medicalisation while harnessing the genuine benefits of scientific advancement. There is a need of balanced approach—one that integrates pharmacological tools with systemic public health interventions and social justice frameworks, offering a promising path toward meaningful, equitable, and humane obesity prevention and care.

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