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Obesity in Low and Middle-Income Countries

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ABSTRACT

Obesity has become one of the most pressing public health challenges in low- and middle-income countries (LMICs), coexisting with persistent undernutrition and food insecurity to create a complex double burden of malnutrition. Vulnerable populations including children, women, rural residents, and low-income households are disproportionately affected due to limited access to healthy foods, healthcare, and nutrition education. This paper examines the impact of obesity on vulnerable groups, identifies major research gaps and methodological limitations, and analyses regional case studies across Sub-Saharan Africa, South Asia, Latin America and the Caribbean, and the Middle East and North Africa (MENA). Findings reveal that urbanization, dietary transitions toward ultra-processed foods, and sedentary lifestyles are accelerating obesity prevalence across all regions. Research and policy efforts are hindered by non-standardized data collection methods, measurement inconsistencies, and weak surveillance systems. Evidence suggests that socioeconomic disparities and cultural perceptions of body image further complicate obesity prevention. Standardizing measurement protocols, improving longitudinal data access, and developing culturally sensitive interventions are critical to mitigating obesity's impact on vulnerable populations. Multisectoral approaches that integrate health, education, food systems, and urban planning are essential to achieving sustainable progress and addressing the obesity epidemic in LMICs.

Keywords: Obesity, Low- and Middle-Income Countries (LMICs), Vulnerable Populations, Urbanization, and Public Health Policy.

INTRODUCTION

Obesity is one of the most important global public health challenges of the twenty-first century. Over the last five decades, the prevalence of obesity has increased rapidly worldwide, including in low- and middle-income countries (LMICs). In 1975, 8.5% of the world's population was classified as obese; by 2019, this number had almost tripled to 27.5% [1]. The rise of obesity aligns with modifications to the global food system and has a multitude of impacts on health systems particularly in LMICs, where health and nutrition remain high on the policy agenda. Global epidemiological analyses indicate that most LMICs are undergoing the nutrition transition [20]. Exacerbated by rapidly urbanizing environments and inadequate food systems, the transition has ultimately increased the prevalence of excess weight and obesity in LMICs [14]. The situation is further complicated by a double burden of malnutrition, where underweight and obesity coexist at the individual, household, population, and national levels [2]. Malnutrition in all its forms is endemic throughout Africa and South Asia. Individual diets can be energy-dense but lack micronutrients, leading to overweight without mitigating hidden hunger [4]. Such global and regional trends underscore the importance of understanding the obesity phenomenon in LMICs as a fundamental contribution to global health [7]. Raising awareness around the epidemiology of obesity elucidates the key importance of combating the progression of the trend, particularly for populations that are still undergoing the nutrition transition. Understanding underlying and amplifying determinants is essential for the implementation of effective and appropriate interventions [9]. So far, approaches have focussed on instruments

that directly influence consumer behaviour, such as regulating food marketing to children, fiscal measures, or communication campaigns promoting healthy dietary or lifestyle choices [7]. Providing a comprehensive overview lays the foundation for rapid progress toward implementing effective domestic policies throughout LMICs [5].

Global Obesity Trends and LMIC Context

Obesity has moved to the forefront of public health agendas globally, progressing from a primarily high-income country (HIC) concern to a vital worldwide issue, particularly in low- and middle-income countries (LMICs) [15]. Rates of adult obesity have more than doubled since 1980. Approximately 1.9 billion adults worldwide were overweight in 2014; of these, 600 million were classified as obese [1]. Among children and adolescents, obesity rates have risen by nearly 50% since 1990. Affecting 42 million young children in 2013, the worldwide prevalence of childhood obesity has increased in LMICs, where the number of affected children in low-income countries (LICs) remains close to that in HICs. These trends are not uniform, with wide regional variability. Obesity prevalence varies significantly across LMICs, ranging from low levels in South Asia to high rates in certain Caribbean and Middle Eastern countries [5]. Rates within LMICs also differ between urban and rural areas, with urban populations often experiencing higher obesity levels [13]. Obesity accompanies urbanization-driven dietary liberalization greater availability/proportion of energy-dense food products and beverages in diets, urban transportation infrastructure leading to decreased physical activity, and increased leisure-time sedentary activities. Nevertheless, many LMICs continue to grapple with underweight or stunting, daunted by the double burden of malnutrition affecting households, communities, and national health systems [11]. The Global Burden of Disease Study reported that between 1990 and 2015, the age-standardized adult body mass index (BMI) increased across all World Bank income categories, with a markedly steeper trajectory in LMICs nationals of LICs experienced the size of increases comparable to those of upper-middle-income countries [16]. As with obesity generally, these weight trajectories crossed typical country income thresholds, implying that income predictions based on conventional epidemiological models may misclassify future LSIC trajectories. All LMICs fell within the same growth channel, displaying limited ability to extrapolate trends from LICs toward predicted upper LMIC steady-state values. Relevant data remain scarce and unrepresentative across LMICs [13]. The importance of monitoring global obesity has increased concurrently with the accelerate propagation rates of epidemic patterns into LMICs; these countries rank second in the universe at risk of incurring substantial adverse health impacts [12].

Definitions, Measurements, and Data Sources

A comprehensive overview of the standard metrics and data sources used to characterize the epidemic of overweight and obesity in Low- and Middle-Income Countries (LMICs) is pivotal to guide policy assessments [1]. Body Mass Index (BMI) and waist circumference (WC) are widely used anthropometric metrics to define overweight and obesity in national surveys. A BMI of 25 kg/m^2 is commonly accepted as an international cut-off for overweight [4]. In many (but not all) LMICs, BMI is also routinely recorded in population surveys and constitutes a crucial variable that enables comparability of overweight and obesity trends across regions. To complement analysis of the urbanization trajectory and its effect on nutritional shifts, a second standard anthropometric metric, waist circumference (WC), is included according to the most recent WHO recommendations[5]. These enhancements are valuable because LMICs from the Demographic and Health Surveys (DHS) programmes are now included in studies for which BMI is not available [9]. Types of data from multiple sources were collected to reveal trends in variations in overweight and obesity, serving as a basis for comparing LMICs with upper-middle and high-income countries[4]. Nationally representative surveys from the World Health Organization (WHO) Global Database on Body Mass Index [8]. The aforementioned analysis of 244 national DHS datasets covering Low- and Middle-Income Countries (LMICs) during 1960–2014 exemplifies the significant information drawn from component [1], which focuses on progress toward universal health coverage. Various comparative studies have examined the intricate relationships between economic factors, urbanization, technology adoption, and overweight status [2] and the diverse socio-economic, dietary, and lifestyle determinants associated with childhood obesity [3]. In the aforementioned analysis, LMICs at different economic-income levels exhibited increased urban residence, economic growth, and technology access alongside significant differences in per-capita energy and consumption patterns. Disparities between LMICs and high-income countries (HICs) are accentuated by the earlier and more rapid rises in overweight and obesity rates observed in middle-income and high-income economies. A previous search identified potential cross-sectional data with BMI information for LMICs between the years 1990 and 2010, underscoring the need to assess measurement techniques since the characteristics, dimensions, topics, and metrics employed in the surveys differ considerably [6].

Epidemiology and Burden

Since nearly 60% of the world's population, 4.4 billion people live in countries where overweight and obesity kill more people than underweight, the global public health challenge is epic [1]. The crisis is particularly alarming in low- and middle-income countries (LMICs), where the rapid rise of obesity occurs in the context of continued undernutrition and socioeconomic disparities [5]. Transitioning to high-income country diet and lifestyle patterns creates enormous pressure on countries ill-prepared to cope with the accompanying environmental and public health consequences [22]. The international community, led by the United Nations, has emphasized the fight against obesity. In 2013, the Copenhagen Declaration argued that prevention is a global imperative, and the Roadmap for Action proposed four priorities [23]. Unfortunately, the mandate of the United Nations Food and Agriculture Organization, which birthed the Copenhagen Declaration, does not specifically mention nutrition transition, double burden, or obesity [21]. The lengthy process of negotiating declarations and action plans obscures the fact that the international community is confronting an unprecedented global transition in diets, nutrition, and health. Cross-sectional assessments of body mass index (BMI) the most widely adopted metric for overweight and obesity show that rates are rising rapidly and significantly among both adults and children in LMICs [2].

Prevalence by Region and Demographics

Overweight and obesity represent a rapidly growing public health threat to low- and middle-income countries (LMICs) [14]. More than one in four adults in the LMIC bloc are currently classified as overweight, and one in ten as obese. The average weight among men has risen almost three kilograms since the year 2000, with much larger increases in regions such as the Middle East and North Africa (MENA) and Latin America and the Caribbean (LAC) [17]. Urbanization has been associated with many positive benefits related to health and wellbeing; nevertheless, fast-paced growth of urban spaces and the parallel rise of urban populations continue to aggravate the double burden of disease [18]. Efforts towards addressing obesity thus warrant urgent, targeted, and continued attention [23]. The Global Burden of Disease Study has estimated overweight to be the cause of 4·88 million deaths globally, whilst obesity was responsible for an additional 2·66 million fatalities [13]. These staggering figures raise serious concern about their implications for LMICs. By 2015, non-communicable diseases (NCDs) largely associated with obesity had become the foremost drivers of mortality among women, and the second-highest cause of premature death for men, in LMICs [16]. Data on obesity remains incomplete and difficult to interpret in LMICs relative to high-income countries. The epidemic continues to build momentum around the world, and rising levels of overweight within LMICs have sparked particular interest from health officials [1].

Double Burden of Malnutrition

Food security is increasingly framed in relation to diet quality and the prevalence of both under- and over-nutrition, positioning the double burden of malnutrition (DBM) at the intersection of food systems and health policy [4]. A range of definitions describe food security, nutrition security, dietary-related diseases and the DBM. More familiar terms such as the nutritional or epidemiological transition and the double burden on the same person, population or household are also widely used as is the use of the World Health Organisation categorisation of country classifications [13]. Identifying DBM per household therefore becomes crucial to targeting appropriate planning and interventions. Most challenges reside in the availability of reliable data to inform such analysis [15].

Health Consequences and Economic Impact

Obesity and overweight can lead to debilitating health consequences and considerable economic costs. Those affected experience a higher burden of morbidity [1], particularly among women, related to conditions such as ischaemic heart disease, diabetes, hypertension, and other diseases. Increased mortality associated with obesity is also an important concern [17]. Though high-income countries have documented declines in life expectancy because of rising obesity-related deaths, this issue has yet to reach low- and middle-income countries (LMICs). However, the growing number of deaths from diabetes, ischemic heart disease, and other conditions that obesity may contribute to requires attention [11]. The costs of obesity can be divided into macroeconomic and microeconomic components and into direct and indirect costs. Macroeconomic costs refer to social losses caused by obesity [18]. Microeconomic costs refer to individual and family-level losses such as out-of-pocket payments for services and days lost to mortality and morbidity, which impact productivity and informative economic resources. Out-of-pocket payments increase participants' vulnerability to poverty [19]. Despite the growing burdens of obesity, existing health systems struggle to manage chronic conditions and many patients face unmet needs. Individuals with diabetes, hypertension, and other non-communicable diseases in LMICs commonly receive no treatments or insufficient care [16]. Management of obesity remains absent from health-care systems. National

burdens may also increase as average weights continue to rise [18]. The direct costs of managing obesity, together with microeconomic burdens linked to morbidity and mortality, are substantial. Furthermore, LMICs with growing rates of overweight and obesity must begin preparing for the long-term implications underlined by economic-theory models, even if effects remain limited to date [20].

Health Systems and Surveillance

Obesity carries immense health and economic burdens across low- and middle-income countries (LMICs). Although national prevalence data remain scant, the available evidence suggests that rates have risen sharply, especially among children [9]. Urbanization, combined with movement toward more energy-dense diets and lifestyles characterized by limited physical activity, drives this escalating epidemic [5]. Obesity significantly increases the risk for cardiovascular diseases, diabetes, musculoskeletal disorders, certain cancers, and other chronic conditions [5]. These additional health problems place great strain both on health systems and on economic productivity. Less measurable impacts include degraded quality of life and diminished psychological well-being 6. Among children and adolescents, obesity leads to harmful comorbidities that impair development and risks overweight continuing into adulthood. Worldwide, obesity causes a staggering 2.8 million deaths each year [9]. Prevalence varies widely among LMICs, with highest rates often concentrated in wealthier urban regions. Available crudely disaggregated data indicate that 3.4% of the population in Sub-Saharan Africa, 6.7% in South Asia, 19.7% in Latin America and the Caribbean, and 28.0% in the Middle East and North Africa are classified as obese according to the World Health Organization (WHO) boundary of a body mass index greater than 30 kg/m². Definitive nationwide measurements remain scarce, however, and much of the available information concerns a limited set of socioeconomic and demographic stratifiers [19].

Screening, Diagnosis, and Clinical Management

Screening typically involves measurement of weight and height, followed by calculation of Body Mass Index (BMI), which helps categorize individuals into different weight categories (e.g. lean, overweight, obese)[11]. This categorization is commonly included in health checks conducted at health facilities and institutions like schools. A substantial portion of the population using these health facilities is usually screened for obesity, which makes screening important for diagnosis and clinical management [6]. Some facilities use waist circumference (WC) as a secondary screening measurement for risk assessment. However, the majority of public facilities in a country carry out only basic BMI screening for obesity, and many treatment guidelines do not include primary care services in their management recommendations [9]. Clinical management of obesity is, therefore, hampered by the absence of integrated obesity management guidelines that explicitly outline the clinical management of obesity. Low- and Middle-Income Countries (LMICs) therefore encounter health system challenges in dealing with increasing obesity and overweight prevalences among their populations [8].

Integrated Care Models and Chronic Disease Management

Chronic diseases already account for the majority of deaths in low- and middle-income countries (LMICs) and continue to rise because of the lack of integrated care models, the indiscriminate growth of these diseases and the increase in obesity [5]. Chronic diseases continue to grow, although countries like Nigeria and Brazil are starting to see equilibrium and some countries even a decrease [7]. Public health strategies are gaining ground, but integrated chronic disease care at the level of community health centres and primary health care services is lacking [6]. The objective is not to create new models but merging integrated chronic disease care into existing systems that countries are already employing for curbing the spread and increase of chronic diseases [7]. Cost of care and treatment of non-communicable diseases (NCDs) is burdensome to individuals and countries' economies. Their management constitutes a huge oppor-tunity due to the high share of the population still under treatment but also the high return on investment [3].

Data Gaps, Monitoring, and Surveillance Improvements

Insufficient and often out-of-date data continue to limit appropriate responses to obesity in low- and middle-income countries (LMICs) [6]. While more than 100 countries worldwide report obesity prevalence estimates, only about 30% of countries in low- and middle-income and 60% in high-income regions provide representative data, with wide spatial and temporal variation [8]. Gap-filling models can indicate the likely prevalence of obesity according to sex and year, yet obesity trends based on measured height and weight only exist for 37 countries, and BMI-specific time series are available for only three LMICs. Most sub-Saharan African and South Asian countries lack both previous estimates and supplementary data that permit interpolation [8]. Monitor collects several key nutrition indicators through national, multi-sector, and multi-partner Food Security and Nutrition-related surveys or through national statistics offices [7]. Nutrition indicators from bilateral surveys or censuses conducted by other organizations may be less regularly integrated into national policy frameworks. Standardization of

indicators and frequency of collection across the three channels involves greater resource allocation, but could facilitate programme planning and implementation [5]. Other important survey and surveillance systems (e.g. World Bank International Household Survey Database, DHS, WHO Global Adult Tobacco Survey) collect few or no indicators directly related to either obesity or a broader range of nutrition indicators, highlighting the importance of the planned indicators [6].

Policy, Programs, and Interventions

Obesity is a condition of excess body fat accumulation and occurs when energy intake exceeds energy expenditure. That excess fat may increase the risk of a range of health problems, including diabetes, cardiovascular disease, and cancer [9]. Policy options to address obesity vary from country to country and can be divided into education, regulation, taxation, or product reformulation measures [9]. These options fall within a broader category of non-communicable disease prevention, typically focused on some areas of action behavior change (tobacco usage, food choice, exercise, etc.) and risk prevention and management. They can be conveniently categorized as food and nutrition policies, public health communication campaigns, and economic interventions with the intent to improve the food supply [3]. Countries across low-and middle-income countries have taken steps to address the growing epidemic of obesity in populations. South Africa, Botswana, Lesotho, Swaziland, and Namibia have adopted soda taxes aimed at reducing sugar consumption and encouraging health reformulation, with reported decreases in sweetened beverage sales [8]. These countries are considering additional fiscal measures to expand healthy food access 6. In Kenya and Ghana, new draft national guidelines on the marketing of food and non-alcoholic beverages to children emphasize the need to protect children in public media spaces and limit the promotion of unhealthy products. Brazil's comprehensive food guide advises families to avoid ultra-processed foods and advertising [7]. As part of schools' health promotion activities, Botswana has introduced lunchbox awareness campaigns to encourage healthy food choices among parents and their children [12]. Thailand's educational campaigns encourage moderation and consumption of less sugar, salt, and fat in foods, along with three core elements of "food safety," "healthy food," and "healthy eating behavior" for vendors and consumers[13]. Special attention is required for Young children and Youth and the protection of childhood in both urban and rural areas [1]. Clinical management and care for patients with overweight, obesity, and diet-related NCDs require a better-refined approach. Inadequate screening and monitoring, poorly designed delivery systems, lack of national health plan or strategy addressing overweight, obesity, and related NCDs, high out-of-pocket costs and inequities, low awareness, and perceptions of low-risk among health professionals constitute barriers for patients to benefit from available interventions to prevent and control obesity from an early age. Ongoing initiatives address policy,socio-demographic, market and food system factors driving NCD[15]. Additional attention is warranted for chorus in the rural areas where poverty, low access to education, lack of nutritious foods, inactive lifestyle poor treatment remains a round-the-clock issue when obesity is not in highlighted agenda of concern[13].

Food and Nutrition Policies

Many low- and middle-income countries (LMICs) and numerous governments are actively working to halt the upward trend in overweight and obesity by advancing substantial food and nutrition policies [7]. Such comprehensive policies are indispensable as the rising demand for processed foods leads to unhealthy diets, prompting weight gain [8]. Intergovernmental actions to maintain healthy diets are of increasing importance owing to the globalization of food systems, rapidly changing urban environments, reliance on food imports, and proliferating food-related marketing. These policies typically comprise voluntary food reformulation targets, improved food labeling regulations, the establishment of food quality standards, and guidelines to mitigate the marketing of unhealthy foods. All such measures also figure in various countries' national food and nutrition policy frameworks [6].

Public Health Campaigns and Behavior Change

The populations of low- and middle-income countries (LMICs) consume fewer sugar-sweetened beverages than those in high-income countries (HICs) but have nonetheless experienced a rapid rise in their consumption per capita[10, 14]. Policy options to curb this rise include administrative measures (e.g. fiscal policies) and a coordinated communication strategy [10]. Public communication campaigns aim to induce individuals to adopt behaviors conducive to health improvement. Such campaigns achieve significant exposure; nevertheless, long-term behavioral change continues to remain elusive [9]. These campaigns must take into account the social determinants of health, or those contextual factors above and beyond individual or household factors that, if targeted, may broaden and expedite long-term behavior change efforts [5]. At the same time, greater attention to how individuals respond to perceived health risks may be an effective strategy to broaden and deepen public communications regarding the broader societal transformations that underlie obesity [3].

Fiscal and Regulatory Approaches (Taxes, Subsidies)

The establishment of food-based dietary guidelines and the adoption by countries either of a tax on sugar-sweetened beverages (SSBs) or of subsidies for healthy foods are two of the policy options identified by the global obesity commission (World Obesity Federation et al., 2022) [13]. As pointed out by Moodie et al. (2013) [11], taxes on SSBs or unhealthy foods and subsidies for healthy foods fall within the category of fiscal policy and allow governments to influence food choices via price manipulation, thereby promoting healthier foods and discouraging options perceived as detrimental to health (e.g., ultra-processed foods). A recent review by Taylor et al. (2015) [12] notes that countries began to implement early public policies aimed at reducing the consumption of unhealthy food and beverage products. These policies include taxes on fats and sugars or on consumption of foods considered unhealthy (high sugar content, saturated fats or industrial trans fats, etc.)[13], reductions in the amount of trans fats permitted in foods, limits on advertising targeted at children, restrictions on vending machines in schools, caloric labeling of menus in fast-food chains, and food and nutrition guidelines for schools. Since the early 2010s, fiscal and regulatory policies have been increasingly considered to tackle the obesity epidemic and various regulations have now been implemented in several countries (Moodie et al., 2013) [15].

School-Based and Workplace Interventions

Education and prevention programs undertaken in schools and workplaces may remain key means to influence lifestyle and weight gain. Ávila and Gatica (2020) summarize 183 school-oriented interventions due to their global reach and potential as preventive measures in youth education [4]. School-based strategies have become increasingly popular in lower- and middle-income countries, although the evidence of impact remains scarce. Some Latin American countries, for example, have adopted food guides or regulations on advertising and food sales in schools, yet most interventions have focused exclusively on promoting physical activity [18]. Dedicated obesity prevention and control programs in Ecuadorian workplaces prioritize food consumption and physical activity. Obesity-oriented programs such as Healthy Habilidades, Contrabando, Mantente Fuerte, and Actitud50 total 1420 direct beneficiary participants in governmental, tertiary, and private sectors [17]. The interventions rely on Health Promotion and Protection guidelines from Health Ministry provisions, addressing education and preventive measures on health, obesity, and physical activity. School-based and workplace-oriented interventions therefore remain pivotal areas for international and national programs targeting BMI development and maintenance [13].

Economic and Equity Considerations

As the economic repercussions of the COVID-19 pandemic unfold, LMICs are grappling with unprecedented unemployment. In this context, obesity treatment may not be a priority [2]. Ongoing conflicts in various regions compound the problem. Preliminary global estimates indicate that obesity now costs LMICs US$97 billion annually, with expenses projected to reach US$147 billion by 2030. Assistance from foreign or multilateral organizations is often essential to help finance health or education initiatives [8]. Cost-effectiveness analysis helps identify priority interventions, particularly in resource-constrained contexts [1]. However, comparatively few economic evaluations of obesity programs in LMICs exist. One or two such analyses appear for Ghana, Kenya, South Africa, and India; a multicountry examination of fiscal policies is in the works for Bangladesh, Brazil, and South Africa; and a similar study of school-based interventions is underway in Bangladesh, Ghana, Kenya, and Mozambique [6]. Obesity measures are rarely included in broader economic evaluation studies, such as analyses of tobacco or alcohol. Since no specific threshold for cost-effectiveness has been established for LMICs, the World Health Organization recommends using a general budget-impact analysis; such estimates are available for the aforementioned interventions [11]. Affordability constitutes a fundamental barrier to treatment [9]. Many LMICs lack universal health coverage, obliging individuals to pay out-of-pocket for medications or consultations; insurance uptake remains limited or nonexistent. Even where coverage exists, the out-of-pocket share may still be substantial. Healthy food options typically command a premium, further restricting access [13].

Cost-Effectiveness of Interventions

Obesity imposes considerable and rising costs on health systems and economies around the world. Annual increases in the mean body mass index of the population are associated with an increase in disability-adjusted life years for conditions such as diabetes [14] and other non-communicable diseases. In LMICs, the fiscal space for addressing non-communicable diseases remains limited and interventions must therefore be prioritised. Cost-effectiveness and/or budget-impact analyses have been conducted for interventions addressing obesity in these countries [15].

Out-Of-Pocket Costs and Access Disparities

Access to healthcare services is unevenly distributed across populations in low- and middle-income countries and remains a significant driver of health inequality [16]. Out-of-pocket health expenditures can lead to financial hardship, particularly among the chronically ill and low-income populations, who are more affected by the rise in obesity-related conditions. Low-income household budgets for food typically approach 70 percent of total expenditures [10]. Yet in some countries, the lowest price for healthy food is actually highest for the poor [10, 16].

Impact on Vulnerable Populations

Children, women, rural residents, and low-income households are disproportionately affected by the rising obesity burden across LMICs [11]. This vulnerable group is most prone to the emergence of overweight and obesity, as well as to other non-communicable diseases associated with dietary and lifestyle changes, because they are already at risk of under nutrition, food insecurity, and insufficient health care and poor access to healthy and affordable foods or nutritious meals [1]. Obesity among children and adolescents is a particular concern given the associated physical and mental health consequences, such as joint problems, high blood pressure, diabetes, low self-esteem, psychological distress, and social stigma [3]. Patterns of illness and risk factors differ considerably between men and women; young mothers face increased vulnerability and greater difficulty in establishing healthy dietary patterns among themselves and family members, amounting to a significant public health risk for both themselves and their children [9]. Addressing the specific dietary patterns, determinants, and risk factors among various user groups before designing policy options is imperative to ensure targeted interventions that suit the various needs and address the specific priorities of each vulnerable user group [8].

Research Gaps and Methodological Considerations

Research in low- and middle-income countries (LMICs) encounters two broad categories of challenges: study design and measurement. Causality is difficult to establish when treatment is non-random, limiting understanding of drivers and policy responses [5]. Selection bias may occur when treatment and outcome are simultaneously determined, leading to spurious correlation. Limited access to panel data prevents thorough examination of longitudinal associations between exposure and outcome. These issues have prompted calls for standardisation of LMIC intervention protocols [1]. Specifying sufficient conditions enables assessment of dependent and independent mechanisms (M. S. Crossley & C. P. K. Low, 2016) [7]. Attribution masks contributions of distinct event attributes to overall impact. These concepts facilitate formulation of formal causal models to address measurably important but less tractable research questions (M. S. Crossley & C. P. K. Low, 2022) [3].

Study Design Challenges in LMICS

Epidemiological studies of obesity in LMICs face considerable design challenges [6]. The feasibility of conducting representative studies is often limited by time and resource constraints; data collection is thus frequently narrowed to a convenience sample of the population, managerial or clinical staff, or households [25]. However, the resulting convenience or opportunistic samples risk large selection biases, limiting the generalizability of findings 1. Causative factors also remain difficult to establish, particularly the extent to which shifts in the food supply or in advertising drive dietary change in LMICs [9]. Data are scarce on dietary intake, and awareness interventions that aim to increase knowledge of diet-related health risks often succeed in shifting attitudes but do not further modify eating behaviour or food choice [8].

Measurement Standardization and Comparability

Measurement protocols concerning anthropometry and food consumption exhibit significant variability worldwide, complicating the establishment of comparable estimates [16]. Particular attention is required to achieve standardization among LMICs [7]. Likewise, when considering the integrity of existing datasets, uniform methods for anthropometric evaluation and dietary assessment should be specified in supplementary frameworks. Additional indicators from global monitoring systems such as the Global School Health Survey, the Global Nutrition and Food Security Monitoring System, and the Global Adult Tobacco Survey also warrant inclusion within the purview of the comparability exercise [2]. Standardizing these response options would enhance the capacity of countries to delineate overweight and obesity trends, thereby facilitating the monitoring of other determinants influencing dietary transition and sedentary behavior [16]. According to Cochrane reviews, multiple strategies have proven effective in motivating populations to reduce caloric intake and increase physical activity, making them relevant areas of enquiry for any spectrum of obesity prevalence [17].

Case Studies by Region

Sub-Saharan Africa exhibits the fastest-growing obesity rates across regions, influenced by urbanisation and the nutrition transition [5]. However, underweight remains prevalent. National surveys feature obesity data, yet the

comparability of anthropometric definitions and measurements hampers comprehensive analysis [15]. Countries in South Asia face substantial obstacles in addressing obesity. Prevalence rates are lower than in other regions, even among women [13]. Urbanisation drives malnutrition and healthy lifestyle changes, yet progress remains inconsistent. Several high-level national policies target obesity, and initiatives in agriculture, nutrition, social protection, gender, non-communicable diseases, and health financing indirectly support action [2]. National surveys generally offer actionable panel data, though shifts in measurement and indicators hinder full comparability [15]. Obesity rates in Latin America and the Caribbean are among the highest globally, with considerable variation among countries [16]. Policies are in place, yet implementation remains inconsistent, and detailed evaluations of existing measures are sparse [11]. Disparities in obesity prevalence along socio-economic lines have been documented, with low-income and uneducated groups facing heightened risks [13]. Several nationally representative studies collect comparable information, though variations in definitions, indicators, and protocols persist. The Middle East and North Africa confront high obesity rates. Urban exposure, rapid lifestyle changes, and disparities in transport modes and time dedicated to physical activity shape obesity trajectories. Quantitative studies employing various definitions and metrics are available, yet the role of confounding factors is uncertain [1, 18].

Sub-Saharan Africa

Rapid urbanization and changes in dietary patterns, physical activity, and sedentary behavior have contributed to rising obesity rates in many African countries [6]. Data from the Demographic and Health Survey 2005–2013 indicate that the prevalence of overweight among women aged 15–49 in urban areas was 1.7 times higher than in rural locations, and the prevalence of obesity was 2.3 times higher [19]. Higher overweight and obesity prevalence was also associated with increased household wealth. These urbanization and wealth-related trends accelerate the nutrition transition [7]. The growing consumerism of ultra-processed foods, sugar-sweetened beverages (SSBs), and cheap oils in Africa is evident through media and advertisements targeting mostly children 20. The food environment is also changing rapidly, and exposure to fast food is also documented. Even if the urban population in some countries is less than 30%, the rapid intra-urban and peri-urban migration is predicted to maintain increased overweight and obesity prevalence [6]. Obesity has increased consistently, alongside dietary, lifestyle, and policy-related changes, in southern Africa over three decades. Age-standardized BMI rose from 24.2 in 1990 to 26.7 in 2019, with obesity prevalence among women more than doubling from 1990 to 2019, rising from 16.2% to 34.1%. Sub-Saharan Africa is experiencing high economic growth coupled with rapidly increasing food production and resource accumulation, which reinforce the double burden of malnutrition [13]. Food availability has been improving; between 1992 and 2014, kilocalories per capita per day rose by 25% in West Africa and by 41% in Eastern Africa [15]. A national nutrition survey carried out in 2013–2014 showed that the percentage of underweight women was still high (15.1%) in Ghana, yet the mean BMI for overweight and obesity was 45% [24].

South Asia

South Asia has seen an alarming rise in the prevalence of overweight and obesity, further widening inequality and increasing the burden of non-communicable diseases (NCDs) [21]. India faces a double burden of global concern, with high childhood undernutrition and rising overweight-obesity among many social groups. Liberalization of the economy has accentuated consumption of processed foods and sugar-sweetened beverages (SSBs), key drivers of the obesity epidemic. Obesity may already be the second largest modifiable risk factor for mortality after tobacco [21]. Growth of the food processing industry coupled with visible marketing of high-calorie foods and beverages on television, bulk purchase offers on online platforms, and urban rural transport connections to distant cities have extended consumer choice and access [19]. Social norms continue to place at least as much emphasis on appearance and body image for women as for men across the country, a consideration from early childhood on that promotes mark-recognition and locations chosen for high-calorie food purchasing among children[18]. Rapidly growing cities with urbanization of rural residents and population movement from small towns to megacities, where lifestyles, food consumption patterns, transport, and job types differ markedly, are additional contributors. Due to rural interdependence and rural development schemes, small towns are also inadvertently acting as facilitators by connecting rural areas to extensive supply chains that influence young people's consumption of high-calorie foods [17]. National policy responses are underway to mainstream the obligations of the Health Ministry and other Departments relative to the multi-sectoral determinants of the rising burden of NCDs and to promote integrated implementation of priority actions across diverse Ministries [17].

Latin America and the Caribbean

Latin American countries experienced significant urbanization throughout the 20th century and extensive economic growth since the 1990s [22]. These social and economic transitions have been accompanied by a marked increase in obesity, particularly among lower socioeconomic groups; the prevalence of obesity has decreased, rather than increased, among higher-income groups in several cases [22]. Approximately 27 % of adult women and 22 % of adult men had obesity in Latin America and the Caribbean in 2016, according to the Global Burden of Diseases, Injuries, and Risk Factors Study. Countries with long-term obesity data, such as Brazil, Colombia, and Mexico, show similar trends; the obesity burden has shifted from upper- to lower-income groups and inequality in obesity has decreased over time [21, 22]. Obesity among lower-income groups rose between 1990 and 2010 in Brazil, Colombia, Mexico, and Peru, alongside decreases in high-income–group obesity. The same pattern was observed for men in Argentina, Jamaica, and Nicaragua, and for women in Bolivia, Guyana, and Nicaragua. Consequently, even at the early stage of the obesity transition, the remaining countries must incorporate the need for high-income–group prevention measures and lower-income–group programmes into their planning [20, 22, 23].

Middle East and North Africa

Obesity has become a significant public health issue in low- and middle-income countries, and is a major risk factor for noncommunicable diseases [23]. The Middle East and North Africa have witnessed a rapid increase in obesity among adults in recent decades, affecting both men and women, especially in some Gulf countries [24]. Rapid urbanisation, sedentary lifestyle, and dietary shifts toward high-energy density foods are some of the drivers for this rise. A significant percentage of the population has recently participated in campaigns aimed at reducing obesity. Various public health bodies in the region aim to address obesity through initiatives to prevent and treat obesity [24-29].

CONCLUSION

The rising prevalence of obesity in low and middle-income countries (LMICs) represents a major global health challenge, particularly for vulnerable populations already burdened by poverty, under nutrition, and limited access to healthcare. Children, women, and low-income groups face the highest risk due to poor dietary diversity, increasing exposure to ultra-processed foods, and limited access to safe spaces for physical activity. The regional analysis underscores that while obesity trends are universal, their manifestations are context-specific, shaped by socioeconomic, cultural, and environmental determinants. In Sub-Saharan Africa, rapid urbanization and lifestyle changes have increased obesity rates, particularly among urban women. South Asia's growing middle class and expanding food industry have accelerated obesity, even as under nutrition persists. In Latin America and the Caribbean, obesity has shifted from high- to low-income groups, reflecting deepening social inequalities. Meanwhile, in the Middle East and North Africa, modernization and sedentary lifestyles have driven obesity to alarming levels, especially among women. Research and policy responses remain fragmented due to methodological limitations, including selection bias, lack of standardized measurement protocols, and inconsistent data comparability. Addressing these challenges requires a coordinated, evidence-based approach that integrates surveillance, prevention, and treatment strategies. Policymakers must prioritize nutritional education, regulate food marketing (especially to children), and strengthen food and health systems. Ultimately, tackling obesity in LMICs is not merely a health goal; it is a social, economic, and developmental necessity aligned with achieving the Sustainable Development Goals (SDGs) and promoting equity in global health outcomes.

REFERENCES

1. Talukdar R, Biswas S, Seelamantula A, Pahari S, Ghosh D, Sagiraju HK. Prevalence of Overweight/Obesity Among Under-Five Children in Lower Middle-Income Countries and Assessment of the Reported Associated Factors: A Systematic Review and Meta-Analysis. Pediatric Obesity. 2025 Sep 16:e70055.
2. Goryakin Y, Suhrcke M. Economic development, urbanization, technological change and overweight: what do we learn from 244 Demographic and Health Surveys?. Economics & Human Biology. 2014 Jul 1;14:109-27.
3. Di Cesare M, Sorić M, Bovet P, Miranda JJ, Bhutta Z, Stevens GA, Laxmaiah A, Kengne AP, Bentham J. The epidemiological burden of obesity in childhood: a worldwide epidemic requiring urgent action. BMC medicine. 2019 Nov 25;17(1):212.
4. Menon S, Peñalvo JL. Actions targeting the double burden of malnutrition: a scoping review. Nutrients. 2019 Dec 27;12(1):81.

5. Jaacks LM, Kavle J, Perry A, Nyaku A. Programming maternal and child overweight and obesity in the context of undernutrition: current evidence and key considerations for low-and middle-income countries. Public Health Nutrition. 2017 May;20(7):1286-96.
6. Edyedu I, Ugwu OP, Ugwu CN, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Ejemot-Nwadiaro RI, Okon MB, Egba SI. The role of pharmacological interventions in managing urological complications during pregnancy and childbirth: A review. Medicine. 2025 Feb 14;104(7):e41381.
7. Adom T, De Villiers A, Puoane T, Kengne AP. A scoping review of policies related to the prevention and control of overweight and obesity in Africa. Nutrients. 2021 Nov 11;13(11):4028.
8. Schouten BC. Clinician–Patient Communication: Intercultural. The International Encyclopedia of Health Communication. 2023 Feb 17:1-6.
9. Buckland AJ, Thorne-Lyman AL, Aung T, King SE, Manorat R, Becker L, Piwoz E, Rawat R, Heidkamp R. Nutrition data use and needs: Findings from an online survey of global nutrition stakeholders. Journal of Global Health. 2020 Nov 8;10(2):020403.
10. Popkin B, Monteiro C, Swinburn B. Overview: B ellagio C onference on P rogram and P olicy O ptions for P reventing O besity in the L ow-and M iddle-I ncome C ountries. obesity reviews. 2013 Nov;14:1-8.
11. Cecchini M, Sassi F. Tackling obesity requires efficient government policies. Israel Journal of Health Policy Research. 2012 Apr 18;1(1):18.
12. Ongesa TN, Ugwu OP, Ugwu CN, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Okon MB, Ejemot-Nwadiaro RI. Optimizing emergency response systems in urban health crises: A project management approach to public health preparedness and response. Medicine. 2025 Jan 17;104(3):e41279.
13. Moodie M, Sheppard L, Sacks G, Keating C, Flego A. Cost-effectiveness of fiscal policies to prevent obesity. Current obesity reports. 2013 Sep;2(3):211-24.
14. Taylor AL, Parento EW, Schmidt LA. The increasing weight of regulation: countries combat the global obesity epidemic. Ind. LJ. 2015;90:257.
15. Ickes MJ, McMullen J, Haider T, Sharma M. Global school-based childhood obesity interventions: a review. International journal of environmental research and public health. 2014 Sep;11(9):8940-61.
16. Wanjau MN, Kivuti-Bitok LW, Aminde LN, Veerman JL. The health and economic impact and cost effectiveness of interventions for the prevention and control of overweight and obesity in Kenya: a stakeholder engaged modelling study. Cost Effectiveness and Resource Allocation. 2023 Sep 21;21(1):69.
17. Ugwu CN, Ugwu OP, Alum EU, Eze VH, Basajja M, Ugwu JN, Ogenyi FC, Ejemot-Nwadiaro RI, Okon MB, Egba SI, Uti DE. Medical preparedness for bioterrorism and chemical warfare: A public health integration review. Medicine. 2025 May 2;104(18):e42289.
18. Zanganeh M, Adab P, Li B, Frew E. A systematic review of methods, study quality, and results of economic evaluation for childhood and adolescent obesity intervention. International journal of environmental research and public health. 2019 Feb;16(3):485.
19. Goryakin Y, Suhrcke M. The prevalence and determinants of catastrophic health expenditures attributable to non-communicable diseases in low-and middle-income countries: a methodological commentary. International journal for equity in health. 2014 Nov 7;13(1):107.
20. Lobstein T, Jewell J. What is a "high" prevalence of obesity? Two rapid reviews and a proposed set of thresholds for classifying prevalence levels. Obesity Reviews. 2022 Feb;23(2):e13363.
21. Popkin BM, Gordon-Larsen P. The nutrition transition: worldwide obesity dynamics and their determinants. International journal of obesity. 2004 Nov;28(3):S2-9.
22. Paul-Chima UO, Ogenyi FC, Ugwu CN, Nnaemeka UM. Gut Microbiota-Derived Metabolites as Early Biomarkers for Childhood Obesity: A Policy Commentary from Urban African Populations. Obesity Medicine. 2025 Sep 4:100641.
23. Neupane S, KC P, Doku DT. Overweight and obesity among women: analysis of demographic and health survey data from 32 Sub-Saharan African Countries. BMC public health. 2015 Dec;16(1):30.
24. Mbogori T, Kimmel K, Zhang M, Kandiah J, Wang Y. Nutrition transition and double burden of malnutrition in Africa: a case study of four selected countries with different social economic development. AIMS Public Health. 2020 Jun 30;7(3):425.
25. Khandelwal S, Reddy KS. Eliciting a policy response for the rising epidemic of overweight-obesity in I ndia. obesity reviews. 2013 Nov;14:114-25.
26. Jiwani SS, Carrillo-Larco RM, Hernández-Vásquez A, Barrientos-Gutiérrez T, Basto-Abreu A, Gutierrez L, Irazola V, Nieto-Martínez R, Nunes BP, Parra DC, Miranda JJ. The shift of obesity burden by

socioeconomic status between 1998 and 2017 in Latin America and the Caribbean: a cross-sectional series study. The Lancet Global Health. 2019 Dec 1;7(12):e1644-54.

27. Ugwu OP, Okon MB, Alum EU, Ugwu CN, Anyanwu EG, Mariam B, Ogenyi FC, Eze VH, Anyanwu CN, Ezeonwumelu JO, Egba SI. Unveiling the therapeutic potential of the gut microbiota–brain axis: Novel insights and clinical applications in neurological disorders. Medicine. 2025 Jul 25;104(30):e43542.
28. Mokdad A, El Bcheraoui C, Afshin A, Charara R, Khalil I, Moradi-Lakeh M, Kassebaum N, Collison M, Ärnlöv J, Murray C. Burden of obesity in the Eastern Mediterranean Region: findings from the Global Burden of Disease 2015 study. International journal of public health. 2018;63(S1):165-76.
29. Okati-Aliabad H, Ansari-Moghaddam A, Kargar S, Jabbari N. Prevalence of obesity and overweight among adults in the Middle East countries from 2000 to 2020: a systematic review and meta-analysis. Journal of obesity. 2022;2022(1):8074837.

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