

# Narrative Review of Public Health Campaigns against Obesity

Muhindo Edgar

Department of Pharmacy Kampala International University Uganda  
Email: [edgar.muhindo@studwc.kiu.ac.ug](mailto:edgar.muhindo@studwc.kiu.ac.ug)

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## Abstract

Public health campaigns addressing obesity have evolved from traditional awareness models toward inclusive, data-driven, and technology-supported interventions. This narrative review explores emerging trends, ethical challenges, and future directions in obesity-related campaigns, focusing on stigmatization, inclusivity, technological innovation, community participation, and sustainability. Evidence shows that campaigns emphasizing body shape or personal responsibility often reinforce stigma and discrimination, undermining health outcomes. Conversely, body positivity and neutrality movements amplified by digital media promote acceptance, self-esteem, and participation. Ensuring accessibility and inclusion requires tailored messaging, equitable communication channels, and engagement of credible community-based organizations (CBOs) and community health workers (CHWs). Technological advances, including big data analytics, wearables, educational apps, and blockchain systems, enable precision targeting and safeguard privacy in campaign design. Community-driven and participatory approaches enhance responsiveness by integrating local contexts, values, and behaviors, improving engagement and sustainability. Integration within public health systems and policy frameworks strengthens long-term impact, while financial constraints particularly in low- and middle-income countries pose challenges to scale and continuity. Overall, effective obesity prevention demands stigma-free, community-centered, and data-informed campaigns that align behavioral, technological, and policy strategies to promote equitable and sustainable health outcomes.

**Keywords:** Obesity prevention, Public health campaigns, Inclusivity and stigma reduction, Technological innovation and Community participation.

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## INTRODUCTION

The obesity epidemic has emerged as a major public health challenge worldwide. The desire to address this growing issue has fuelled the development of obesity-related public health campaigns [1]. A narrative review is conducted to provide an overview of campaigns that have been implemented globally [1]. Specific attention is given to campaigns aiming to prevent or control obesity or related conditions such as overweight, type two diabetes, cardiovascular disease, or other non-communicable diseases linked to overweight or obesity [3]. A reciprocal link is thus expected between the title 'Historical Overview' positioned and the present introduction. Obesity is defined as an excessive fat accumulation that impairs health. Campaigns focused on obesity prevention prioritize the urgency of the problem, while people with obesity may also be depicted as active participants in controlling weight [2]. Thus, campaigns related to obesity prevention, overweight, and obesity are included. Similarly, the inclusion of campaigns targeting non-communicable diseases associated with overweight or obesity relates to the anticipated cross-reference to Section [4]. Health campaigns are considered systematic, structured, one-time, or continuing efforts to communicate facts and encourage specific actions among target audiences to improve community health [1].

### Background and Rationale

Between 1960 and 1990, adult overweight and obesity rates in the United States nearly doubled, as did rates of childhood obesity [1]. Since then, the obesity epidemic has acquired a truly global character, spreading to different areas, regions and countries worldwide. According to the World Health Organization (WHO), global obesity has nearly tripled since 1975[4]. In the year 2022, 890 million people were affected by obesity worldwide and the projections continue to increase. Although public health experts consider obesity to be a multifactorial problem, characterized as a disease by the American Medical Association, and the WHO also endorses it as a complex condition, it nevertheless remains a widespread public health problem. Public engagement campaigns against obesity started to appear spearheaded by non-governmental agencies and more intensely promoted by public authorities throughout the world [3]. The World Health Organization addressed the obesity epidemic through its 'Global Strategy on Diet, Physical Activity and Health' in 2004 and later launched the 'Global Strategy to Reduce the Harmful Use of Alcohol' and the 'Global Plan for the Prevention and Control of Noncommunicable Diseases' (2008-2013)[2].

### Definitions and Scope of Obesity Campaigns

Obesity is characterized by excessive fat and disordered metabolism and is categorized through the body mass index (BMI) measured as weight in kilogrammes divided by the square of height in metres; a BMI  $\geq 30$  defines obesity 1. Overweight applies similarly to BMI 25.0–29.9, averaged across all global populations; a BMI  $\geq 23$  and particularly  $\geq 27.5$  elicits consideration in Asian and Western Pacific populations [3]. Prevention campaigns attempt to foster healthy diets and encourage physical activity by both children and adults, encompassing up to eighteen distinct strategies [2]. Campaigns are explicitly differentiated from broader programmes; by considering only the former, boundaries are established that facilitate examination of message content and delivery method. Excessive weight gain relies on a consistent energy intake exceeding expenditure, often resulting from societal evolution [7]. Specific agendas, settings, and populations are further excluded to maintain focus on the nature of campaigns [9].

### Theoretical Frameworks and Behavioral Models

Public Health Campaigns against Obesity surpasses tobacco as a foremost challenge for public health [3] thus, campaigns to prevent obesity form a critical avenue of public health advocacy. Obesity campaigns emerged when public health agencies shifted their primary focus from infectious to chronic diseases and when attitudes toward the obesity epidemic shifted again toward a focus on prevention [14]. Despite these inspiring examples, a narrative review highlights that the connection between campaigns against obesity and societal health, economic, and equity outcomes remains tenuous [2]. Consequently, the review identifies the resulting need for expertise in the domains of obesity prevention campaigns, outreach or messaging strategies, and a range of adjacent issues while also elucidating the history of the emergence of public health campaigns against obesity particularly in the early 1990s as a means of preventing the significant health and economic burdens associated with obesity [6]. The review surveys prominent theoretical frameworks and behavioral models guiding many campaigns and strongly influencing their anticipated effectiveness [5]. These concepts may subsequently facilitate a distilled analysis of the design, delivery, and evaluation strategies accompanying many such initiatives. Social Cognitive Theory describes human behavior as the result of reciprocal interplay between cognitive and environmental factors, emphasizing modeling, self-efficacy, and expectations of outcomes [4]. Many campaigns highlight the influence that family, friends, celebrities, and others exert in initiating, sustaining, or terminating practices related to obesity and frequently use media channels to reinforce such messages. Health Belief Model identifies perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action as variables shaping individual or group intentions and behavior [5]. Relevant campaign surveys often foreground cues to action but do not precisely frame other variables [2]. Social Ecological Model posits that influences span personal, social, institutional, community, and public policy variables. Campaigns often exhort individuals to act and underscore the roles of family, friends, and co-workers; yet, many initiatives that improve physical activity, food or drink consumption, or other obesity-related factors simultaneously address broader policies or community conditions [8]. Evaluation analyses further incorporate tracking, dissemination, fidelity, and other dimensions consistent with the model [9].

### Social Cognitive Theory

Social Cognitive Theory (SCT) emphasizes how people learn from their environment through direct experience, observational learning, and media influence. Central constructs are perceived self-efficacy, outcome expectations, and knowledge of health behavior determinants. These factors directly and indirectly influence behavioral intention and behavior [5]. Observational learning occurs when individuals observe models performing behaviors

that lead to desired outcomes [2]. A campaign that shows how others have successfully adopted healthy lifestyle behaviors can enable viewers to experience those behaviors vicariously [9]. SCT suggests that audience members may become interested in or motivated to adopt healthy eating and physical activity behaviors, even if they were not initially inclined to do so, if they see positive modeling in informative or entertaining content [1]. The characters might be normal-weight individuals who serve as role models; viewers resemble the characters physically and demographically and therefore identify with them. All these elements also apply to messages with storylines that depict characters modeling healthy behaviors in otherwise difficult or constrained environments [6].

### **Health Belief Model**

Perceived susceptibility and severity are central constructs of the Health Belief Model (HBM) [7]. When individuals perceive themselves to be susceptible to a health threat and consider its severity as a serious health consequence, they are motivated to adopt health-promoting actions to mitigate the threat [9]. Another two key constructs are perceived benefits (the opinion that action will reduce susceptibility or severity of the health threat) and perceived barriers (one's perception of the obstacles to taking action) [13]. Cues to action help to trigger the readiness of individual actions toward health-promoting behaviors [25].

### **Social Ecological Model**

A limited number of factors influence individual lifestyle behaviour. These include education, nutrition knowledge, perceived intimidation, weight stigma, insufficient knowledge, and poor modelling by parents and peers [1]. Household factors, food environments, urban planning, government policies, advertisements, financing, breeding concepts of overweight and body image, and economic and social capacity exert more substantial influences [2]. There are environments and countries where there are mass media and digital campaigns, but little or no accompanying policy direction [23]. In these places, the influences of the actions taken on these policy instruments on the lives of the inhabitants remain to be determined, but it would be expected to be more limited. Such circumstances do not warrant exclusivity in the response to accessibility through national or international assistance [27]. Government policy does not influence the government through such literature; the behaviour of those in the environment cannot be expected to shift in compliance with the literature. As success is only achieved when important policy direction and accompaniment support are available, the term commentary is more appropriate in such a context [8].

### **Historical Overview of Public Health Campaigns**

Public health campaigns addressing excessive weight or obesity have evolved considerably since the first recorded initiatives in the 1970s. Framing and messaging have changed over time without, however, diminishing the focus on individual responsibility [24]. This historical overview charts the trajectory of campaigns in order to illustrate present-day practices and provide context for later discussions of the design, effectiveness, and ethical considerations of obesity campaigns [12]. Campaigns began to appear in the 1970s, spurred by growing awareness of obesity as a public health concern [9]. The first wave focused on individual behavioural change and popularised the term "obesity epidemic". Early campaigns were limited primarily to print media, television, and radio. Programmes remained prevalent until the mid-1990s, when the concept of a global epidemic began to emerge. By the end of the 1990s, virtually all campaigns focused on obesity explicitly, and prominent frameworks included Social Cognitive Theory and the Health Belief Model [8]. Obesity prevention campaigns gained international momentum in the 1990s but attracted relatively little attention in developing countries [10]. This focus shifted dramatically following the globalisation of obesity in the early 2000s. Public Health campaigns began to incorporate system-level interventions and a wider variety of media [11]. Campaigns expanded to target societal norms and environmental influences on the 1990s and the mix of locations and channels sought to ensure reach and exposure across diverse populations remained a feature of massive campaigns [26].

### **Pre-2000 Initiatives**

Building on the foundation set out in the previous section, this overview traces the evolution of initiatives to prevent or mitigate obesity before the turn of the millennium [1]. Early efforts typically lacked the cohesive frameworks and systematic audience analysis espoused by contemporary approaches; yet the emergence of common themes indicates that an understanding of effective campaigning was already beginning to develop. These initial initiatives often deployed traditional mass media in environments where digital channels were not yet widely available, ensuring extensive reach but limiting interactivity and engagement underscoring the centrality of media choice in broadening the scope for action called for in the previous section. The World Health Organization (WHO) and other agencies began to consider the obesity epidemic seriously in the late 1990s [11]. The obesity prevalence among children and youths in the United States had more than doubled or tripled,

respectively, between 1980 and 2000 [12]. In the 1990s, food consumption at home rose by 15%, while away-from-home consumption tripled [2]. Over the same period, the calorie content of fast food increased by 116–160%, with marketing targeted at children increasing significantly (Harrison, 2010). Campaigns focusing on weight emerging before 2000 addressed gaining or maintaining weight, reflecting a concern for underweight that remained active even in the face of globally rising obesity rates [13].

#### **Expansion in the 2000s and 2010s**

Globalization and commercial pressures from the food and beverage industries accelerated the expansion of obesity prevention campaigns in the 2000s and 2010s [13]. Many countries shifted from promoting healthy lifestyles to addressing strategies to make healthy choices easier [5]. Moreover, after childhood obesity rates reached unprecedented levels and countries intensified action against obesity, new program and campaign designs emerged [22]. Combinations of mass media with events and multimedia school narratives along with a further shift to digital media were favored [11]. Design trends extended beyond communication to enhance policy and environmental components, and campaigns exhibited greater sensitivity to ethical, cultural, and equity considerations [14]. Extensive mass media coverage encouraged dissemination of promising practice information, characterized as low-cost and highly replicable, that sidestepped the increasing competition for mass media attention. Funding and cost considerations gave rise to community-driven and participatory campaigns in conjunction with voluntary guidance for systematic approaches that combined multiple active elements across diverse programmatic components [12]. The introduction of big data, analytics, and algorithmic promotion enabled extreme targeting of ads to specific high-impact life-experience circumstances of estimated high vulnerability to obesity-related unhealthy consumption behavior. Community engagement and co-design approaches in which campaigns were collaboratively developed with targeted communities also grew in prominence [21].

#### **Campaign Design and Messaging Strategies**

Tackling the global obesity crisis requires multifaceted and cooperative approaches involving individuals, communities, and governments [24]. Campaigns emerge from this collective responsibility, informing the public and influencing behaviours on a population scale [13]. Yet obesity prevention strategies generally target consumers rather than the broader environment. Frameworks characterizing obesity as a complex public health challenge set the stage for a diverse range of campaign messages, materials, and methods [10]. The ongoing stigma surrounding obesity affects how campaigns are designed and conveyed. Emerging movements place equity, wellbeing, and human rights at the centre of obesity discussions [9], necessitating consideration of healthcare, food justice, and other systemic factors. In South Africa, mass media campaigns draw attention to unhealthy food environments while advocating for national policies that curtail the marketing of energy-dense foods high in fats, sugar, or salt [10]. In the United Kingdom, initiatives promote healthy food environments and encourage movement, reframing obesity as part of a broader agenda for acceptable living [14]. Addressing both conventional and inclusive reframing enhances societal understanding of obesity and allows populations with diverse needs and experiences to engage more deeply.

#### **Framing, Tone, and Audience Segmentation**

Public health campaigns around obesity have undergone a gradual reframing in their structure and scope since inception, reinforcing key messages aimed at various target audiences. The initial discourse and framing was characterized by overt size-related language and remarks, a plethora of normative messages, misgivings about personal responsibility, and a public-centric emphasis [8]. In recent years, there has been a discernible movement toward repositioning obesity as an environmental/habilitative matter, with individuals considered less responsible for their weight and overall health than in the past [10]. The selective audience frame is marked by prioritizing governmental actors to convey that obesity is not merely a personal issue but rather warrants regulatory attention and youth, who are positioned as dependent on adult behavioural power [12]. Initiatives targeting these demographics have expanded considerably and are now complemented by cultural tailoring, thereby enhancing access to diverse groups and further rendering the weight issue less individual-specific [7]. Over the last decade, the trajectory of efforts to counter obesity has noticeably shifted [3]. Whereas predominant messages once framed the matter in terms of exerted physical effort versus caloric intake or unhealthy habitude focus, the salient publicly articulated framing today revolves around social equity concerns [9]. These include pledges to counteract food insecurity and the availability of low-quality, calorie-dense products, particularly in vulnerable areas; recognition of the omnipresent availability of hyper-palatable items; acknowledgment of the impact of socio-economic factors at birth on a range of outcomes, including the prospect of manageable weight; and acceptance of the notion that not all individuals possess agency to pursue personally deemed healthy conduct [7]. The contemporary narrative

driving public health initiatives against obesity aligns with a broader societal effort aimed at engendering a more equitable system, and is reinforced across diverse countries. Canada, New Zealand, and the United States have adopted particular publicly pronounced equity-related themes; for example, a commitment to mitigate inequality remains a defining socio-political ambition across the three nations [6].

#### **Media Mix: Mass Media vs. Digital Campaigns**

A comparison of major information technologies suggests a near-universal pattern: as new systems arise, they are deployed primarily for dissemination before being adapted for genuine interactivity [6]. Campaigns against obesity exhibit no exception. Early efforts centred almost exclusively on mass media: billboards, bus signs, print advertisements, radio spots, and television commercials. In the 2010s, an increasing number of campaigns turned to digital media, including websites, online video, smartphone applications, and social platforms, to supplement or replace traditional mass media approaches [15]. The introduction of e-mail, messaging, blogs, or social networks did not, in the early days of their adoption, lead to corresponding shifts in the nature of communication [16]. Similarly, even now, digital elements serve largely to deliver information rather than to solicit active involvement or collaboration with the intended audience [25]. Once established, the various media components of a campaign are often employed in much the same manner: intensive periods of dissemination are followed by assessment of audience reach, engagement, and, where feasible, changes in constituent behaviours. The use of multiple media, and the relative contributions made by different elements, are therefore important determinants of effectiveness [22].

#### **Policy and Environmental Components**

Obesity is influenced by interrelated individual, social, and environmental factors across multiple sectors, systems, and influences [6]. To effectively tackle obesity, a multi-sector, systems-level approach is required to facilitate individual-level changes in behavior [7]. Campaigns therefore integrate specific calls for actionable change at the level of policy and environmental and on both a macro and micro scale. Macro level components focus on sectors (e.g., food, communication, transport, education, urban planning, health) and interventions (e.g., food access, food policies, taxes, depot qualities, marketing restrictions)[13]. Micro level components, typically concerned with public messages, aim to effect changes in school, worksite, community, and authority group settings [6, 17].

#### **Effectiveness and Outcomes**

Campaigns aim to change behaviour or raise awareness about specific health issues, and obesity campaigns have emerged only in the last few decades [3]. A core ambition is to foster awareness of the health consequences of being overweight or obese and the risk factors associated with weight gain. Several theories and models of behaviour underpin the design and implementation of obesity campaigns [18]. Public health initiatives against obesity began in the 1960s. Campaigns evolved over time in response to changing priorities, knowledge, technological advances, and societal shifts, with concerns about obesity being more pronounced within certain populations and regions [19]. The prevalence of overweight and obesity has risen dramatically over the past fifty years at a global scale, prompting a range of initiatives designed to assist with the associated health issues. Initiatives aim to educate the public regarding the potential weight gain implications of individuals' lives and encourage the countering of these problems through the promotion of health dietary and lifestyle choices [20].

#### **Short-Term Behavioral Indicators**

Information other than titles and references in the original submission is treated as null. The following plain-section text integrates directly into the specified position [4]. Healthy policy practices that promote good nutrition and physical activity also can help mitigate eating and activity behaviors that contribute to obesity [10]. Campaigns have influenced intentions to engage in healthy diet and exercise behaviors 6. Evaluation metrics provide limited understanding of actual changes [5].

#### **Long-Term Health Outcomes**

The only relevant evidence to long-term health benefits comes from the LiveLighter campaign in Western Australia, which promotes healthy diets and increased physical activity [26]. Surveys conducted between 2012 and 2019 assessed mass media exposure, knowledge of health consequences of obesity, intention to lose weight, fast food purchasing, consumption of fruits and vegetables, and body mass index (BMI) [20]. Exposed participants demonstrated an 8.8% increase in knowledge, 4.8% rise in intention to lose weight, 8.4% reduction in fast food consumption, and a 14.8% increase in fruit/vegetable intake [23]. There was also a significant decline in BMI, which according to modelling attributed 42.3% of the reduction in obesity prevalence and 38.6% of the decrease in diabetes prevalence to the campaign [12]. Attribution was complex; BMI was only one of several causal pathways through which exposure influenced obesity outcomes (tying back into the Social-Cognitive Model of behaviour change)[13].

### **Economic and Equity Implications**

Economic evaluations of public health campaigns against obesity show promising cost-effectiveness [21]. Financial impacts are often lower and health outcomes frequently more favorable among socio-economically disadvantaged populations [22]. These evaluations enable assessment of viable options for promoting health equity [15]. Implementing healthy workplace initiatives can be mapped to change models to improve effectiveness. Addressing social determinants and health inequities requires global action and comprehensive strategies. Community-based approaches are vital for obesity prevention, considering socio-economic and demographic factors [13]. Addressing obesity as a complex, systemic issue involves understanding food systems and multi-sectoral collaboration. Health in all policies and an integrated governance approach are essential for tackling health disparities and promoting equity [12]. This section reviews the economic and equity implications of various obesity prevention and treatment interventions in children and adolescents. Analyses of school-based programmes, such as physical education policies, active transport initiatives, and after-school activity programmes, have been conducted. Financial analyses have also evaluated taxes on sugar-sweetened beverages and restrictions on advertising unhealthy foods to children [9]. Community-based programmes like Be Active Eat Well and Project Energize have demonstrated favourable cost-effectiveness. Interventions targeting families and policy changes in child care settings have also been assessed [8]. Overall, evidence indicates that many obesity prevention strategies are economically viable, highlighting their potential for equitable health improvements among youth [7].

### **Critical Appraisal and Lessons Learned**

Despite increasing implementation, engaging target populations and generating impactful consequences remain major challenges for obesity prevention campaigns [16]. Campaigns demonstrating sustained effects on awareness, intentions, and behaviours were observed to circulate messages on diverse topics such as policy, environmental, behavioural, or public health approaches [23]. Addressing specific campaign attributes can clarify cross-national differences and aid understanding of their role and synergy within broader obesity prevention initiatives [25].

### **Successes and Best Practices**

Since the early 2000s, campaigns to promote healthy dietary practices and regular physical activity have proliferated on every continent and in nearly every nation, reflecting growing global concern over rising rates of obesity and related noncommunicable diseases (NCDs) [24]. The need to counter obesity and NCDs lies at the interface of public health policy and several bioethical principles, including beneficence (promoting health and well-being), nonmaleficence (preventing harm caused by unhealthy choices), autonomy (assisting informed decision-making), and social justice (ensuring equal opportunities for healthy lives among all people) [24]. Efforts to document and disseminate lessons learned from experience with population-based campaigns also respond to increasing calls for public health initiatives that address obesity and NCDs through advocacy and education directed to the general public [25]. Thus, a wide range of governmental and nongovernmental actors are engaged in advocacy to promote national campaigns targeting obesity and NCDs as midterm and long-term investment strategies [14].

### **Limitations, Critiques, and Unintended Consequences**

Public health campaigns against obesity, aimed at addressing a growing global epidemic, have attracted diverse critiques and generated unintended consequences [34]. Critics increasingly question whether anti-obesity campaigns reinforce stigmatization that exacerbates rather than alleviates the problem, while others voice concern over adverse displacement effects both within and beyond the campaigns' targeted issues [14]. These critiques intersect, pointing to situations where campaigns play well-known messages in empty or muted urban environments, suggesting a misalignment with community awareness [6]. Campaigns that promote one health priority or condition, but inadvertently create barriers to other priorities, represent a form of displacement and can reinforce an unhealthy focus on weight rather than a broader concept of health. Recognizing the need to connect diverse campaigns through common overall framing and consider weight in ways that do not detract from broader concepts of health could lead to more abuse-resistant initiatives [11]. Moreover, poorly designed campaigns may further disadvantage already marginalized communities and hold little appeal to those for whom the product for sale creates no psychological draw. Compounding the challenge, many planners nevertheless lack high-quality information on the health status, aspirations, priorities, and even baseline awareness of the intended target populations [13].

### **Ethical, Cultural, and Equity Considerations**

Public health campaigns addressing obesity risk stigmatization, potentially reinforcing discrimination or discouraging individuals from participating [22]. Campaigns also risk failing to respect or respond to different cultural contexts [17]. Invoking food security, health equity, consumer rights, and general respect for diversity, the World Health Organization calls for obesity campaigns to adopt a more inclusive approach [26]. The desire to disentangle zero-sum equity considerations from public health initiatives motivates defining campaigns in ways that enable assessing responses across socio-economic status [27]. Addressing these factors remains critical as technological innovations enable more granular targeting [4] and establish protocols for public participation in campaign design [8].

### **Stigmatization and Responsiveness to Diverse Populations**

Public health campaigns to reduce obesity often focus on individual behavior and can reinforce negative stereotypes about obesity [28]. Evidence-based strategies offering broader support remain underutilized. Campaigns emphasizing body shape or size contribute to stigma [5]. The body positivity and body neutrality movements promote self-acceptance and respect for all sizes and have improved media representation of people with obesity. Advertising with plus-sized models boosts self-esteem and body satisfaction. Digital spaces created by social media challenge stigma and empower people with obesity [23]. Despite these positive developments, stigma persists in news, political, and public health media, and societal attitudes remain largely unchanged. Most Americans perceive obesity as a serious problem despite conflicting studies [2]. Public perception of health risks influences responses to health challenges. Stigma, prejudice, and discrimination are interconnected and affect health outcomes [3]. Reframing obesity as a public health issue rather than personal failure can help reduce stigma.

### **Accessibility and Inclusion in Campaigns**

Public health campaigns addressing obesity should prioritize accessibility and inclusion by tailoring messages to diverse audiences and ensuring delivery through equitable communication channels [29]. Campaigns often adopt a mix of approaches: transformational emotional appeals, which invoke intense feelings, and informational appeals, which provide relevant knowledge and insights. Although both have shown efficacy in increasing engagement, the framing of obesity-related messages remains crucial to their ability to reach target populations [27]. Within campaigns, the credibility and relevance of CBO and CHW proponents exert significant influences on target audiences. CBOs perceived as aligned with the daily lives of residents are considered trustworthy sources for addressing local issues [24]. Under current conditions, public health campaigns often request behavioural changes, yet attaching and framing information as participation in collective, non-individualistic activities enables involvement with lower individual self-awareness [22].

### **Technological Innovations and Future Directions**

Technological advances and their incorporation into daily life have facilitated the emergence of alternative communication, intervention, and participation models [1]. At the same time, the continuous emergence of new technologies offers funding agencies and vulnerable population groups, such as overweight children, opportunities for further innovation in health and education [2]. Examples include new media, wearables, digital games, social and digital networks, and educational apps that provide near-constant connectivity and motivate participation in health-promoting activities [30]. The COVID-19 pandemic accelerated data-collection innovation in the public health area. In response to frequent temporary lockdowns and partial restrictions, public discussion on balancing economic impact, social contact, and health-serving information has gained greater prominence. The long correlation length of news clustering about the pandemic can be applied as a cipher to personalize delivery instead of debilitating information overload [25]. The COVID-19 pandemic has spurred innovative initiatives in public health campaigns and nation-level strategies that hold promise for childhood obesity campaigns. Incorporating trending topics such as the pandemic within a spectrum of ambient health topics could shift national-level public discussion from awareness and individual prevention propagation to socially traded uncertainty and psychological health [24]. At the end of lockdowns phases, introverted fields were highlighted in public debate, and the included topics could expand wider attention [22].

### **Big Data and Targeted Interventions**

Public health campaigns against obesity, particularly in high-income countries, increasingly rely on digital media and big data to design messages that target specific regions, communities, and even individuals [10]. Campaigns capitalize on rich analytics from social media, mobile apps, and search engines to identify audience characteristics and behavior patterns [22]. Additional information from major national, regional, and local surveys and commercial datasets illuminates interests, activity hotspots, nutrition gaps, and possible barriers to dietary variety

or physical activity [28]. Such data guide the selection of topics, framing, and messaging channels for greater relevance and resonance enhancing engagement and campaign effects [31]. Collected and analyzed across even modest populations, these behaviours and interactions help identify specific messages for further tailoring [32]. Data collection is often designed to protect privacy and minimize voyeurism; yet analytical capabilities can stray into surveillance, raising ethical questions regarding consent and privacy protection. Consequently, blockchain-based solutions are gaining attention to mitigate data collection and sharing concerns [33].

#### **Community-Driven and Participatory Campaigns**

Despite their challenges, co-designing campaigns in partnership with communities, neighbourhoods, and other groups sometimes termed participatory design or participatory communication offers several potential advantages and is increasingly being adopted for health and obesity campaigns [20]. In an analysis of public obesity prevention campaigns in North America, 29 observed that community-level co-design approaches were uncommon but had emerged in some highly participatory projects [30]. Community-driven obesity initiatives that involve collective reflection on local norms, contexts, and values together with co-creation of messages and materials were anticipated to strengthen connections to local dynamics and thereby enhance responsiveness, engagement, and impact [29]. Community-driven and participatory campaigns can improve responsiveness to local conditions and facilitate collaborations. They recognize diverse needs among different neighbourhoods or communities, and thus allow for localized approaches within a campaign [28]. Participatory design combines various disciplines and perspectives on the theory of communicating and seeking behavioural change, broaden different concepts of both encouraging healthy behaviours and preventing obesity and non-communicable diseases and capturing and addressing a larger number of barriers and facilitators influencing change or enhancing the reach of different target groups through linking with social media or by multiparty housing advertisements [32]. Community-driven approaches can also directly address the challenge of moving beyond health awareness to building readiness for obesity prevention [25].

#### **Policy Implications and Recommendations**

Overweight and obesity remain enduring public health challenges globally, negatively impacting the lives of millions of people [1]. Recognizing the importance of fostering a healthier lifestyle, many campaigns target obesity preventive strategies [25]. Research on the impact of such campaigns in various countries protects healthy living measures and shapes future food and nutrition policies. Similar programs deployed in several countries augment public demand for effective, evidence-based public policy action to prevent obesity [29]. In the UK, recommendations prioritising the prevention of obesity highlight the need to target at-risk populations and to establish clear measures for implementation [32].

#### **Integration with Public Health Systems**

Offering different communication styles via various media is part of an element common to several campaign elements [20]. A parallel effort in response to the systemic detriment of obesity is integration of communications within existing strategies and systems such as Built Environment and Food Systems, and Food Policy [22]. Aligning campaign components within these designations allows interaction via periodic flexible exchanges, leveraging informal paths previously identified, and permitting simultaneous feedback on co-creation engagements reliant on input from governmental well-being specialists and trusted sector and community bodies on Safety and Well-being boards [29]. Observing that public health programs represent crucial official healthcare avenues devoted to long-term perseverance and enormous technical and financial investment, many multinational campaigns 33 encounter similar funding and readiness to complement and extend scope [30]. Further direct parallels designate obesity, under-nutrition, and activity components within People, and Rethinking Obesity, Global Obesity and Under-nutrition initiatives alongside Food Promotion Program and Global Safe School initiatives under safety and education themes respectively [31]. National initiatives address developmental stage coordination, recovery, and safety alignments, and sustained healthy enablement [33]. Connecting efforts along existing policy lines greatly enriches comprehensive co-creation feedback; extending further to rights, community well-being, and connected vehicles settings considerably broadens engagement options respecting provincial freestanding education-material restrictions whilst preserving access to extensive tools otherwise retained at levels higher than a campaign typically undertakes [32].

#### **Sustainability and Funding of Campaigns**

Given the widespread political consensus that obesity is a major public health issue, and the increased activity by civil society organizations and private sector initiatives to address obesity, the lack of mass media campaigns in many countries remains surprising [29]. Financing is a central issue since these campaigns are typically costly, and local governments generally have multiple competing priorities [30]. This is especially true in low- and

middle-income countries (LMICs), where many governments encounter acute fiscal constraints [10]. Efforts have been made to transform government priorities to assist obesity campaigns, but previously established census data of such activities are masquerading as health campaigns [33]. It has been extremely challenging to identify actual programs, models, and campaign samples that comprise such initiatives and provide tangible guidance to local governments to assist [34-41].

### CONCLUSION

Public health campaigns targeting obesity have become increasingly sophisticated, reflecting both technological progress and greater awareness of social and ethical dimensions. While traditional campaigns often emphasized individual responsibility and body image, such approaches inadvertently perpetuated stigma, reducing engagement and effectiveness. Contemporary frameworks now recognize that combating obesity requires promoting body acceptance, inclusivity, and empowerment rather than shame or fear. The rise of body positivity and neutrality movements bolstered by digital media representation has shifted public discourse toward acceptance, respect, and psychological well-being. Accessibility and inclusion remain fundamental. Campaigns must tailor messages to diverse cultural, linguistic, and socio-economic contexts, ensuring they resonate with varied audiences. Trusted community voices, such as CBOs and CHWs, enhance credibility and engagement by aligning messages with local experiences. Transformational and informational appeals can be powerful when framed around collective participation and community empowerment rather than individual blame. Technological innovations and the integration of big data have redefined how campaigns are designed, implemented, and evaluated. Wearables, mobile apps, and digital platforms allow for personalized feedback and sustained engagement, while blockchain technologies offer solutions to privacy and consent challenges. The COVID-19 pandemic accelerated these digital transformations, demonstrating how virtual tools can maintain public health communication even amid social restrictions. Community-driven and participatory approaches represent a paradigm shift toward collaboration and shared ownership of health initiatives. Co-designing campaigns with communities ensures cultural sensitivity, relevance, and sustainability. Such approaches facilitate long-term behavioral change by embedding interventions within local social norms and collective values. At the policy level, integrating obesity campaigns within broader health, education, and urban systems enhances coherence and reach. Sustained funding and political commitment remain critical especially in LMICs, where competing priorities often constrain public health budgets. Partnerships among governments, civil society, and private sectors can ensure resource optimization and policy continuity. In sum, the future of obesity prevention lies in campaigns that are inclusive, participatory, technologically innovative, and ethically grounded. By prioritizing diversity, community engagement, and systemic integration, public health efforts can move beyond awareness to create sustainable environments that support healthy living for all.

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