



## THE EFFECTIVENESS OF COMMUNITY-BASED INTERVENTIONS IN PROMOTING PHYSICAL ACTIVITY AND REDUCING OBESITY RATES

Mohammed Abbas Alturkey<sup>1\*</sup>, Mohammed Mahdi Al Talaq<sup>2</sup>, Hussain Ali Al Yateem<sup>3</sup>, Mahdi Radhi Al Sheef<sup>4</sup>, Ali Majed Alsaedi<sup>5</sup>, Hassan Ali Aljanabi<sup>6</sup>

### Abstract

People who are obese run the risk of having cancer, diabetes, and cardiovascular disease. In the past, obesity was thought to be a personal illness that needed to be treated on an individual basis. The focus of obesity prevention strategies has switched to a social approach, which includes community-based initiatives. The purpose of this review is to describe community-based weight reduction programmes. Numerous community-based initiatives were covered, including the Diabetes Prevention Programme, the Intensive Lifestyle Intervention, Motivational Interviewing, and Prevent Obesity from Birth. Population-based community initiatives that foster connections between individuals, families, schools, and municipalities are recommended by organisations such as the World Health Organisation. Community-based weight-loss programmes are a useful tactic for reaching big numbers of people.

**Keywords:** Community-Based-Intervention, Obesity, Prevention, Weight, Social.

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<sup>1</sup>\*Qatif Preventive Medicine, KSA. Email: moabalturki@moh.gov.sa

<sup>2</sup>Almunira PHC, KSA. Email: mmaltalaq@moh.gov.sa

<sup>3</sup>Qatif Preventive Medicine, KSA. Email: halyateem@moh.gov.sa

<sup>4</sup>Qatif Comprehensive Inspection Center, KSA. Email: malsheef@moh.gov.sa

<sup>5</sup>Qatif Preventive Medicine, KSA. Email: almasaedi@moh.gov.sa

<sup>6</sup>Qatif Preventive Medicine, KSA. Email: Hassanjanabi@gmail.com

**\*Corresponding Author:** Mohammed Abbas Alturkey

\*Qatif Preventive Medicine, KSA. Email: moabalturki@moh.gov.sa

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## **Introduction**

Obesity is a major public health issue affecting a significant portion of the population. Recent data shows that 42.4% of adults and 17% of children aged 2 to 19 are dealing with this problem [1]. The complex interplay of environmental factors and limited effective treatment options contributes to the challenging nature of obesity prevention. Additionally, children with obese parents face a higher risk of obesity, with genetic predisposition being just one aspect of this multifaceted issue [2]. Moreover, low-income communities are disproportionately affected by obesity, highlighting the need for a comprehensive approach that addresses the needs of both adults and children to effectively combat this widespread problem [3].

Obesity has extensive repercussions, not only affecting physical health but also mental well-being and overall quality of life. The societal stigma linked to obesity can lead to discrimination and reduced opportunities for affected individuals. Furthermore, the economic burden of obesity on healthcare systems and productivity cannot be underestimated. It is clear that a comprehensive approach involving education, access to healthy food options, community support, and policy changes is essential to tackle this complex issue [3].

Obesity has historically been viewed primarily as a personal illness requiring individual treatment. The focus of obesity prevention strategies has shifted towards a social approach. Social models of health behaviors take various forms; layers include built and natural environments, policies, communities, organizations, and intrapersonal and interpersonal relationships. Individual characteristics such as knowledge, skills, and attitudes constitute the intrapersonal level of influence. Through interactions with colleagues, friends, family, and other social networks, interpersonal processes provide identity and social support. Churches, community organizations, and workplaces are examples of institutional forces that have policies, structures, regulations, and laws governing their operations. Community factors encompass the connections between institutions, organizations, and other networks within predetermined boundaries. The influence of public policy includes local, state, and federal laws and regulations [4]. The International Obesity Task Force and the World Health Organization advocate population-based community interventions to prevent overweight and obesity, based on the theory of interacting levels of influence on obesity [5].

In overweight and obese individuals, modest weight loss of 5–10% of body weight can lead to significant health benefits, such as a reduction in blood pressure, blood sugar, cholesterol, and cardiovascular disease risk factors. The presence of depressive symptoms, initial weight loss during an intervention, and social support are factors that have consistently shown effectiveness in predicting weight reduction. The World Health Organization (WHO) underscores obesity prevention as a primary objective for mitigating the impact of non-communicable diseases. Ultimately, there may be a decrease in overall obesity rates and chronic illnesses, resulting in reduced related expenditures, as well as a decrease in support provided to those who are already overweight to achieve moderate weight loss and prevent further weight gain [6].

### **Obesity as a public health concern:**

Individuals who are obese accumulate excessive fat, raising their risk of developing diabetes, cardiovascular disease, and cancer. Obesity arises from various factors, including social, psychological, environmental, and economic influences. Those affected by obesity typically have shorter lifespans than those maintaining a healthy weight. Addressing the substantial societal and economic impact of obesity is crucial. The World Health Organization (WHO) estimates that a high body mass index (BMI) contributes to two to seven percent of global healthcare costs [7]. In the US, nearly one-third of the population is classified as obese, a trend mirrored worldwide. Over the next years, the annual global medical cost of obesity is projected to surpass 30 trillion US dollars. If current obesity rates persist, it's conceivable that by 2030, half of the world's population could be overweight or obese. Effectively managing this global issue requires a multifaceted approach involving education, access to nutritious foods, urban planning that promotes physical activity, and policies encouraging healthier lifestyles. Addressing the root causes of obesity also necessitates a shift in societal attitudes towards body image, along with mental health support for individuals struggling with weight management. Without comprehensive intervention, the burden of obesity-related health complications will continue to strain healthcare systems and economies worldwide. Therefore, it is crucial to prioritize preventive measures and cultivate a culture that values and supports overall well-being [8].

### **Community-based strategies that work well to encourage healthy habits and stop further weight gain**

Obesity prevention and treatment initiatives focus on modifiable risk factors such as poor diets and insufficient physical exercise. The World Health Organization and the International Obesity Task Force advise population-based community initiatives that link individuals, families, schools, and communities because of the intricate interaction of variables that contribute to obesity. In addition to focusing on instructional components, adjustments in norms may be implemented to create an atmosphere that encourages lifestyle modifications that promote active living and healthy eating. This will boost the efficacy of the program [9].

According to Merzel and D'Affliti (2003), the framework for community-based interventions consists of six essential components. The following six fundamental components are comprehensive and integrated, encompassing a variety of settings, employing multiple interventions, involving a range of people, groups, and organisations, involving the community in the development, execution, and assessment of the programme; and involving a number of individual-level intervention techniques [10].

**Motivational Interviewing:** By focusing on the specific challenges and environment unique to each family, Motivational Interviewing (MI) aids in the engagement of families. MI is a form of behavioral counseling designed to help individuals identify their reasons for change, establish goals aligned with those reasons and their values, and enhance their self-efficacy in achieving those goals. MI has proven successful in assisting with adult weight loss and maintenance, reducing blood pressure, increasing physical activity, and promoting fruit and vegetable consumption. The application of MI to promote healthy behaviors within a family context, including children, draws from a strong evidence base in family-focused interventions for child obesity, group counseling, and family functioning, although it has received limited research attention until recently. Future research should focus on stricter adherence to MI principles and encompass a broader range of demographics. Consequently, research utilizing MI to address the entire family in efforts to prevent obesity in various low-income communities is necessary. Even with the motivation and self-assurance provided by MI, families still require the resources necessary to achieve their goals [11].

For example, families need transportation and financial means to purchase nutritious food, and a bicycle could facilitate a child's physical activity. Moreover, addressing competing demands such as securing stable housing may enable families to prioritize lifestyle choices that prevent obesity and promote better health. Expanding access to healthy foods may also impact eating habits and Body Mass Index (BMI). Previous endeavors to connect individuals with community organizations and programs offering essential resources (food, opportunities for physical activity, healthcare, housing, childcare, employment, etc.) have shown potential, but further investigation is needed to ascertain the most effective methods for linking low-income families to these resources and encouraging their utilization. Currently, there are no published studies on families combining MI with systematic screening for resource needs and connection to community programs. Given the potential benefits of combining Motivational Interviewing with systematic screening for resource needs and connection to community programs, future research should explore the effectiveness of this integrated approach in addressing the multifaceted challenges faced by low-income families. Such studies could provide valuable insights into the most efficient and impactful methods for supporting families in achieving their health and wellness goals. Additionally, further investigation into the long-term outcomes of utilizing MI within a family context, particularly in diverse demographic settings, will contribute to a more comprehensive understanding of its potential impact and inform the development of tailored interventions [11].

**Prevent Obesity from Birth:** In communities at risk for early-onset obesity, efforts to prevent obesity from birth appear to be especially crucial. According to national statistics, children of American Indian (AI) descent are more likely than children of other races or ethnicities to be overweight or obese. Prevention of Toddler Obesity and Teeth Health Study (PTOTS) was created to evaluate the efficacy of a multi-pronged intervention that aims to decrease the intake of sugar-sweetened beverages, encourage breastfeeding, introduce nutritious solid meals at the right time, and advise parents to encourage their kids to lead less sedentary lives. The goal of the community-partnered (PTOTS) is to prevent obesity in AI children starting at birth [12]. For example, in 2015, it was anticipated that the percentage of the general U.S. population who are overweight (body mass index [BMI]  $\geq 25$ ) and

obese (BMI  $\geq 30$ ) would climb to 75% and 41%, respectively. With 69.2 percent of AI individuals 18 years of age or older were overweight or obese, American Indian (AI) adults were already approaching these levels. When compared to children of other races and ethnicities, AI children were equally more likely to be obese. Among AI school-aged children (5–17 years old), the age-adjusted prevalence of obesity and overweight (BMI  $\geq 85$ th percentile) was almost 47%, compared to 33.6% among school-aged children of other races/ethnicities. In AI children, the antecedents of adult obesity might start at birth. Studies had indicated that Pima Indian babies acquire weight at a faster rate throughout the first six months of life when compared to reference groups that were age- and gender-matched. The Paediatric Nutrition Surveillance System showed that compared to infants and toddlers of other races/ethnicities, who had obesity rates of 10.9% and 17%, respectively, AI newborns (0–11 months) and toddlers (12–23 months) had obesity rates of 26% (weight  $\geq 95$ th percentile). Furthermore, compared to children of other races and ethnicities, who made up 31.2% of preschoolers (24–60 months), 40% of AI children were overweight or obese. Anderson and Whitaker (2009) found similar results among 4-year-olds in the birth cohort of the Early Childhood Longitudinal Study. Childhood obesity has been linked to an earlier start of adult obesity, as well as an increase in the expenses associated with obesity. These consequences include type 2 diabetes mellitus, an increase in the risk factors for cardiovascular disease, cardiovascular disease itself, cancer, and asthma [12].

The Diabetes Prevention Program: One well-known illustration of an effective lifestyle intervention for lowering the risk of diabetes and obesity is the Diabetes Prevention Program (DPP). Adults in the US who have a higher risk of acquiring type 2 diabetes participated in a randomized clinical study conducted by the Diabetes Prevention Program Research Group. Their main concerns were evaluating the efficacy of lifestyle modifications to metformin (a biguanide antihyperglycemic drug) therapy in avoiding or postponing the onset of diabetes. The participants in the DPP were people without diabetes who had an impaired glucose tolerance test (a 75-gram oral glucose tolerance test) indicating a high risk of acquiring type 2 diabetes. Although preventing or delaying the onset of diabetes was the main purpose of this study, other research objectives included obesity, physical activity, and nutritional consumption. As part of the original design (1999), participants in all

treatment arms received reading materials and a 20–30 minute one-on-one session to encourage healthy living, which included eating less fat and calories, increasing physical activity to complete 150 minutes per week, and losing 5–10% of their baseline weight through diet and exercise [13].

The intensive lifestyle intervention: A focus on empowerment, social support, and self-esteem; interactive training on behavior modification skills; healthy eating and physical exercise; and behavioral change support. Additionally, the intervention's targets of at least 150 minutes per week of moderate-intensity physical activity and a 7% reduction in starting body weight through food and exercise were accepted. Within the first 24 weeks, participants are encouraged to reach their fitness and weight loss objectives [11]. Numerous recorded successes have resulted from the rigorous lifestyle intervention, which has been replicated and modified for other groups. DiBenedetto et al. (2016) evaluated 25 DPP programs and found that, at the conclusion of the program, each of the 25 programs had an average percentage body weight decrease of more than 5% [14].

According to Diabetes Prevention Program Research Group, 2004, 1079 individuals in a randomized control trial who were allocated to the lifestyle group lost an average of 7% of their body weight. This suggests that such programs may be effective in addressing obesity. Nonetheless, disparities in weight loss were noted amongst minority groups, with black women seeing a lower reduction in weight. Furthermore, there are little data on lifestyle treatments for Hispanics [15].

Evidence of effective interventions: According to Doak et al., [16] the majority of overweight and obesity prevention strategies evaluated had substantial positive effects; school-based physical education and TV use reduction proved to be more successful. After reviewing eleven interventions conducted in the UK and the USA, Sharma [17] concluded that eating habits and physical activity are the most modifiable, followed by TV watching. Summerbell et al. [18] came to the conclusion that while comprehensive solutions integrated both physical exercise and a healthy diet to prevent childhood obesity, they might not be as successful as psychosocial support and environmental change. According to Connelly et al., [19] practice-relevant recommendations have not been followed in the earlier systematic reviews of controlled trials of childhood obesity therapies. According to Gibson et al., [20] there is insufficient data to support the effectiveness of dietary therapies for pediatric obesity, with a low-fat, energy-restricted diet serving as the main component. In terms of

adults, data indicated that diets low in fat rather than low in calories or extremely low in fat were linked to weight reduction. Exercise and dietary therapies together led to a larger weight loss than either of them alone, but the greatest weight loss came from the combination of the two with psychological interventions (such as behavioral and cognitive-behavioral techniques) [21].

### Program Attrition and Retention for reducing obesity

The success of programs aimed at reducing obesity in the general population depends on reaching a large number of individuals, changing lifestyles sustainably, and maximizing participation from the priority demographic. The effectiveness of weight management programs has been the subject of several research studies, many of which lack data on attrition and retention rates. Attrition is the loss of involvement before the program's end date, whereas retention is keeping people involved until the end of the program. However, attrition and retention are negatively correlated; a rise in retention causes a fall in attrition, and vice versa. The attrition rate for interventions varies greatly between locations and delivery methods, ranging from 10% to 80%. These figures are not generally disclosed. 92% of participants in a research evaluating 25 CDC-recognized Diabetes Prevention Program implementations attended four or more sessions, which is known as the retention rate. 1,735 individuals in 168 cohorts from 2013 to 2015 were included in this [13].

### Conclusion

Public health strategies that emphasize physical exercise and prevent weight gain through community-based initiatives are crucial. We discovered some moderate evidence in our review to support the potential positive benefits of community-based interventions on weight increase. When combined, a balanced diet and Physical Activity treatments can help persons with obesity lose weight and lower their chance of developing type II diabetes. These strategies haven't, however, been evaluated using a more thorough community-based methodology. There needs to be more research done on how community based interventions affect population health and health-related behaviors.

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