

Management of Childhood Obesity

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Abstract: *Growth in the prevalence of overweight and obesity in developed countries is bringing outbreaks and is promptly increasing in many middle incomes and underdeveloped countries. In developed and developing countries including India, the number of children in the common population who are overweight and obese has doubled in the last 20 years with an increasing prevalence of diabetes. This review study shows that the cause of obesity is complex and consists of multiple factors, which shows that an increase in body weight is due to a complicated relationship with a wide spectrum of factors. Moreover, the growth in obesity is mainly caused due to extensive physiological disorders, as well as adjustable environmental factors and obesogenic behaviors along with genetic susceptibility as well as prominent internal factors giving rise to increased body weight. Obesity makes children and adolescents more susceptible to various serious conditions such as the development of early puberty in children, menstrual irregularities in adolescent girls, sleep disorders and various degenerative diseases. Currently, the management of childhood obesity is subject to lifestyle interventions and the significance of spending more energy than consuming. Lifestyle interventions have made an impact on patients, but the prevailing trend of this issue indicates that it's not enough. It has been found that including behavioral changes like family - based therapy or cognitive behavioral therapy (CBT) with dietary and exercise treatments might affect the BMI and skinfold thickness accompanying the BMI z scores. Schools are the best place where children can be influenced and even in a review of environment - based treatment to decrease the intake of energy - rich food, out of 75, 25 recognized studies were school - based.*

Keywords: Childhood obesity, overweight, obesity management, diet, exercise

1. Introduction

Growth in the prevalence of overweight and obesity in developed countries is bringing outbreaks and is promptly increasing in many middle incomes and underdeveloped countries. In developed and developing countries including India, the number of children in the common population who are overweight and obese has doubled in the last 20 years with an increasing prevalence of diabetes. The occurrence of obesity during childhood causes a greater chance of adult obesity and also results in chronic diseases such as type 2 diabetes, hypertension, and cardiovascular diseases (**Goyal R et al., 2010**). In India, about 18.3% of female adolescents of age 12 to 17 years fall under the category of either overweight or obese. As per the National Health Survey (NFHS - 4) held in 2015 - 16, there were about 20.6% of women and 18.9% men of aged 15 to 49 in which prevalence of obesity was found, which is a little greater than the NFHS - 3 study held in 2005 - 06 (**S S et al., 2021**). After 2010 the studies showed that the prevalence of obesity and overweight has increased to 19.3% which was 16.3% in 2001. For this reason, there's a greater prevalence of obesity and overweight among adolescents in India (**Pathak S et al., 2018**).

Overweight and obesity in children is a complicated public health issue that affects the majority of industrialized countries globally. It is influenced by genetics, biology, psychosocial factors, and health behaviors. Poor diet and physical inactivity, which are the main causes of obesity, are also major contributors to the economic burden of illness as well as the top causes of preventable deaths in children and adolescents. Few interventions have shown long - lasting effects or been adopted at such a scale to have a substantial public health impact, despite the obvious need to avoid childhood obesity and to intervene early to prevent excess weight gain in later developmental phases (**J smith et al., 2020**). In recent years, it has been clear that intrauterine and generational effects, as well as the involvement of

epigenetics and the gut microbiota, all contribute to the rise in obesity. Other elements, such as being short for gestational age (SGA) at birth, formula feeding throughout infancy as opposed to breastfeeding, and early protein introduction in an infant's diet have reportedly been linked to weight increase that can last into adulthood. By increasing the burden of chronic non - communicable diseases, childhood obesity's rising prevalence poses a serious threat to public health (**Kansra A et al., 2021**).

Obesity increases the risk of developing cardiovascular risk factors such as prediabetes, type 2 diabetes, high cholesterol, hypertension, NAFLD, and metabolic syndrome. It also increases the risk of early puberty in children, irregular teen girls' periods, sleep disorders like obstructive sleep apnea (OSA), and sleep disorders in general. Additionally, psychological problems like eating disorders, sadness, anxiety, low self - esteem, and problems with peer interactions can affect obese children and adolescents (**Kansra A et al., 2021**). The rise in chronic cardio - metabolic illnesses, such as hypertension, hyperglycemia, and dyslipidemia, which are normally only seen in adults, may also be attributed to these trends in excess body weight in children and adolescents with obesity. Additionally, prejudice, social isolation, and low self - esteem are established psychosocial issues that affect the health, education, and quality of life of pediatric populations with obesity. Additionally, the interaction between obesity and numerous viral pandemics, like the COVID - 19 pandemic and the 2009 swine flu, has shed new light on the fatal feature (**Motevalli M et al., 2021**).

Obesity in childhood must be addressed quickly in order to be treated before issues develop. It is also obvious that if the proportion of obese children is decreased, this should have a good impact on the prevalence of adult obesity. The current approach to treating childhood obesity emphasizes lifestyle changes and the value of burning more calories than one consumes. Although some individuals have responded well

to lifestyle changes, the general trend of this issue's growth indicates that this is not enough. Despite the paucity of data for these drugs in children and adolescents, pharmacotherapy is evolving quickly in the adult population, where it has the potential to be a useful adjunct in the management of obesity (Apperley L et al., 2021).

The advantages of lifestyle treatments in reducing obesity-related cardiometabolic illnesses like diabetes are well documented in adult populations. Recent reviews and meta-analyses have found that, overall, lifestyle interventions combining physical activity and dietary changes represent the most promising method for preventing childhood obesity, even though the efficacy of lifestyle interventions in children is not well established. These reviews have also shown that such programs, particularly at the community level, do not successfully target high-risk population groups, such as racial and ethnic minorities who have a higher risk of obesity and related disorder is. Children from poor socioeconomic level and ethnic minority groups, for instance, are more likely to be obese and to have healthcare disparities. As a result, there is a higher chance that obese children from high-risk minority groups may also develop comorbid conditions such as fatty liver, hypertension, T2D, and CVD. Recent research has indicated that children from ethnic minority groups with greater obesity rates are more likely to have both NCDs and inferior outcomes. The COVID-19 pandemic's results (Obita G and Alkhatib A, 2023).

A continuum of efforts is involved in the prevention and treatment of obesity, from those targeted at minimizing the imbalance between energy intake and output to those aimed at producing a negative energy balance. A step-by-step strategy for the prevention and treatment of obesity has been recommended by the American Academy of Pediatrics in its 2007 guidelines [7]. The writers adopt and advocate a comparable strategy that is contextualized for their situation. The degree of obesity, its consequences, and the response are taken into account while scaling up the interventions from level 1 to level 4. Level 1 therapies focus on managing overweight children without consequences and preventing obesity in children who are currently of a normal weight. These emphasize dietary and lifestyle changes. The same tactics are used in level 2 therapies for children who are obese or overweight and have problems such as moderate hypertension, dyslipidemia, fatty liver, etc. These interventions are more structured and highly supervised. They are raised to level 3 with more intensive, all-encompassing multidisciplinary care if concentrated efforts over a period of 3 to 6 months do not result in an acceptable recovery. For those who don't respond well, have severe obesity or significant co-morbidities, level 4 scaling, which includes medication and bariatric surgery, is necessary. While the core tactics stay the same, they become more intense at each stage, visits to the doctor become more frequent, and the family's dedicated involvement gains in significance (Mittal M and Jain V, 2021).

Interventions for childhood obesity are frequently built around the idea of energy balance. Energy input minus energy expenditure equals energy balance. According to this view, excess adiposity develops when calorie intake exceeds

energy expenditure. Two popular strategies for managing obesity are now involved in either, or both, of the following: lowering energy intake through good eating and nutritional education, or raising energy expenditure through physical activity. On the other hand, Flatt et al. emphasize that complex factors must be taken into account while managing obesity. Age, gender, genetics, psychological issues, and contextual elements including school rules, parent job obligations, and lifestyle choices may all have an impact on childhood obesity (Truong K et al., 2021).

In a recent review study of 8 tryouts on about 4000 obese children, it has been found that diet and exercise treatment for 6 months helped in reducing the BMI z scores and other indications of metabolic abnormalities such as fasting blood sugar levels in these children. It has been found that including behavioral changes like family-based therapy or cognitive behavioral therapy (CBT) with dietary and exercise treatments might affect the BMI and skinfold thickness accompanying the BMI z scores. Family-based therapy involves both parents and children who actively participate in framing the nutrition and physical activity choices which is one of the powerful interventions for childhood obesity. Accompanying family-based therapy with cognitive behavior therapy where individuals are inspired to change attitudes and behaviors that comfort the ongoing behavior has also manifested to be advantageous in this age group. Therefore, an indiscriminate "mind and body" intervention may cause a major impression on improving body composition (Al - Khudairy L et al., 2017).

Schools are the best place where children can be influenced and even in a review of environment-based treatment to decrease the intake of energy-rich food, out of 75, 25 recognized studies were school-based. In general, these interventions seem to impact some of the habits related to the intake of food but only one appeared to affect the prevalence of obesity only in girls. The factors that contribute to the school food environment in all are: school food and nutrition policies which include the kind of foods and drinks accessible and are promoted at school through the school's canteens, training sessions, and resources for teachers and food service workers, instructions for providing healthy food and drink options, encouraging to bring healthy food from home, teaching lessons about food and nutrition and overall school's climate and culture on it. Altogether, they certainly influence dietary intake combined with physical activity settings, which likely impacts the prevalence of obesity but still, the ultimate proof is not there around which components are most necessary (Swinburn B et al., 2014).

Support for lifestyle modification including dietary and behavioral changes and physical activity for both children and families is important for healthy living and is required for the treatment of all overweight and obese. Dietary recommendations incorporate avoidance or limitation of calorie-rich, poor nutrient-containing foods such as fast foods, as well as sugar-sweetened beverages, sports drinks, and fruit drinks and juices. Evidence is extending, mainly with respect to sugar-sweetened beverages, that indicates a relationship with weight gain in children and adolescents.

One study marked that for intake of every extra serving of sugar - sweetened drink per day, the chances of getting obese in childhood rises by 60%. Daily sixty minutes of moderate to heavy physical activity is also suggested, and the aim is to discover practices that children and their families can often do jointly (Matson K and Fallon R, 2012).

2. Summary and Conclusion

This study aims to find the possible measures and interventions for the management of obesity among children. Future public health and wellbeing are seriously threatened by the high prevalence of childhood obesity. According to the available research, most youngsters do not follow the nutritional, physical activity, and lifestyle recommendations related to weight.

Given the intricate and multifaceted nature of obesity's aetiology and management, it would seem that developing and using personalised ways to treat and prevent paediatric obesity is absolutely essential. Connecting the dots between aetiology, development, and intervention aims, as well as knowing when and where to intervene, still poses enormous obstacles. Since even slight changes in weight can have a big influence on a number of cardiometabolic indices and increase life expectancy, there needs to be a push to scale up beneficial interventions.

The findings imply that a multidisciplinary strategy in schools that includes the children's families can be the most practical and effective approach among several types of interventional programs for managing childhood obesity. It will be simpler to ingrain good dietary, physical activity, and behavioral patterns in children because teachers and parents make the ideal role models. Future research is required to ascertain the sustainability and long - term consequences of such programs.

Effective and thoroughly researched treatment options are crucial for managing the escalating public health concern brought on by the rising prevalence of pediatric obesity worldwide. While more research is being done on children obesity, there are fewer viable medicines for pediatric populations and less evidence to support their usage than there is for adult patients with obesity. As the first line of treatment for children and young people with obesity, lifestyle and behavioral change is currently supported by rather weak evidence. The number of medical alternatives for managing obesity in patients who are resistant to lifestyle changes or who have severe obesity is gradually growing. Finding an effective drug that is well accepted by the patients is essential to achieve weight loss in addition to lifestyle adjustment, even if these therapies can have side effects that impede adherence due to the growing availability of pharmaceuticals with various mechanisms of action. Bariatric surgery is still an option for children and adolescents who cannot lose weight with medical care, albeit there is currently little evidence to strongly support its use in this age group. Long - term follow - up data are also needed.

Therefore, this study's conclusion is that a variety of factors contribute to childhood obesity, making it challenging to

successfully prevent and treat the illness. Children's rates of weight increase and fat deposition can be decreased through lifestyle interventions, which may also help to postpone or avert some long - term dangers including type 2 diabetes. However, for lifestyle change to be effective, it must be sustained and intensive (i. e., calorie restriction, individual and family counselling, and daily exercise), which is difficult for kids and teenagers to undertake. If children or adolescents are not making progress, pharmacotherapy may be thought of as an adjuvant.

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