PERSPECTIVE

Childhood Obesity: A Public Health Crisis

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ABSTRACT

Over the past three decades, pediatric obesity prevalence has significantly increased globally. This obesity epidemic is thought to be the cause of the rising incidence of illnesses like type 2 diabetes in youngsters. Understanding the genetics and physiology of hunger control has advanced greatly, and as a result, the reasons for various unusual obesity diseases have been clarified. Children of thin parents may do better in weight control than children of obese parents. Adherence to exercise is likely to be a problem with obese children, and the choice or design of an exercise program should take these adherence problems into account. The nutritional adequacy of the child's diet should be evaluated both in terms of what the child is eating as well as in terms of the prescribed diet.

We have learned almost little about how to prevent or reverse childhood obesity from these rare illnesses, though. Due to the modern sedentary lives of children, calorie intake and activity recommendations require re-evaluation and enhanced quantification at the population level. Given the growing understanding of the so-called energy gap, the current calorie recommendations for individual treatment may be too conservative. High-quality multicentre studies with long-term follow-ups are required despite improvements in the quality of research into prevention and therapy. During this time, efforts should be made to reduce intake and enhance energy expenditure through preventative and therapeutic measures. Increased efforts should be undertaken on all fronts to maintain this potentially promising trend in light of recent data that suggest that the spiralling rise in pediatric obesity prevalence may be slowing.

Key Words: Childhood Obesity; body mass index; Global Issues**,** pandemic and pediatric obesity

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Introduction

In the industrialized world, childhood obesity has risen to become the most prevalent disorder, It is most effectively described using the body mass index (BMI) percentile compared to national BMI reference data, according to a vast of reliable and consistent research, this criterion accurately diagnoses excessive fatness and indicates a higher risk of negative health effects.[1]

Pediatric obesity results in poor health in both children and adults, while more research for understand some of the co-morbidities in children (particularly psychological morbidity), and adulthood, where there is a paucity of long-term empirical evidence and to more properly monitor the obesity pandemic.[2]

There are two main causes of why we should care about childhood obesity. First, compared to children with normal BMI, overweight and obese children and teens are considerably more likely to develop into obesity as adults.[3] Second, it is harder for these adults to lose excess weight once they become obese. For the treatment of health issues caused by obesity, newer medications and bariatric operations have been developed, but they are expensive, and have additional risks.[1] Therefore, it is crucial to focus on increasing physical activity to prevent childhood obesity.

Many obese children today are developing health issues that previously only affected adults. These obese children are more likely to develop chronic illnesses like diabetes mellitus and heart disease earlier in life and for a longer period. Even though the illness may not be recognized until adulthood, the complications that follow are more severe to the short life expectancy.[4]

Definition

Childhood-related obesity is an increasing concern for the health and well-being of the child. For children between 2 and 19 years, BMI is plotted on the CDC growth chart to check for the corresponding age and sex-related percentile. Obesity in children, which is defined as having a body mass index (BMI) above the 95th percentile for children of the same age and sex, is a growing epidemic with high consequences for their health, academic performance, and social and emotional development.[5] Along with a host of other psychological issues, childhood obesity is linked to stigmatization, low self-esteem, poor self-image, peer victimization, externalizing behaviors, body dissatisfaction, poor interpersonal interactions, and increased suicidal behavior[3].

Classifications of obesity in children depend upon the body composition of the child, as it varies concerning the age and sex of the child.[6]

Causes and Risk factors

Childhood obesity is influenced by family history, psychological issues, and lifestyle choices. Children are more prone to tend to an unhealthy lifestyle if their parents or other family members do, or because their parents are unable to choose or cook healthful foods, some kids grow up obese. Other families could find it difficult to afford fresh meats, veggies, and fruits. However, an unhealthy combination of eating too much and not moving enough is the primary contributor to childhood obesity.[7-8] Children might acquire weight quickly if they eat a bad diet with plenty of fat or sugar and few nutrients (Fig 1). Fast food, sweets, and soft drinks are frequent offenders. According to the U.S. Department of Health & Human Services (HHS), at least 24 ounces of soda are consumed daily by 32 percent of adolescent girls and 52 percent of adolescent boys in the country.[9]

Exercise helps you maintain a healthy weight by burning calories. Sports, time on the playground, and other physical activities can help kids burn more calories, but if they aren't encouraged to do so, they may not do as well. Some children's obesity may also be caused by psychological problems. To deal with their bad feelings, bored, worried, or unhappy children and adolescents may eat more. Compared to their classmates who maintain a healthy weight, children who are obese are more likelyto experience health issues. Asthma, diabetes, and heart disease are some of the most serious dangers.[10]

Childhood Obesity and Food Advertising

Academic research confirms that hours spent on television viewing correlate with measures of poor diet, poor health and obesity among both children and adults.[11]

Three explanations for this have been offered. First, television viewing is a sedentary activity that reduces metabolic rates and displaces physicalexercise. Second, television viewing is associated with frequent snacking, pre-prepared meals and/or fast-food consumption. Third, television viewing includes exposure to advertisements for HFSS food products.

There is support for each of these explanations, although little empirical research attempts to disentangle them. Academic research shows modest direct effects of television advertising on food preference, consumption and behaviour. There is insufficient evidence to determine the relative size of the effect of TV advertising on children's food choices by comparison with other relevant factors. Nor does a clear consensus exist yet regarding the nature of these other factors. In the context of the multiplicity of influences mentioned above[12], it is not surprising that the direct contribution of TV advertising to modest.

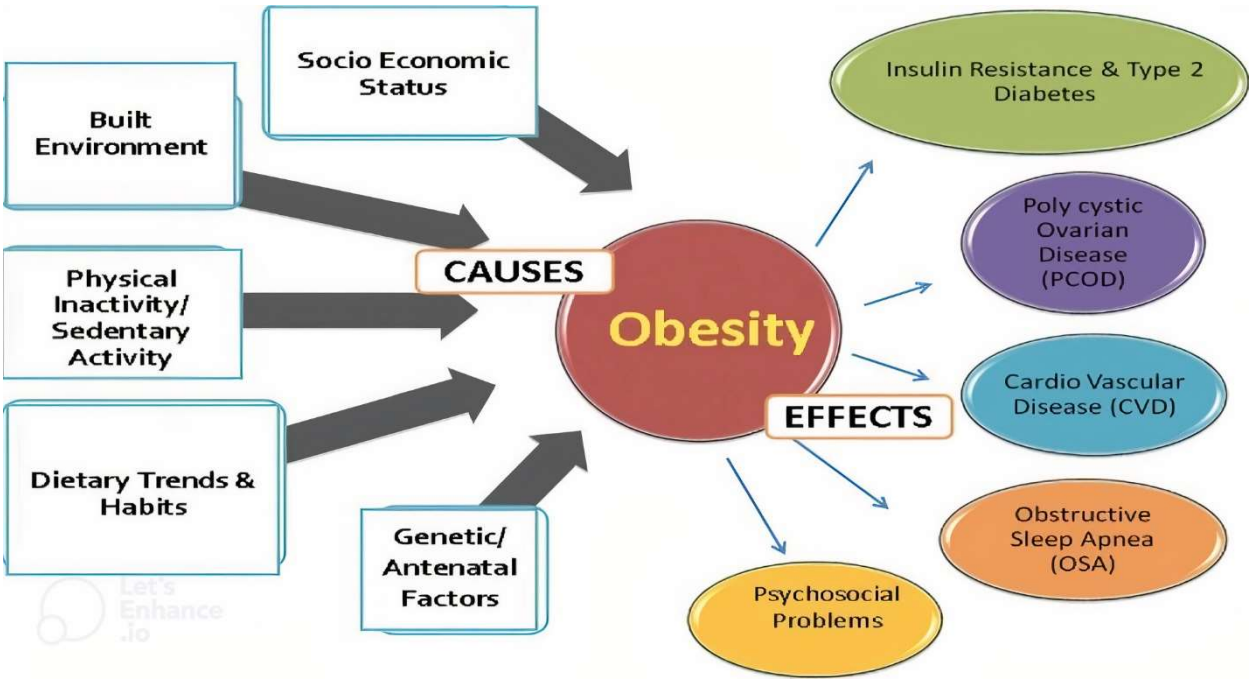

Fig.1: Obesity-complex condition with multiple causes and consequences

In the NOP survey, when television advertising is put in the context of other influences, it does have an impact on food choice among both parents and children, but it is small compared to otherinfluences.

For example, to parent and child alike, the child's taste preferences are paramount and price and familiarity are also important. Peer pressure (My friends like it) is also a notable influence on food choices for children. Parents are influenced by the healthiness of the products, although when serving food or drink, convenience (quick and easy to prepare) is a more powerful motivator.[13]

Childhood Obesity and Cardiovascular Disease

Strong evidence supports the concept that precursors of adult CVD begin in childhood, with obesity as a vital correlate of overall CVD risk. The clearest evidence comes from autopsy studies showing that coronary atherosclerotic lesions occur in adolescence and are strongly related to pediatric obesity, hypertension, and dyslipidemia.[14] The question of whether childhood obesity ends up in increased adulthood CVD via increased CVD risk factors in childhood or via persistence into adulthood obesity, or both, remains unclear. However,sufficient data exist to warrant both obesity prevention and reduction in youth and adults.[15]

Individuals who are both obese and have underlying risk factors for CVD, and their families, deserve the most-intensive interventions as these people are at high risk for CVD events and are most-likely to profit metabolically from weight loss.[16] However, little evidence exists to suggest that adipose triglyceride deposition itself encompasses a defined, independent role in CVD, which has led some to argue that teenagers with 'isolated obesity' should merely be monitored for the development of other CVD risk factors.[17]

Normal-weight children who become obese as adults are at increased risk of adult morbidity, and underweight children who become obese adults may well be at even higher risk of adult hypertension and renal disease than youths with higher weights.110 Thus, excessive weight gain has negative consequences altogether for children. Data show that established obesity is difficult to treat; therefore, early prevention efforts to avoid unhealthy lifestyles and encourage the adoption of healthy behaviours are critical for all told children and adolescents, not just people who are already obese.[18]

Genetic abnormalities that cause severe early obesity are identified. Affected genes include LEPR (leptin receptor), MC4R (melanocortin 4 receptor), and POMC (proopiomelanocortin). However, these gene defects are rare and therefore the remainder of the genome appears to own a part in the current obesity epidemic. Genes conferring increased risk for CVD have also been identified, but how these genes interact with obesity, or how obesity-associated genes interact with atherosclerosis is, as yet, unclear.[19]

Childhood Obesity and Diabetes

Rates of T2D have increased dramatically together with the rising incidence of obesity, and obesity is prominent in most cases of youth diagnosed with

T2D. Children from lower-income families and of ethnic backgrounds are at increased risk for both obesity and T2D. Obese children evidence increased metabolic risk factors, and people with a case history of T2D appear to be at the greatest risk for the development of T2D. Both obesity and T2D confer increased risk for development of varied health disorders, contributing to the probability of decreased lifetime. Additionally, obesity and T2D in youth are related to increased risk for psychological problems like depression, eating disorders, and reduced quality of life, and are in the course of unhealthy dietary and physical activity lifestyle behaviours.[20]

Obesity and T2D thereby represent very significant public health issues in terms of both adverse personal impacts on health and costs to society through increased health care utilization over time. Efficacious treatments are available for obese children, but a serious issue is the way to reach the population of overweight and obese children. In-person clinical interventions involving family-based behavioural programs could also be effective, but most families needing treatment for his or her children are unlikely to receive comprehensive evidence-based treatment programs. Internet-based programs have had some success with weight loss and maintenance and have potential for increasing the reach of effective intervention to the population. In cases of morbid obesity, inpatient and surgical approaches are used but additional research is required to demonstrate their safety and long-term effects. Some weight loss medications are evaluated, but more work is required during this area.

Identification and treatment of overweight children within the school setting has some promise, as do obesity prevention programs delivered to children in class. Because treatment of obesity is simply modestly effective, obesity prevention beginning in infancy may be a priority area for future research; public health and policy approaches offer promise during this regard.[21]

Research indicates that youth with T2D are likely to develop serious diabetes-related health complications relatively early in adulthood, contributing to decreased expectancy. And research suggests family factors are significant influences on youths' T2D management. as an example, members of the family with high-risk behavioural lifestyles might not provide good models for healthydietary intake and physical activity. Psychological factors also play a crucial role in T2D management, as studies show such youth are in danger for depression, binge eating, and reduced quality of life. Physicians report major challenges inclinical care of T2D in youth, including high risk behavioural lifestyles, psychological problems, reduced patient motivation, and cultural barriers. However, recent research indicates that almost all youth with T2D don't attain optimal glycaemic control, remain overweight, and sometimes don't stay in medical treatment.[22] National and international organizations like the American Diabetes Association and therefore the International Society of Paediatric and Adolescent Diabetes recommend that physicians, nurses, dieticians, and mental and behavioural health professionals collaborate on interdisciplinary teams to effectively help youth with T2D. Given the actual fact that youth with T2D are at high risk for development of diabetes-related health complications, identification of effective medical and behavioural treatment approaches remains a priority.[23]

Childhood Obesity and Respiratory Disease

The incidence of childhood obesity is steadily rising. Numerous studies have shown that obesity is a significant, disease-modifying risk factor for some respiratory disorders, including Obstructive Sleep Apnea Syndrome and asthma (OSAS). Exposure to air pollution, tobacco use, a Western diet, and poor vitamin D levels are just a few of the pathogenetic factors that may contribute to the co-occurrence of obesity and asthma. In obese asthmatic children, dysanapsis and lung development appear to play different roles in decreased respiratory function than in adults. Although genes linked to both obesity and asthma have been found, a gene-by-environment interaction has not yet been thoroughly studied.

The natural history of both diseases may be altered by the discovery of modifiable environmental variables impacting gene expression through epigenetic processes. Numerous studies have shown that obesity raises the chance of having deep vein thrombosis, pulmonary emboli, pulmonary hypertension, and pneumonia.[24]

Finally, it has been demonstrated that weight loss is useful in reducing the severity and symptoms of a number of respiratory illnesses, including OSA and asthma. Therefore, it is important to advise patients who are overweight or obese to lose weight in order to lower their risk of contracting respiratory disorders or to better manage existing conditions Even if the evidence is not overwhelming, it is apparent that obesity is a major factor in OSAS and asthma. A thorough investigation of a gene-by-environment interaction should be done about the connection between fat and asthma. To stop the spread of these two diseases, it will be essential to identify modifiable environmental factors, such as diet, that might affect gene expression through epigenetic pathways and cause obesity and asthma in susceptible individuals.[25]

Although it appears that mechanical factors contribute to obesity in individuals with OSAS, the critical function of inflammatory cytokines with pro-inflammatory signalling pathways, a diminished effect of leptin activity, and elevated adipokine levels is clearly supported by the evidence. The significance of platelet activation in OSAS asthmatic patients is not yet well understood.[26]

A significant contributor to morbidity and mortality is obesity. Exercise intolerance, sleep-disordered breathing, reduced small airway compliance, increased small airway resistance, impaired respiratory muscle function, increased work of breathing, impaired gas exchange, and increased risks of VTE are all common respiratory function disturbances, especially in patients who are extremely obese. These alterations can take place independently of any underlying parenchymal lung illness and significantly increase mortality, functional impairment, and poor quality of life. The likelihood and severity of respiratory problems linked to obesity can both be greatly reduced with weight loss. A organized rehabilitation program including nutritional, behavioural, and exercise components (such as a pulmonary or cardiac rehabilitation program) should be explored for inclusion of obese patients with respiratory problems in an effort to increase functional capacity.[27]

TREATMENT AND PREVENTION

Paediatricians are being asked more and more to treat children who are clinically overweight due to therising prevalence of juvenile obesity.

Surgery, medication therapy, and behavioural lifestyle modification are the main forms of treatment. Modifying one's lifestyle is the cornerstone of treating pediatric obesity, and research has shown that doing so reduces the severity of overweight and obesity. Several recommendations cover suitable techniques for modifying a child's lifestyle when they are overweight or obese.[28] There is general agreement that family involvement is important in efforts to prevent and cure childhood obesity. The objective of the current study was to compare the relative effectiveness of treating childhood obesity by targeting either parents alone or both parents and obese children at once with a family-based, health-centred intervention. 32 families with obese children aged 6 to 11 were randomly divided into groups, and participants received a comprehensive educational and behavioural program for a healthy lifestyle for 6 months. The primary change agent in these groups varied: either the parents alone or the parents and the fat child. Parents were urged to adopt authoritative parentin practices in both groups (parents are firm yet supportive; take the lead in bringing about environmental change while giving their children the proper amount of freedom).[29]

There are currently accepted guidelines and recommendations for treating childhood obesity, with a focus on the significance of comorbidity monitoring. study of the health effects of obesity, followed byan analysis of the suggestions made by the expert panel for determining which kids are the best candidates for therapy. As mentioned in the review, the existence of concurrent health issues is crucial to this procedure. We next go over the essential elements of juvenile obesity treatment, such as nutrition, exercise, and parental engagement, before presenting evidence that suggests that treatment can reduce the severity of obesity-related comorbidities.[30]

In the United States and around the world, childhood obesity is a severe health issue. Children and adolescents in America are overweight or obese to a greater than 30% rate. By reviewing all interventional studies that were carried out in high-income countries in settings such as homes, schools, primary care clinics, childcare facilities, the community, or combinations of these settings with the goal of enhancing diet, physical activity, or both, we evaluated the efficacy of childhood obesity prevention programs. Consumer health informatics interventions were also reviewed. We compared the effects of the interventions on outcomes related to weight (such as body mass index [BMI], waist circumference, percent body fat, skinfold thickness, prevalence of obesity and overweight), intermediate outcomes (such as diet, physical activity), and clinical outcomes (such asblood pressure, blood lipids) related to obesity.[31]

Better outcomes were obtained than in the case when parents simply attended sessions with the obesechild by focusing on a health-centred approach to childhood obesity with the parents serving as the sole mediator and addressing parenting as much as lifestyles. The key indicators of success were treatment group, reduction in obesogenic load, and attendance rate. It is crucial to encourage medical providers to use family-based healthy lifestyle programs rather than weight-reduction strategies to combat the epidemic of obesity and eating disorders.[32]

The effectiveness of school-based programs for preventing childhood obesity is moderately supported by the research. The most successful physical activity programs include nutrition and physical activity interventions in school-based settings with home and community components or physical activity interventions with a family component. To test interventions in various contexts, such as those assessing policy, environmental, and consumer health informatics techniques, more study is required.[33]

Pediatric obesity is a condition that is difficult to prevent and treat because of a variety of causes. 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. 67 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. 4 If children or adolescents with major comorbidities or who are not losing weight despite lifestyle changes are given pharmacotherapy as an adjuvant. In some, short-term obesity cases, orlistat and metformin have both shown a mild to moderate

reduction in BMI (between 0.55 and 4.09 kg/m2 and between 0.16 and 3.2 kg/m2, respectively).[34]

The withdrawal of drugs after a brief period of usage has been linked to weight gain, therefore in the future, long-term use of pharmacological agents may be required to ensure a sustained benefit of weight loss. 37 Children and adolescents need to have their long-term health (i.e., incidence of type 2 diabetes and cardiovascular disease) as well as weight outcomes and negative consequences assessed.To thoroughly assess therapy choices in this population, direct comparative studies of orlistat, metformin, and other novel pharmacological drugs, such as growth hormone, octreotide, and topiramate, are also required.[35-37]

Conclusion

The prevalence of obesity in childhood continues to increase throughout the world. Currently, obesity is the second-leading cause of preventable death, after cigarette smoking. If our children continue to gain weight at the current rates, obesity will soon become the leading cause of death in the United States. Although treatment strategies using pharmacologic agents and surgery are being investigated, earlier intervention and prevention strategies are more cost-effective. Physicians should begin intervention and counselling on appropriate diet and exercise choices and portion sizes during infancy and continue counselling and close monitoring of BMI throughout childhood. Breastfeeding for the first 4–6 months of life should be promoted.

So, this problem is a very important social problem that our country needs to address in the near future to avoid our people from suffering through their adult years from a condition that could have been easily prevented in infancy. In the prevention of childhood obesity, schools and families play a big role by offering a safe as wellas supporting environment with the strategies and activities supporting healthy behaviours.

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