



Review Article

Childhood Obesity in Developing Countries: An Emerging Menace

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ABSTRACT

There has been a worldwide increase in obesity among people of all ages, with children inclusive. This epidemic of obesity sits alongside the problem of under-nutrition in many developing countries thereby creating a double burden of nutrition-related ill health among children, which has been more appropriately referred to as the 'Double Burden of Malnutrition'. Although the prevalence of childhood obesity in developing countries is still relatively low when compared to that of developed countries, studies in these countries are beginning to report increasing trends which should be a source of concern. This review article was therefore undertaken to raise awareness about the emerging menace of childhood obesity in developing countries.

Key Words: Childhood; Obesity; Overweight; Developing Countries; Nutritional status

INTRODUCTION

Thirty years ago, International nutritionists were focussing on childhood malnutrition, the 'protein gap' and how to feed the world's burgeoning population, and medical services in the developing world were concentrated on the fight against infectious diseases. ⁽¹⁾ Today the World Health Organization (WHO) finds itself needing to deal with the new pandemic of obesity and its accompanying non-communicable diseases (NCDs), while the challenge of childhood malnutrition is still far from being over. ^(1,2) This epidemic of obesity sits alongside the problem of under-nutrition in many developing countries thereby creating a double burden of nutrition-related ill health among

children, ^(3,4) which has been more appropriately referred to as the 'Double Burden of Malnutrition' (DBM). ⁽⁵⁾

Global Epidemiology of Childhood Obesity

There has been a worldwide increase in obesity among people of all ages. As many as 250 million people, or about 7% of the current world population, are obese. Two to three times more people are overweight. ⁽⁶⁾ In one of the most extreme examples, the prevalence of overweight doubled among children 6 –11 years of age and tripled among those 12–17 years of age in the United States between the second National Health and Nutrition Examination Survey, conducted between 1976 and 1980, and the most recent such survey, conducted in 1999

and 2000. Approximately 14–15% of all 15 year olds in the United States can be classified as obese. ⁽⁶⁾

The WHO Expert Consultation on Obesity held in 1997 warned of an escalating epidemic of obesity that would put the populations of most countries at risk of developing non-communicable diseases (NCDs). ⁽⁷⁾ The prevalence statistics on obesity have escalated rapidly since that date in almost all countries, and these country-specific trends are now coalescing to create a true pandemic. Most remarkably this pandemic is penetrating the poorest nations in the world—first amongst the urban middle-aged adults, but increasingly affecting semi-urban and rural areas, and younger age groups. The pandemic is growing at such a pace that prevalence statistics become rapidly outdated. ⁽¹⁾

The prevalence of childhood obesity is increasing in almost all industrialized countries for which data are available, and in several lower-income countries. The Figures indicate that the changes have been taking place at very different speeds and in different patterns. Obesity appears to have spread more dramatically in industrialized countries over the past 2-3 decades than in less economically developed countries. In several industrialized countries and in societies that have been undergoing rapid socioeconomic transitions, obesity has increased at an accelerated rate. From the 1970s to the end of the 1990s, the prevalence of overweight or obesity in school-age children doubled or tripled in several large countries in most regions, such as Canada and the United States in North America; Brazil and Chile in South America; Australia and Japan in the Western Pacific region, and Finland, Germany, Greece, Spain and the UK in Europe. ⁽⁸⁾ The current prevalence of overweight and obesity varies considerably worldwide. North America, Europe, and parts of the

Western Pacific have the highest prevalence of overweight among children (approximately 20-30%). Parts of South East Asia and much of sub-Saharan Africa appear to have the lowest prevalence. South and Central America, Northern Africa and Middle Eastern countries fall in between. Importantly, the prevalence of overweight among children in several countries undergoing economic growth, such as Brazil, Chile, Mexico and Egypt, has reached a level comparable to those in fully industrialized countries. ⁽⁸⁾

Childhood obesity is currently a major health problem in many countries of the world. Recent statistics show that, 16% of children 6 - 11 years old are overweight and that an additional 14.3% are at high risk of becoming overweight. ⁽⁹⁾ In another report, it was concluded that approximately 10% of school-age children (age range: 5-17 years) were overweight, of which a quarter were obese. In actual numbers, the estimate suggested some 150-160 million school-age children worldwide were overweight, of which some 35-40 million were obese. ⁽¹⁰⁾ Statistics also show that, prevalence of overweight continues to increase during the school age and adolescent stages. ⁽¹¹⁾

Based on the secular trends, and assuming they continue on a linear basis, Wang and Lobstein ⁽⁸⁾ estimate that over 46% of school-age children will be overweight (IOTF criteria) in the Americas by 2010; along with approximately 41% of children in the Eastern Mediterranean region, and 38% of children in the European region (which includes the countries of the former Soviet Union); 27% in the Western Pacific region, and 22% in South East Asia. Data for sub-Saharan Africa are not adequate to make predictions.

The prevalence of childhood overweight and obesity remains low in many lower-income countries, in particular those in Asia and sub-Saharan Africa where

under-nutrition is still a major public health problem. The overall prevalence of childhood obesity was estimated to be 3% in lower-income countries in the 1990s. ^(8,12) It should be noted, however, that the low levels of overweight and obesity observed in some countries might be due to a shortage of recent representative data. ⁽⁸⁾

Nutritional Status Transition in Developing Countries

Traditionally, deficiency in macro- and micronutrients has been the major problem among children in low-income countries. ⁽²⁾ Nevertheless, owing to progressive urbanisation and the associated changes in lifestyle, the energy balance is shifting; ⁽¹³⁾ Childhood overweight/obesity is becoming an equally challenging, yet under-recognised, problem in many emerging countries. ^(12,14,15) What was once a health problem for the industrialized world with its high calorie foods, labour-saving devices and dwindling levels of physical activity is now spreading to developing countries. These countries are now reporting unprecedented levels of childhood obesity with substantially rising trends every year. ⁽³⁾

A number of low- and middle-income countries have experienced a transition from under- to over- nutrition problems or, quite frequently, a double burden of both under-nutrition and obesity. ⁽⁵⁾ For example, in Brazil between 1974 and 1997, the prevalence of overweight among children aged 6-18 years more than tripled (4.1% to 13.9%), while the prevalence of underweight decreased from 14.8% to 8.6%. ⁽¹⁴⁾ There is increasing evidence that underweight and overweight may exist among family members within the same household, especially as low income, urbanized populations adopt westernized diets. ^(8,16)

The paradoxical coexistence of obesity with under-nutrition has been

stressed by a number of commentators, particularly in relation to the situation in Central and South America where the nutrition transition is more advanced. ⁽¹⁷⁾ Doak et al ⁽¹⁷⁾ have shown that a large number of households, particularly in middle-income countries, contain both underweight and obese individuals and describe these as 'dual burden' households. ⁽¹⁾

Today the WHO finds itself needing to deal with a 'double burden' of disease that threatens to overwhelm the health services of many resource-poor countries; the new pandemic of obesity and its accompanying NCDs while the challenge of childhood under-nutrition has far from disappeared. WHO warns that the greater future burden of obesity and diabetes will affect developing countries, and the projected numbers of new cases of diabetes run into the hundreds of millions within the next two decades.

Risk Factors for Childhood Obesity

The aetiology of childhood obesity and subsequent diseases is poorly understood. Obesity is not a single disorder but a heterogeneous group of conditions with multiple causes. Body weight is determined by an interaction between genetic, environmental and psychosocial factors acting through the physiological mediators of energy intake and expenditure. Although genetic differences are of undoubted importance, the marked rise in the prevalence of obesity is best explained by behavioural and environmental changes that have resulted from technological advances. ⁽¹⁸⁾

Obesity is likely to be explained by alterations in the regulation of energy balance between energy expenditure and energy intake. ⁽¹¹⁾ Energy balance is determined by a number of complex biological, behavioural, cultural, social, and environmental factors and the interactions

between them. ^(7,8) There is evidence suggesting that, reduced energy expenditure may be involved in the aetiology of childhood obesity. ⁽¹⁹⁾ A study by Epstein and Nueman ⁽²⁰⁾ showed that, more than 65% of children 6-19 years of age eat a lot of fat and half of young people (12-21 years) do not engage in regular physical activities. Changes in lifestyles in which children lead sedentary lifestyles lead to a low energy expenditure. Frequent use of cars to facilitate movement rather than walking and lack of aerobic exercises contribute to low energy expenditure. ⁽²¹⁾ Similarly, extensive use of electrical/electronic appliances such as television, video games and radios has made children spend much time watching television, and listening to radio programmes and playing electronic games and sports which make children more inactive. ⁽¹¹⁾

Socioeconomic status (SES) and ethnicity can affect overweight and obesity prevalence among adults and children, and these influences may vary according to the economic context. For example, in middle-income countries, members of better-off households are more likely to be at risk of adiposity compared with members of poorer households, and urban residents may be more at risk than rural ones. In South Africa, the highest prevalence levels for overweight were found among young white (23%) and Indian populations (25%) compared with young Africans (17%). ⁽²²⁾ As the economies develop, the pattern changes to one where higher obesity levels are found among lower income groups. ⁽²³⁾ In industrialized, economically developed countries, children in the lowest SES groups may be at greatest risk, as may be children in specific racial or ethnic groups. ⁽¹⁴⁾

Children whose linear growth is compromised through early malnutrition may respond to subsequent availability of food by increasing their body weight but not

their height proportionately, leading to a raised risk of central adiposity and below average height. ⁽²⁴⁾ With several low-income countries experiencing prevalence rates for stunting of over 50% among infants, ⁽²⁵⁾ large numbers of children may be at risk of central adiposity and related chronic diseases. For these children, interventions in early infancy are needed to promote catch-up growth while minimising the risk of central obesity. ⁽⁸⁾

Prevention of Childhood Overweight/Obesity

Childhood obesity is now recognized as a major medical and public health problem. Obesity in adults is strongly associated with many serious medical complications that impair quality of life and lead to increased morbidity. Obese children are at high risk for adult obesity, but there are as yet insufficient data to assign specific risk levels in childhood. However, obesity in childhood provides an independent contribution to the development of adult morbidity. Without proper intervention, adult morbidities will likely begin to appear in the young. ⁽⁶⁾

There are strong epidemiologic and causal links between obesity in the young and earlier-onset Type 2 Diabetes Mellitus. ⁽²⁶⁾ Over the past decade, there has been an alarming increase in the appearance of Type 2 Diabetes Mellitus (T2DM) in children, a disease that formerly occurred almost exclusively in adults. T2DM in youth represents the most rapidly growing form of diabetes in America, Europe, Japan, and Australasia, now responsible for up to about one fifth of new diagnoses of diabetes in pubertal children. ⁽⁶⁾ It is imperative to intervene early in childhood and adolescence to prevent and/or reverse the effects of overweight and poor eating habits. In preventing childhood obesity, it is important to note the following;

Healthy Eating Pattern: Emphasis should be laid on nutrition rather than ‘dieting’. Maintain healthy components of traditional diets such as fruits, vegetables and whole grain cereals and guard against energy dense, fatty, salty and sugary food. ⁽³⁾

Increased Physical Activity: Dietary changes alone are often not enough to help a child lose weight. Taking part in exercise should be encouraged from an early age to promote self-esteem and help children function optimally, both physically and mentally. The enjoyment of sport at an early age, and the influence of parents, friends, teachers, coaches and schools combine to shape lifelong attitudes and participation in sport and exercise. In general, moderate to vigorous activity for at least one hour a day may be a practical recommendation for all school going children. ⁽³⁾

Decreasing Sedentary Activities: These activities lead to motion deprivation, and children spend hours doing little more than sitting down. These inactive and prolonged pastimes should be discouraged. Television viewing should be restricted to not more than one hour a day, and use of computers, telephone conversations should be reduced. ⁽³⁾

Recommendations

In order to prevent childhood obesity effectively, action must be taken in multiple settings through a variety of approaches and involving all stakeholders. ⁽²⁷⁾ Some important recommendations for these stakeholders are;

Government Authorities

- Prevention programmes should target children as early as kindergarten with the involvement of their parents
- Regulate fast food advertisements aimed at children and insist on food labelling.

- Government can influence the food industry to reduce the levels of fat and sugar in foods targeted at children
- The government should encourage a responsible approach to marketing of these foods.

The Family

- Everyone should be involved in planning meals, buying food and coming up with ways to be active together.
- Families should also make physical activity a family priority and establish rules or guidelines that encourage activity and limit leisure time in front of the television or computer.
- Changing your child's eating and exercise habits means the parents changing theirs too. After all, parents are in charge of what their child eats at home and how much exercise he gets when he gets home from school. Plus, parents are role models; if they exercise and eat healthy, their child would follow suit.

The Schools

- The schools should formulate and adhere to physical-education and activity requirements and standards.
- Schools should facilitate changes to increase physical activity and parent teacher associations (PTA) can help to educate parents as to the dangers of childhood obesity.
- Schools should decrease consumption of unhealthy foods and beverages during school hours.
- Introduction of ‘nutrition and physical education’ in the school curriculum with these activities should become compulsory and/or a ‘scoring subject’ with marks to be added to total grades. The

parents/students are then likely to give the required attention and time to these activities in this competitive world of academics.

Medical Personnel

- It is important for medical practitioners to think of 'prevention of obesity' at all visits and incorporate relevant health education.
- BMI should be calculated for all children visits and above 85th centile should be advised about lifestyle interventions while children with BMI >95th centile should be screened for co-morbidities.
- Gradual weight control should be encouraged rather than crash dieting.

CONCLUSION

The prevalence of chronic or non-communicable disease is escalating much more rapidly in developing countries than in industrialized countries. ⁽²⁸⁾ According to World Health Organization estimates, by the year 2020, non-communicable diseases will account for approximately three quarters of all deaths in the developing world. ⁽²⁹⁾ In this regard, a potential emerging public health issue for developing countries may be the increasing incidence of childhood obesity, which is likely to create an enormous socioeconomic and public health burden for poorer nations in the near future. ⁽²⁸⁾

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