Childhood Obesity is an Emerging Health Hazard: A Psycho-social Perspective

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Earlier it was commonly accepted that the fatness of an individual reflects sign of prosperousness and healthiness. But unlike the past, today obesity or overweight is considered as a major health risk. The early 21st century has seen the development of global epidemic of obesity in many countries (WHO, 2003; cited in Baur, 2003). The prevalence of obesity and overweight is escalating rapidly worldwide. It appears to be one of today’s most common and serious health problems (Stein, 1987). It is now estimated that over 100 million people worldwide are obese and 58 million of these are in developed countries (Shetty, 2003). Some scientists (Popkin and Doak, 1998) concluded that obesity has already reached epidemic proportions in developed countries and their observations are that the developing world might fall into its grip very soon. Indeed obesity is now so common that it is replacing the mere traditional public health concerns, such as under-nutrition and infectious diseases, as one of the most significant contributors of ill health.

The childhood obesity is major concern among health care professionals and policy-makers because the prevalence of obesity increases with age among both males and females (Lohman, 1987),

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and there is a greater likelihood that obesity beginning even in early childhood will persist through life span. A significant increasing trend in the prevalence of overweight and obesity among children and adolescents has been documented over last few decades in the developed and developing countries (Chinn and Rona, 2001).

Obesity in childhood is also very common. Majority of European countries have prevalence rates of obesity higher than 10 % for 10 years old boys and girls. Of even greater concern is that several countries have rates of above 30 % as in Greece, Italy and Malta (Livingstone, 2000). Overweight and obesity and their health consequences have been recognized as major public health problems worldwide. The most significant long term consequences of childhood and adolescent overweight and obesity are their persistence into adulthood with all of the attendant health risks (Must & Strauss, 1999; Power, Lake & Cole, 1997).

Nature and Definition of Obesity

Obesity is one of the most common metabolic disorder and historically one of the oldest documented conditions. The most ancient example of obesity, antedating the development of agriculture by about 10000 years is ‘Venus of Wellenorf’, a lime stone statuette from the Stone Age which has been unearthed. In spite of the prevalence of this abnormality through the centuries, no single definition has been accepted for obesity. The term obesity has been defined differently by different authors, and they have given various meanings of this term. Albrink and Meigs (1965) stated that obesity is the accumulation of reserve fat which becomes so extreme that the functions of the organism are interfered with. Using the fatness as an indicator of obesity, Berry (1968) defined it as “excess of fat in body often causing its bulkiness”. Obesity is a condition in which there is excessive storage of body fat (Craddock, 1973; Sood et al. 1984).

Many authors have defined obesity in terms of weight for height as well as in skinfold thickness. According to Lohman (1987), obesity is present when total body weight is more than 25 percent fat in boys and more than 32 percent in girls. Although childhood
obesity is often defined as a weight for height in excess of 120 percent of the ideal skinfold measure are more accurate determinants of fatness (Dietz, 1983; Lohman, 1987). Child with weight more 10 to 20 percent of the ideal weight for height and age has been labeled ‘overweight’ and that exceeding 20 percent more than ideal weight for age and height as obese (Robinsen, 1967). Lohman (1987) has defined the obesity in terms of different sites of skinfold thickness also. The triceps alone, triceps and subscapular, triceps and calf, and calf alone have been used with children and adolescents. When the triceps and calf are used, a sum of skinfold of 10-20 mm. is considered optimal for boys and 16-30 mm. is optimal for girls. Recently, Budd and Falkenstein (2008) defining the obesity stated that “obesity is the accumulation of adipose tissues within the body”. By reviewing the above definitions of obesity it can simply be concluded that obesity is the excessive accumulation of fat body to that extent that it starts to interfere the normal functioning of the body.

Assessment of Obesity

For research purpose body fat content can be estimated by measuring body density and by dilutional techniques (body water measurement, body potassium measurement, etc.). However, for routine use, anthropometric measurements are the most practical tools for diagnosing obesity. Some commonly quoted anthropometric indices are discussed below:

(1) Weight and Height Relationship: Weight and height relationship is the most useful and simplest to obtain. It deemphasized the effect of stature on body weight and also closely correlated with adiposity (Edwards & Whyle, 1962).

(2) Weight as Percent of Reference Weight: In this method, the reference weight of a person as appropriate for his height is referred from the table. The reference weight is then compared with the actual weight of the person.

The relative weight is the actual weight expressed as percent of ideal weight and is easiest method of quantifying the degree of obesity. Subjects with relative weight more than 120 % are usually
considered as obese. Relative body weight is the most commonly used criterion to define obesity.

(3) **Weight Height Indices:** Many indices of obesity (weight/height, weight/height, weight/cube of height, cube root of weight/height etc.) have been used in the past.

The Quetelet’s Index or obesity index or Body Mass Index (Weight in Kg/ Height in metre $^2$) has been found to be most appropriate one. It is calculated by dividing the weight (in kg) by the square of height (in metre). Although invented in the mid 1800s by Belgian Adolphe Quetelet, BMI is currently used as a simple clinical tool for determining the degree of obesity and its potential risk for diseases. In most common definitions used for BMI categories include underweight (BMId” 18.5), ideal (BMI = 18.5-24.9), overweight (BMI= 25-29.9), obese (BMI= 30-34.9), and morbidly obese (BMIm”35) (Jonathan-Tan, 2008). Many health related indices, such as high blood pressure, heart disease, and diabetes, have a graded and continuous correlation with BMI. Although BMI represents the degree of body fat, it does not distinguish between excess weights due to fat mass and non-fat mass such as muscle, edema or bone.

For children and adolescents, there is a controversy regarding the definition of normal BMI values due to concerns about possible interference with normal growth, self-esteem, and the desire to promote the development of healthy food behaviours and habits. During childhood, BMI changes with growth and development. There are several periods in which sex, growth and malnutrition pattern affect muscular gains and account for BMI variation, rather than adiposity. Thus several authorities have developed child BMI levels including the International Obesity Task Force, The British Child Growth Foundation, and the US Centres for Disease Control and Prevention. Excess adiposity in children is known to produce a number of comorbidities in childhood as well as increasing the risk of obesity in adulthood.

*Abdominal Fat*

Abdominal obesity, as measured by Waist Circumference (WC), is known to be a better predictor of health risk among those of
normal weight, overweight and obese categories. Waist circumference > 120 cm. or 40 inches in men and 80 cm. or > 35 inches in women are considered with increased risk of type II diabetes, dyslipidemia, hypertension, and cardiovascular diseases.

Skin Folds Thickness

The measurement of skinfold thickness using specially designed calipers offers a more direct assessment of obesity. Durnin and Womersley (1974) have measured skinfold thickness at four sites (Biceps, Triceps, Suprailiac, and Sub scapular). The triceps alone, triceps and sub scapular, triceps and calf, and calf alone have been used with children and adolescents. When the triceps and calf alone are used, a sum of skinfolds of 10-25 mm. is considered optimal for boys and 16-30 mm. is optimal for girls (Lohman, 1987).

Prevalence of Childhood Obesity

Obesity and overweight are serious health problems. A significant increasing trend in the prevalence of overweight and obesity among children and adolescents in developed and developing countries have been observed (Chinn and Rona, 2001). The majority of European countries have prevalence of obesity higher than 10 % for 10 years of old boys and girls. Of even greater concern is that several countries have rates above 30 % as in Greece, Italy or Malta (Livingstone, 2002). About 19-23% Australian children and adolescents were overweight or obese (Magarey, Danials & Boulton, 2001). It is generally recognized that the highest rates occur in pacific region while the lowest rates are found in South Asia (Sridhar, 2008). In mainland China, whose population accounts for the one fifth of the global population, the prevalence of obesity has been rising quickly in both adults and children during the past two decades. According to Wang and Lobstein (2006) the prevalence of overweight in China’s urban areas was 12.4 % in 1997, but the figure may soon change, as the level of overweight in pre-school children was 29 percent.

Obesity in children is gradually becoming a major public health problem in India also (Popkin & Daok, 1998). For example, in New...
Delhi, a cross-sectional study was conducted by Kapil, Singh, Pathak, Diwedi, and Bhasin (2002) in public school to determine the prevalence of obesity among children and adolescents belonging to affluent families. Prevalence of obesity was found 7.4%. It is noted that overall prevalence of obesity was higher in male than female children. In addition, the maximum prevalence of obesity was found during the pubertal period between 10-12 years. Prevalence of childhood obesity has been increased during the last three decades and child obesity accounts for nearly 30% of all adult obesity (Pandher, Sangha & Chawla, 2004). Childhood obesity has emerged only recently in India, unlike the West where it existed for a long time. Obesity in children, as young as two years onwards, has been reported from the Indian population. Ten percent of children, or at least 155 million youngsters worldwide are overweight or obese (Lobstein, Baur & Uauy, 2004). In a study of Mehta, Bhasin, Agrawal and Diwedi (2007) of four selected public schools in Delhi, it was 5.3%. Rao, Kanade, and Kelkar (2007) examined the magnitude of overweight in school children. The prevalence of overweight based on conventional BMI cut off was 27.5% for boys and 20.9% for girls.

In a recent study, Kumar, Mohanan, Kotian, Sajjan, and Kumar (2008) reported that the prevalence of overweight and obesity was found 4.5% and 1.4% respectively. Bose, Bisai, Mukhopadhyay, and Bhadra (2008) undertaken a cross-sectional study to determine the prevalence of overweight and obesity among 431 school girls aged 6-9 years in Kolkata. Results revealed that the overall rates of overweight and obesity were 17.63% and 5.1%. Review literature suggests that prevalence of childhood obesity in India is also becoming a considerable health problem.

Causes of Obesity

As with adults, onset of obesity, childhood and adolescent obesity has multiple causes centering on an imbalance between energy intake and energy expenditure. It most likely results from an interaction of biological, environmental, familial, social, nutritional and psychological factors.
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**Biological Factors**

There are complex regulatory pathways in the human body that influence body weight. During conception, a fetus receives many pairs of genes; one half of each pair derived from mother and one half from father. Research shows that several genes have been associated with obesity and that some genes do play an important role in body size and body weight. A child with two obese parents has a 70-80% chance of becoming obese and a child with one obese parent has a 40-50% chance (Lansky, 1990). Heredity, including a number of inherited genetic disorders (such as Prader-Willi Syndrome and Brabet-Biedl Syndrome), and gene mutations may contribute to rising incidence of obese individuals. If an individual’s biological mother is heavy as an adult there is approximately a 75% chance that the child will be heavy. On the other hand if the mother is thin, there is also a 75% chance that the child will be thin (Bray and Ryan, 1999). One misconception about genes and obesity is that there is an ‘obesity gene’ or one gene that causes obesity. In fact there are many genes that have been implicated in obesity.

**Environmental Factors**

Although genes are important factors in many cases of obesity, a person’s environment also pays a significant role. Environmental factors include lifestyle, behaviours such as what a person eats and how much active he or she is. Living in abundance of processed, sugary, fatty, and salty foods has been called living in a ‘toxic environment’, one that sets the stage for unhealthy food behaviour and weight gain to occur. Although not everyone in a toxic environment will become obese, those who are predisposed to do so, due to presence of genetic variations and differences, will most likely put on excess weight and have great difficulty taking it off (Stein, 2008). The abundance of fast food restaurants is also important factor in contributing obesity. There is a positive association between frequency of eating fast food and body weight.

*Low Energy Expenditure:* Obesity is more among children and adolescents who frequently watch television (Dietz & Gortmaker,
1985), not only because little energy is consumed while viewing but also because of the concurrent consumption of high calorie snacks. Increased television viewing causes them in reduction of physical activity and the subsequent lack of exercise that affect children adversely in many areas. While watching television, children often mindlessly eat high calorie or high fat snacks foods, which also leads to increased weight gain.

**Parental and Home Environment**

A number of factors related to home and parental environment may have an effect on children’s eating habit and consequent weight status. Home and parental environment have also received much attention by researchers investigating factors related to the development of obesity, because it is in the home that most early experiences with the food and eating occur.

Some demographic variables of home have been found to relate to children’s eating, level of physiological activity, and weight status. While evidence on the socio-economic status is mixed, many studies suggest an association between low income and increased rates of obesity (Benton, 2004). This may be due to the fact that in lower income groups, higher weight in early childhood may be considered as a mark of good health, and foods such as fruits and vegetables may be less available and the environment may be less stimulating and conducive to physical activity. Parental educations may also play a role. Single parent home environment is also related to obesity. Children from single parent tend to eat fewer meals but more snacks (Golan and Crow, 2004).

Children who eat more meals with the family at home tend to have healthier eating habits. However, in recent years eating has been taking place outside of the home environment more frequently. Meals eating outside of the home, such as in fast food venues or restaurants tend to higher in fat and energy content (Hayons, 2008). Another variable related to the home environment that has been found important in increasing the prevalence of obesity is the availability and utilization of technology that promotes sedentary behaviour (e.g. watching television, playing videogames).
In particular, television viewing has been linked with the development of obesity. Parents’ attitudes and behaviours towards eating and physical activity can also have a significant effect on those of their children. Parental disordered eating behaviours, such as food restriction and disinhibition while eating are often mirrored in their children’s eating habits. The research demonstrates that parents modeling on eating and exercise behaviours impact children’s habits (Benton, 2004).

Parents who restrict their child’s access to foods or otherwise impose strict limits on their child’s eating may be inadvertently encouraging habits that lead to increased risk of obesity (Golan & Crow, 2004). Studies have shown that overweight girls eat more in the absence of hunger than leaner counterparts, whose mother place restriction on their eating, as well as peers than those whose mothers do not place restrictions on eating (whether overweight or lean) (Neumark-Szainer, 2002). Parenting style like extreme disorganization, neglect, and abuse in some cases have been linked with development of severe obesity and eating disorders (Hayons, 2008). Parent’s attitudes towards their child and weight may also have an impact on the child’s eating behaviour and weight. Children who receive negative comments regarding their weight at home or who receive their weight as being very important to their parents tend to engage more in dieting and unhealthy weight control behaviours. These behaviours, in turn, increase the risk for development of obesity and eating disorders.

**Familial Factors**

The risk of becoming obese is greatest among children who have obese parents (Dietz, 1983). This may be due to powerful genetic factor or to parental modeling of both eating and exercise behaviour, indirectly affecting child’s energy balance.

**Social Factors**

Cultural influence and socio-economic pattern have a strong influence on the prevalence of obesity. The first evidence of the influence of social factors came from Midtown Manhattan Study (Moore, Stunkard, and Srole, 1962). The Ten State Nutrition Survey
(1972) showed that there were significantly more obese in lower socio-economic groups. In a study Musaiger and Ansari (1992) found that age, education, employment, marital status, family size, and practicing exercises before joining the fitness programme had a significant association with obesity.

Obesity carries a social stigma (Allon, 1976). This was most clearly shown by the studies with children and adolescents who were asked to express a preference for various forms of disability including obesity (Goodman, Richardson, Dornbush, and Hastrof, 1963). In all cases the obese child was liked least.

**Media:** The media has a powerful influence on children’s eating behaviour (Mahan & Pees, 1984). A sedentary lifestyle begins to emerge with hours spent on watching television rather than on physical activities. They want to do less outdoors and end up spending more time indoors (Goulart, 1985).

**Peer Influence:** Another influence on eating behaviour is peer pressure. The fast food restaurants are common ‘hang out’ place for teens. The meals as associated with these ‘hang outs’ are high in calories, fat and sodium. Results of researches have pointed out that obesity can be ‘socially contagious’, meaning that people tend to eat as their friends and family do. Researchers found that a person has an increased chance of becoming obese if their social network was obese. Friends appeared to influence each other to obesity (Trest, Kerr, Ward, & Pale, 2001).

**Changing Children’s Food Habit:** Nowadays children are less active, eat more processed food, and have poorer eating habits than ever before. Kids today are suffering from an energy gap, meaning they take in more calories than they burn through growth and daily living.

Because of convenience packaging, school lunches and maladaptive lifestyles relating to food on the part of parents and other family members, children are taking in too many foods, while fruits and vegetables and fibers are not consumed sufficiently. They are consuming high quantities of fatty foods, too much refined sugar, too much caffeine, and too much processed and preserved food.
Nutritional Factors

Manipulation of diet can produce obesity in two ways: by changing the frequency of eating or by changing the composition of diet.

1) Frequency of Eating: The frequency of food composition plays an important role in the genesis of obesity. It is known that taking one meal per day as opposed to two or three has metabolic consequences independent of calorie intake. Epidemiological studies have shown a clear negative relationship between number of meals and obesity: the fewer the meals, the greater the tendency towards the obesity (Fabray, Hejda, Cerney, Osanoova, and Peacher, 1966).

2) Composition of Diet: The calorie intake of lean subjects was the same as those of overweight subjects for all ages and both sexes. Thomson, Billeweiz, and Passmore (1961) also reported that calorie intake does not rise with body weight. Obesity can occur only as a result of energy intake that is excess of energy expenditure. In a study, Shah and Robert (1991) examined the studies that investigated food intake, physical activity, basal metabolic rate, and thermogenesis etiology. Energy intake appears to be only weakly related to obesity but diet contribution especially dietary fat may make significant contribution to body weight.

3) Disturbed Pattern of Eating: Obese teenagers often have disturbed patterns of eating. Some of the common ones are listed below:

(i) Consumption of an imbalance of high energy and low nutritious foods.

(ii) Susceptibility of eating cues unrelated to physiological needs.

(iii) Guilt related to eating under any circumstances.

(iv) Lack of understanding of bodily needs for nourishment.

(v) Unwillingness to eat with others, including family members.
Psychological Factors

Two types of obesity have been identified: reactive and developmental. The reactive obesity results from ingestion of excess food as an emotional reaction to the situations in the environment. The developmental obesity begins in infancy and caused by a fundamental feeling of rejection by mother towards her child. The following psychodynamic causes have been considered to be responsible for overweight and obesity.

A lack of coping skills: This means that there is an inability to manage life in a practical way. Often there is an inability or lack of skill to deal with an emotion, to process it, to work with and to cope with it. Individuals with eating disorders only know how to deal with their problems through food and exercise.

They lack confidence: These individuals can be quite high functioning in other areas of their lives but they are not confident about their bodies. They feel particularly threatened in situations which require that they look physically good. There is a poor body image and the body image itself is often distorted. All emotions may contribute to, or be the result of the eating disorder. For example, depression, anger, boredom, emptiness, loneliness feeling, devalued, helpless, inadequate, stressed etc. may cause or be the consequences of the eating disorder.

Physical Health Risks of Childhood Obesity

Obesity beginning in childhood is linked to many other diseases and ailments in adulthood including bone and joints problems, sleep apnea, infertility, asthma, eye disorders, diabetes and stroke. Many obese children suffer from hypertension, gallbladder disease, osteoarthritis, and menstrual irregularities in their youth. Children with obesity are nine times more likely to have persistent high blood pressure. High blood pressure in childhood is the strongest predictor of adult high blood pressure, significantly increasing the risk of adult cardiovascular disease. Sleep apnea is associated with depression, and memory, learning and concentration problems.

Overweight children as compared to children with healthy weight are more likely to develop many health problems such as high
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cholesterol and high blood pressure associated with heart disease in adults. Type-2 diabetes has increased dramatically in overweight children. Sensory integration dysfunctions are fast becoming a mainstream problem. Inactivity prevents kids from proper neurological development. The neurological system is primitive at birth and requires stimulation to develop. If stimulation does not occur, normal development does not take place, and normal adequate responses not achieved. Children who are overweight by the age of 8 are more likely to become morbidly obese in adulthood. Obesity in childhood and adolescents contributes too many serious physical and emotional consequences. It is estimated that at least 61% of young people who are overweight have at least one additional risk factors with heart disease, high blood pressure are high cholesterol (Fender-Scarr, 2008). A number of studies have shown that overweight children become overweight adults with a five to nine times increase in adult obesity for individuals obese at age 9 to 13 years (Mirza, 2008). Adult obesity is associated with significant morbidity, including hypertension, Type-2 diabetes mellitus, hyperlipidemia, hyperuricemia, some forms of cancer (Harlan, 1993; Power et al. 1997). Obesity tends to “track” throughout life, meaning its presence at any age will increase the risk of persistence at subsequent ages (Power et al., 1997; Whitaker, Wright, Pepe, Seidel, & Dietz, 1997).

The persistence of obesity into adulthood depends on several factors, including the age at which child becomes obese, the severity of disease and the presence of obesity in at least one parent. Overweight in a child under three years of age does not predict obesity, unless at least one parent is also obese (Whitaker et al. 1997). After age three, however, the likelihood that obesity will persist into adulthood increases with the advancing age of the child, is higher in children with severe obesity in all age groups (Whitaker et al. 1997). After an obese child reaches six years of age, the probability that obesity will persist exceeds 50% (Whitaker et al. 1997) and 70 to 80% of obese adolescents will remain so as adults (Epstein, Wing, & Valoski, 1985; Malina, 1993). Obese children have also increased average blood pressure, heart rate and cardiac
output when compared to non-obese peers (Mc Murray, Harrel, Levine, & Gansky, 1995). Because they carry excess weight obese children are at increased risk for orthopedic problems. These include tibial torsion and bowed legs, slipped capital femoral epiphysis and symptoms of weight stress in the joints of the lower extremities (Williams, Companaro, Squillace, and Bollelloa 1997; Goldman, 1979). Obese children are much more prone to skin disorders than are non-obese children; especially in deep skin folds are present. These disorders include heat rash, intertigo, monilial dermatitis and acanthosis nigricans (Williams et al., 1997, Goldman, 1979).

Psycho-Social Correlates of Obesity

Obesity is generally considered as ugly, shameful and disgraceful. One is usually viewed as self-indulgent and lacking self-discipline and control. Obese child exhibit a disturbed body image which encompasses the inner mental picture of one’s body including emotional feelings and attitudes.

Social Stigma: One of the most significant consequences of being overweight or obese child is the stigmatization and discrimination he or she often faces at school, in play groups and after school related activities and at times in the home (Price & Peejak, 2003; Carr & Friedman, 2005). This was first brought to light when Richardson (1961) set out to look at the stigmatization of handicaps and found that children stigmatized overweight children, they consistently ranked overweight child as less desirable to be a friend than a child with a broken leg, a child in a wheelchair, a child with a hand missing, and a child with a disfigured face.

Psychologists have conceptualized stigma as the possession of a trait either ascribed (from birth such as race) or achieved (a trait someone acquires later in life). Researchers generally agreed that overweight related stigma is both an ascribed and achieved trait. There are numerous consequences for both adult and children who are stigmatized (Jaffe, 2008). Link and Phelan (2001) conceptualized stigma as a combination of being labeled, stereotyped and separated from the rest of the society, in addition to losing status, and being a victim of discrimination. Once a person is labeled as ‘fat’, he or she
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is also stereotyped as being lazy, sloppy, and ugly. This is particularly harmful for children who are in their formative years. Children’s self-concept starts to form at a very young age and they inevitably internalize the fat label and the stereotypes with which it is associated. Therefore, their confidence, sociability, and grades often suffer, leading overweight children onto a path of disadvantage and discrimination.

In the current socio-cultural milieu obese individuals are seen to be devalued in virtually all social context. This results in obese persons enduring substantial stigmatization and discrimination. The stigmatizing experiences were positively associated with depression, general psychiatric symptoms, and body image disturbance and negatively related to self-esteem (Friedman, 2002). This stigmatization contributes to poor mental health adjustment.

Today, a person having excessive body fat can encounter many disadvantages in society. For instance, upon first impression, many people assume that an obese individual is lazy, uncontrolled, and unmotivated.

Distorted Body Image: Childhood obesity has been demonstrated not only as impacts on physical health but also on the mental health of the affected children. The psychological effects of childhood obesity have been well studied over the past several decades. One particular focus of research has the area of body image (or how children view their own bodies in the context of feedback receive from their social community and/or environment) and how body image relates to overall health among children with overweight. Body image has been widely researched in children, particularly among girls, owing to prior concern about weight related obsessions and dieting behaviours in the population (Huang, 2008). Several studies have shown that girls are more likely than boys to exhibit body dissatisfaction. Body image disturbances generally fall into two categories: body size distortion, the individual has an erroneous perception of his/her body size and body dissatisfaction, which relates to the cognitive and attitudinal aspects of the individual’s body image. Body image has been correlated with psychological distress and depressive disorders. Research with obese individuals
suggests that obese men and women experience higher level of depression and other mood and anxiety disorders than individual with normal weight. Lower levels of self-esteem are also associated with obesity (Al-Subaie, 2000). Since body image is an important concept, perhaps movement can be made to the other areas of self-concept such as family, social identity and personal concept of selfhood (Stein, 1987). Those who were more dissatisfied with their body shape had high depression score (Al-Subaie, 2000).

**Personality Characteristics:** Number of researchers has examined the personality characteristics associated with obesity. The obese often experiences social and psychological difficulties such as feeling of considerable social anxiety, alienation, low self-worth, and behavioural immaturity (Craddock, 1973). Nappa and Hallistron (1981) suggested that there was a positive relation between illness, depth of depression and weight gain. A larger proportions of obese boys reported that they did not like school, were more absent from school, had been exposed to more violence, more somatic and psychological symptoms and suicidal attempts (Berg, Simonsson, & Ringvist, 2005).

**Self-Esteem:** A close relationship has been demonstrated between weight and self-esteem in childhood. Low self-esteem is associated with obesity (Barnow et al., 2003). Drive for fitness and societal pressure to achieve the ideal, but unrealistic body size has reportedly been extended to children as young as 8 years old. Such pressures have caused anxiety regarding the body weight in children and may influence them to base self-worth on their weight. Factors such as weight that influence self-esteem have been found to be critical contributors to the child’s all round development. Low self-esteem is associated with elevated levels of loneliness, sadness, nervousness, and increased likelihood of initiating in high risk behaviours such as smoking, sexual promiscuity and alcohol consumption. With rapid increase in childhood obesity, it is especially important to understand the psycho-social effects of weight on children. Many overweight children and adolescents are believed to be at particularly high risk for developing low self-esteem and consequently associated developmental risks.
Negative attitudes towards overweight children, the pressure to be thin, and high levels of peer teasing and rejection that can accompany obesity may lower self-evaluation putting overweight children at a higher risk for developing significantly low levels of self-esteem. Other factors associated with obesity, such as decreased level of physical activity, increased level of distress, or poor home environments may also be responsible for lower self-esteem level in obese children.

Anxiety: Obese people have 25% increased risk for developing anxiety disorder (Juturu and Sriramoju, 2008).

Depression: Epidemiological data suggest an association between obesity and depression. Extreme obesity was associated with increased risk for depression across gender and racial groups (Dong, Sanchez, & Price, 2004). Whether depression leads to obesity or obesity causes depression is not clear. Obesity and depression are two major diseases which are associated with many other health problems. Pine et al. (2001) concluded that depression in childhood is positively associated with BMI during adulthood. In spite of the inconsistent findings, it is overall believed that psychological distress caused by obesity may lead to depression. In a recent prospective study (Goodman & Whitaker, 2002) childhood depression was found to be associated with an increase body mass index in adulthood.

Berg, Simonsson and Ringgvist (2005) compared the life style and health aspects among obese and non-obese adolescents. Obese boys had a significantly more negative outcome. A large proportion of obese boys reported they did not like school, were more absent from school, had been exposed to more violence, more somatic and psychological problems, suicidal thoughts and attempts. Obese children had greater problem in the area of emotional development than control children.

Prevention and Treatment of Childhood Obesity

Children cannot change their exercise and eating habits by themselves. They need the help and support of their families and other caregivers. This is why it is important for parents to understand the problems and risks of obese children. Treatment of
childhood obesity starts at home. So creating new family habits around healthy eating and increased physical activity can help a child to lose weight.

A number of behaviours contribute childhood obesity, whether it is time spent in front of television or computer or the type of, or amount of food eaten. This is why successful prevention and treatment of childhood obesity start at home. Obesity treatment programmes for children rarely have weight loss as a goal; rather the aim is to slow or halt weight gains so the child will grow into his or her body weight over a period of months or years.

Early and appropriate intervention is particularly valuable. Current trend in the treatment of childhood obesity focuses primarily on increase of physical activity, modifying diet, providing nutritional education and teaching self monitoring and stimulus control procedure.

Conclusion

The prevalence of childhood obesity has risen dramatically in the past few decades. Obesity has already reached epidemic proportions in many developed countries and developing world might fall into its grip very soon. Hormonal and genetic factors are rarely the cause of childhood obesity. Childhood obesity is usually caused by kid’s eating too much and exercising too little. The childhood obesity is a major concern among health care professionals and policy-makers because their health consequences have been recognized as major public health problems. It increases the risk of obesity in adulthood, and produces physical distress. Social and psychological problems are the significant consequences of obesity in children. Obesity is easier to prevent than to treat, and prevention focuses in large measure on parent education. Effective treatment of childhood obesity focuses primarily on increasing physical activity, modifying diet, behaviour modification and nutritional education.

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