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A survey on the today's world problem of increasing obesity

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Summary. *Introduction:* Obesity generally occurs when there is an imbalance between energy intake and energy expenditure. Various factors including genetic, age, sex, disproportionate intake of energy-dense foods, lack of exercise, eating disorders; depression, sleeping culture, and socioeconomic status could lead to obesity. On the one hand, while developing countries are deal with reducing malnutrition and hunger; they are also confronted with the more complex problems of obesity and overweigh. In recent years, the increasing rate of obesity in these countries was so that exceeds the number of people suffering from food shortages. Given the considerable prevalence of obesity, it is predicted that more than 2.3 billion people worldwide will be affected by obesity by 2015 (1). Respiratory failure, asthmatic attacks, gall stone, varicose veins, atherosclerosis, high blood pressure, high cholesterol, heart stroke, Reproductive Disorders and mental illness, are among the many complications of obesity (2, 20). *Results:* Given the importance of infant obesity in adult obesity, parental education is necessary for improving the diets of infants and avoiding urging to rapid weight gain in infants less than one year of age, since the urge to increase the volume of baby's food can bring excessive weight gain and obesity in early childhood. On the other hand, drinking enough water is also helpful in preventing false appetite and obesity in children. Behavior and environment play a large role in overweight and obesity that are also the greatest areas for prevention and treatment actions. Add meals, from 3 to 5 servings, would cause increase the metabolism. The best method for fast slimming is to upturn the extended meals along with prolonged chewing. *Conclusion:* it can be stated that the best and most consistent way toward reducing weight to an ideal weight is achieved through appropriate life style, engage in physical activity and eat a healthy diet.

Key words: obesity, childhold obesity, diet

Introduction

Definition and causes of obesity

Generally Overweight and obesity occur when there is an imbalance between energy intake and energy expenditure (24). This involves eating too many calories without getting enough physical activity. There are a variety of other factors that play a role in obesity including genetics, age, sex, improper diet, eating disorders, hypersomnia, depression, culture, and socioeconomic status (5).

The immediate cause of obesity is net energy imbalance. The fundamental cause of obesity is presumably a combination of the organism's genes and environment (36). Increased urbanization and industrialization in many countries, along with nutritional and behavioral changes towards consumption of high fat and energy foods, lack of physical activity and lack of supportive policies in sectors such as education, health and environment planning leads to increasing prevalence of obesity in the populations and high occurrence of cardiovascular diseases, type II diabetes, and some cancers occurred parallel to this increase in the past thirty years (14).

There is also a paradox of nutritional status in the world, particularly in developing countries. While

these countries are confront with reducing malnutrition and hunger they also faced with the problems of obesity and overweight, so that the overweight and obesity are now on the rise particularly in urban settings (6). Overweight and obesity are linked to more deaths worldwide than underweight (5). In recent years the number of people suffering from obesity exceeds from nutritional deficiency in these countries.

The incidence of overweight and obesity could indirectly lead to the neglect of the deficiencies of vitamins and micronutrients. These major health problems namely hunger, obesity, and lack of vitamins and nutrients, all have a common solution known as "appropriate nutrition".

Since there are different scales of measuring obesity in many areas, the comparison between the prevalence of obesity in various countries is somewhat difficult. This issue has been partially resolved by the classifications provided by the World Health Organization (9). The incidence of overweight individuals is calculated roughly through body mass index (BMI) that defined as a person's weight in kilograms divided by the square of height in meters (kg/m^2). The weight of a person considered normal if the result of this equation was "between" 18.5 to 24.9. Overweight is defined as a BMI of 25 or higher; obesity is defined as a BMI of 30 or higher. There are also different degrees of obesity. The results between 30 to 35 meaning as "grade 1 obesity ", between 35 to 40 meaning as "grade 2 obesity" and above 40 indicates obesity (15).

Abdominal obesity is defined as excessive abdominal fat around the stomach and abdomen area.The severity of abdominal obesity is determined by taking waist and hip measurements. The absolute waist circumference (>102 centimetres in men and >88 centimetres in women) and the waist-hip ratio (>0.9 for men and >0.85 for women)[19] are used as measures of central obesity (3) In Iranian population the waist circumference greater than 95 cm has been considered as measure of abdominal obesity. In Tehran it is reported that 66% of women and 32% of male population above 20 years old are suffering from obesity (16, 1). Researchers have been shown that abdominal obesity seriously endangering the health of a person, and it has now more complications than obesity itself (17). There is a strong correlation between abdominal obesity and cardiovascular as well as other metabolic and vascular diseases (15)

This type of obesity is caused by several factors such as sedentary lifestyle. Women are less engaged in work environments and have more access to food. In addition, the hormonal status is an important factor in getting women to gain weight. Puberty, pregnancy, childbirth and breastfeeding cause changes in the levels of hormones in women. In obese men, abdominal subcutaneous fat is greater. This type of obesity is called the central type, torso, male type or apple-shaped obesity. In women fat accumulates in the lower abdomen and pelvis, and thighs. This type of obesity called peripheral obesity, women–type or pear-shaped obesity (1).

Complications of Obesity

Research has shown that as the weight increases to reach the "overweight" and "obesity," the risks for the noncommunicable diseases include cardiovascular risks (mainly heart disease and stroke), hypertension, dyslipidemia, endothelial dysfunction, type 2 diabetes mellitus and impaired glucose tolerance, acanthosis nigricans, Liver and Gallbladder disease, hepatic steatosis, Gynecological problems (abnormal menses, infertility), premature puberty, hypogonadism and polycystic ovary syndrome, Sleep apnea and respiratory problems, orthopedic complications, cholelithiasis and pseudotumor cerebri increases (20). Overweight and obesity are associated with increased risk for many types of cancer, including cancer of the breast, colon, endometrium, esophagus, kidney, pancreas, gall bladder, thyroid, ovary, cervix, and prostate, as well as multiple myeloma and Hodgkin's lymphoma (32).

It is noteworthy that men who have more body fat in the waist area may be at higher risk of stroke. Research shown that excess body fat distribution is also an important factor.

According to Medline Plus, a study showed that a People with excess fat located in the abdominal region, were more vulnerable to sudden death from a ruptured cerebral artery than who had a more proportional distribution of body fat (5).

It is likely that abdominal fat is a serious threat to health because it is associated with increased blood pressure, elevated blood cholesterol (LDL) and deficient sensitivity to the insulin (18).

Obesity is the main cause of cardiovascular and brain disease, and also can provide the ground for the development of diabetes.

Other causes of obesity

Other causes of obesity include age, gender, activity level, economic status, medications, genetic factors, disease, and neglect of fine food volume. Below a description of each of the factors is presented separately (6).

Activity's level

Caloric requirements increase with increasing levels of activity. Physical activity not only decreases the appetite in obese individual but also increases the body's ability to metabolize and use of materials, particularly fats, as energy source. Today, it is believed that low levels of physical activity during the past 25 years have been the main cause of the rising obesity in recent years (3).

Economic status

Economic status has an effective role in the prevalence of obesity, so it seems to be more prevalent in developing countries, and countries with lower economic status (5).

Eating detritus

It is noteworthy that, frequent eating detritus could be one of the causes of obesity. Many overweight people do not eat a full meal, or have a lack of time to eat. But instead, they used frequently of snacks throughout the day. These small snacks usually abundant with calories are also among the causes of unaware obesity.

Neglect the mass of food

Neglect the mass of food is another cause of unconscious obesity. Some people gain weight when they are mistaken in the estimation of the volume of their consumed food. Some people gain weight when they are mistaken in their estimation of the volume of foods. In other words despite the high volume of their daily use, when they are asked about their foods they do not remember many of foods. On the other hand, some people do not know about the food calories and fat of the action, which results in unaware obesity.

Drugs

Many drugs have been reported to play a role in weight gain; These effects may be direct, such as contraceptives and steroids drugs or indirect, such as some antidepressants and anti-anxiety drugs that cause drowsiness and inactivity might lead to a reduction in energy consumption. The effects of some medications for inflammatory diseases, epilepsy, and mental health problems have been proven in increasing the appetite, deceleration of metabolism, and weight gain and obesity.

Diseases

when the obesity arose after an illness, it is called secondary Obesity. This type of obesity is treated by treating the underlying disease. Secondary obesity may occur secondary to diseases such as endocrine diseases, hypothalamic disorders, brain tumors or brain damage during surgical procedures. Some illnesses may lead to obesity or weight gain that may include Cushing's disease, and polycystic ovary syndrome. An underactive thyroid gland, leads to reduced thyroid hormones which have an important role in the metabolism of nutrients in the body that results in is storage fat in the body and consequently obesity. Other diseases such as neurological disorders, muscle's, bone and joint diseases could indirectly leads to obesity by reducing the activity. Sex hormone disorders, whether in men or women, may lead to obesity by disrupting the body's metabolic balance (2).

Genetic factors

Science have been shown that genetics play a role in obesity. Genes can directly cause obesity in disorders such as Bardet-Biedl syndrome and Prader-Willi syndrome. Genes and behavior may both be needed for a person to be overweight. In some cases multiple genes may increase one's susceptibility for obesity and require outside factors; such as abundant food supply or little physical activity.Preliminary studies on the role of genetics in obesity estimated it about 66 to 80

percent, and studies on twins showed genes play a role in causing obesity in about 50 to 70 percent.

Gender

Gender is also an important factor in the development of obesity. BMR (Basal Metabolism) is higher in men than women and so they need more calories to meet their basic energy needs. Basal Metabolism is higher because men have a greater muscle mass. In addition, the rate of metabolism in postmenopausal women reduce significantly and so many women gain weight after menopause (3).

Age

age especially around the rages of 60-50 years in developed countries and 40 years in developing countries, is associated with weight gain in both sexes. As a general rule the rate of metabolism and the calories needed to maintain a constant body weight decreases with ageing. For this reason, many patients have stated that although they are eating the same foods, had no increase in the amount of food consumed, and level of physical activity such as past, but their weight is still increasing. In other words, the calories needed to maintain a constant weight has a reduction despite the similar amount of food and activities (2).

Childhood obesity

Child obesity is one of the most significant pediatric public health concern, obese child are more at risk for adult health problems such as cardiovascular disease, high cholesterol or high blood pressure, heart disease, type 2 diabetes, stroke, several types of cancer, osteoarthritis (25) and are more likely to have prediabetes, a condition in which blood glucose levels indicate a high risk for development of diabetes (28, 29). Children and adolescents who are obese are at greater risk for bone and joint problems, increased risk of fractures, sleep apnea, and social and psychological problems such as stigmatization and poor self-esteem (24, 25 ,30).

The childhood obesity epidemic is a world health crisis. Studies show that approximately one in five children are overweight or obese by the time they reach their 6th birthday. Overweight and obesity are now on the rise in low and middle-income countries, particularly in urban settings. More than 30 million overweight children are living in developing countries and 10 million in developed countries (25).

Studies show that Between 1980 and 2001, the prevalence of overweight infants under six months almost doubled, from 3.4% to 5.9%.

Studies on neonatal obesity have shown that babies who become overweight under age 1 have higher risk to develop obesity in preschool's age. One study showed that children who became obese as early as age 2 were more likely to be obese as adults (31-34). This shows the importance of correct eating habits from birth.

According to one study done at Harvard University, the risk of children become overweight or obese by the time they reach their 3th birthday was 40% greater in children who were heavier at birth or had fast weight gain up till 6 month olds. Interestingly, Excessive weight gain during infancy increases the risk of develop obesity in later development period more than being overweight at birth. It is shown that babies with rapid growth in the first few months and even perhaps the first days of postnatal life who become overweight under 1th birthday have a increased risk of develop obesity at preschool's age. Although obesity at 3th years of life does not necessarily means obesity in adulthood, but it certainly raises the risk.

New studies shows that despite numerous warnings about the adverse consequences of obesity, yet many parents do not take seriously the importance of this complication. Each year, the number of obese children is increase despite the fact that obesity has many adverse outcomes for children in later years. Obese children may be at increased risk of becoming obese adults. The results of a study with reviewing the epidemiologic literature between 1970 and July 1992, shows that about a third (26 to 41%) of obese preschool children were obese as adults, and about half (42 to 63%) of obese school-age children were obese as adults. For all studies and across all ages, the risk of adult obesity was at least twice as high for obese children as for non obese children. The risk of adult obesity was greater for children who were at higher levels of obesity and for children who were obese at older ages (19).

The life-threatening consequences of childhood obesity epidemic create a critical call for action. In

the search for a culprit for this epidemic, researchers and the lay media tend to focus on factors that directly influence energy balance, like exercise and sugar sweetened beverages. Less attention is paid to hidden factors that regulate a child's behavior, rendering them more susceptible to poor dietary habits or sedentary lifestyle.

Despite much publicity in countries in order to prevent children from becoming obese, still some parents believe that child obesity is a sign of health, and try to increase the weight of their children in different ways. In addition, many busy parents do not have enough time to monitor their children's nutrition (37). In many schools, students are not provided with proper nutrients and food supplies largely lack the quality and nutritional value.

Numerous reports suggest that children are not meeting daily recommendations for physical activity, and that children spend 70% (10) to 87% (11) of their time in early care and education being sedentary, i.e., sitting or lying down. Excluding nap time, children are sedentary 83% of the time (11). Children may only spend about 2% to 3% of time being moderately or vigorously active.(Preventing Childhood Obesity in Early Care and Education Programs)

Studies have been shown young children who watch TV have poor diet quality, higher intakes of sugar-sweetened beverage and lower fruit and vegetable intakes (8). Children are exposed to extensive advertising for high-calorie and low-nutrient dense foods and drinks and very limited advertising of healthful foods and drinks during their television viewing. Television advertising influences the food consumption of children two- to eleven-years-old (9). .(Preventing Childhood Obesity in Early Care and Education Programs)

The prevalence of obesity in children has increased over the past 20 years, so the prevalence of obesity among American children has doubled and nearly 1.3 percent of them are obese or overweight. Unfortunately, the prevalence of childhood obesity in our country has grown dramatically in recent years. As we know, the obesity epidemic is associated with health threatening problems, such as increased risk of heart disease, diabetes and cancer (4).

Along with the effects on our children's health, childhood obesity imposes substantial economic costs. Each year, obese adults incur an estimated $1,429 more in medical expenses than their normal-weight peers.5 Overall, medical spending on adults that was attributed to obesity topped approximately $40 billion in 1998, and by 2008, increased to an estimated $147 billion.6 Excess weight is also costly during childhood, estimated at $3 billion per year in direct medical costs.7

The status of prevalence of obesity in World and Iran

In 2010, more than one third of children and adolescents were overweight or obese (22). Childhood obesity has more than doubled in children and tripled in adolescents in the past 30 years (22, 23). The percentage of children aged 6–11 years in the United States who were obese increased from 7% in 1980 to nearly 18% in 2010. Similarly, the percentage of adolescents aged 12–19 years who were obese increased from 5% to 18% over the same period (22, 23) and There is no indication that the prevalence of obesity among adults and overweight among children is decreasing (35).

According to studies, the prevalence of obesity will double by 2030 and currently 18% of residents are obese in developing countries.

Some WHO global estimates from 2008 follow. More than 1.4 billion adults, 20 and older, were overweight. Of these overweight adults, over 200 million men and nearly 300 million women were obese. Overall, more than 10% of the world's adult population was obese.

Recent figures show the difference in the prevalence of overweighting and obesity in different countries of the world. Based on these statistics, the prevalence of obesity ranges from less than 5% in China and Japan and some African countries to 93/5% in Samoa. In these figures, the islands of Kiribati (81.5%), America (66.7%), Germany (66.5%) and Egypt (66%) are in the next ranks. Bosnia and Herzegovina, New Zealand, Croatia and the UK are among the other 10 obese countries of the world. It is estimated that 13% of Canadian men and 14% Canadian women, 10 to 20 percent of European men and 10 to 25 percent of European women, 9% of Australian men and 11 percent of Austral-

ian women, and 20 percent of American men and 25 percent of American women are obese. Recent statistics show that more than 58 million people in America are overweight, 40 million obese and three million suffer from severe obesity. According to statistics, 8 out of every 10 people over 25 years are overweight (18).

World Health Organization has predicted that the prevalence of severe obesity sufferers will be double during 1995 to 2025.

There is also a high prevalence of overweighting and obesity, especially in children and so it has become one of the world's problems. According to statistics obtained from 79 developing countries and some developed countries, more than 22 million of children under 5 in the world suffer from overweighting. The statistics also show a rapid increase of this condition in these populations. So that in the last thirty years the incidence of overweighting in 5 to 14 years old child in America has nearly doubled. Recent statistics show that one out of every five children of elementary school age is suffering from overweighting or obesity. According to the NHS, at the end of primary school, one out of every three children is overweight or obese. This figure is very high (8).

Iranian food intake comparison with the optimal and standards dietary announced by the World Health Organization showed that essential nutritional materials such as milk, dairy products, fruits and vegetables are low in Iranian diets. These factors have caused upsurge the rate of obesity, overweighting, short stature and stature deformities among the nation's youth (7).

Based on the results of various studies, 40% of the population above 20 years is overweight and 21 percent are obese. Also, 35 percent of the Iranian villagers above 20 years are overweight, among which 15 percent are obese.

Among the 65% of Iranian's over 20 years old, 11.2 millions in the cities and 5.2 millions in the villages suffer from overweight, and 5.9 million in the city and 2.2 millions in rural areas are experiencing obesity (2).

The World Health Organization has reported a prevalence of 54% and 70% respectively in Iranian men and women.

Diabetes and obesity are higher in cities than in rural areas and big cities than in small towns, thus incidence of the disease in Tehran is more than any other parts of the country, and the prevalence of diabetes in some provinces due to hereditary factors or habits is high.

Prevalence of overweighting and obesity in the country is 70% for people over 20 years.

Prevalence of overweighting and obesity is increasing worldwide, and some studies stated that the prevalence of obesity has doubled. Increasing obesity is not just for high-income developed countries, and its prevalence is also on the rise in developing and poor countries. The use of the word "Globesity" in some of the report indicates the worldwide severity of this problem. According to the latest statistics provided by the World Health Organization, one out of every three people worldwide is suffering from overweight, and in contrast, one out of ten of them are obese. According to these statistics, it is predicted that more than 2.3 billion people in world become overweight by 2015. Since the obesity measurement scales are different in many areas, comparing the prevalence of obesity in various countries is somewhat difficult. However, this issue has been partly resolved by classification provided by the World Health Organization (3).

Results

Nowadays, obesity and overweighting have become a major problem and millions of people around the world suffer from it. Aside from inappropriate appearance, Overweight and obesity can also lead to certain diseases and are the fifth leading risk for global deaths. According to WHO figures, At least 2.8 million adults die each year as a result of being overweight or obese, 44% of the diabetes burden, and 23% of the ischaemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity.

50 to 70 percent of obesity cases are associated with improper diet and environmental factors. Obesity can be prevented by improving the feeding practices, and avoiding from consuming processed, high-calorie, fried and salty foods.According to two studies, avoiding excessive feeding children during the fullness, and encouraged them to drink large amounts of wa-

ter could be very effective in controlling their weight. When children are thirsty between meals and snacks, water is the best choice. Encouraging children to learn to drink water in place of fruit drinks, soda, fruit nectars, or other sweetened drinks builds a beneficial habit. Drinking water during the day can reduce the extra caloric intake which is associated with overweight and obesity (1). Drinking water is good for a child's hydration and reduces acid in the mouth that contributes to early childhood caries (1,3,4). Water needs vary among young children and increase during times in which dehydration is a risk (e.g., hot summer days, during exercise, and in dry days in winter).

Juice should have no added sweeteners. The facility should offer juice at specific meals and snacks instead of continuously throughout the day. Juice consumption should be no more than a total of four to six ounces a day for children aged one to six years. This amount includes juice served at home. Children ages seven through twelve years of age should consume no more than a total of eight to twelve ounces of fruit juice per day. Caregivers/teachers should ask parents/guardians if they provide juice at home and how much. This information is important to know if and when to serve juice. Infants should not be given any fruit juice before twelve months of age. Whole fruit, mashed or pureed, is recommended for infants seven months up to one year of age .(Preventing Childhood Obesity in Early Care and Education Programs)

On the other hand, drinking enough water is also helpful in preventing false appetite and obesity in children (3, 2, 17).

The adults should encourage, but not force, the children to help themselves to all food components offered at the meal. When eating meals with children, the adult(s) should eat items that meet nutrition standards. The adult(s) should encourage social interaction and conversation, using vocabulary related to the concepts of color, shape, size, quantity, number, temperature of food, and events of the day. Extra assistance and time should be provided for slow eaters. Eating should be an enjoyable experience at the facility and at home.(Preventing Childhood Obesity in Early Care and Education Programs)

All children should be monitored to prevent them from eating substances that do not provide nutrition (often referred to as Pica). The parents/guardians of children who repeatedly place non-nutritive substances in their mouths should be notified and informed of the importance of their child visiting their primary care provider.(Preventing Childhood Obesity in Early Care and Education Programs)

Caregivers/teachers should promote children's active play, and participate in children's active games at times when they can safely do so.

There is solid evidence that physical activity can prevent a rapid gain in weight which leads to childhood obesity early in life.

Physical, social, and emotional habits are developed during the early years and continue into adulthood; thus these habits can be improved in early childhood to prevent and reduce obesity and a range of chronic diseases. The physical activity promoted healthy weight, improved overall fitness, including mental health, improved bone development, cardiovascular health, and development of social skills.

Because of public concern about overweighting, some false advertising is done in the field of weight loss that unfortunately resulted in the tendency of people for use methods such as illegal drugs and non-standard devices.

Indeed, Promoting knowledge and awareness in the community is one of the ways to combat the spread of such illegal and dangerous practices which is among the critical duties of the experts and media in this field.

It is noteworthy that the current criteria for the use of medication in consultation with a specialist, is BMI greater than 30 or greater than 27, if there was a disease.

It is noteworthy that the current criteria for the use of obesity medication in consultation with a physician are BMI greater than 30 or BMI greater than 27 if there was associated disease. Body mass index (BMI) over 40, or body mass index between 35 and 39.9 in the presence of comorbidities, makes it an excellent option for "Bariatrics" surgeries (3, 2, 17).

Bariatrics Surgeries that are performed in order to weight lose are generally the next step for people who even after non-surgical treatments are suffering from obesity problems (5, 6).

However, it should be noted that these surgeries can never replace a healthy diet and physical activity.

Indeed, the success of this operation has been directly related to nutrition and physical activity.

Behavior therapy is a useful adjunct to diet and physical activity. The clinician should assess patient motivation and readiness to implement the weight management plan and take steps to motivate the patient for treatment. Behavior strategies to promote diet and exercise should be used routinely, as they are helpful in achieving weight loss and maintenance. (20).

It should be noted that in the diets that people develop without expert opinion usually there is the removal or reduction of a meal, such as breakfast. A person with elimination diet will be affected by hypoglycemia, decrease in daily efficiency and even aggression and try to compensate for it by overeating at the next meal. Moreover, reduction in the meals can lead to malnutrition, because a person does not consume enough of the required nutrients.

The best approach is a diet in which all the nutrients to be supplied. This plan will be established by experts and nutritionists.

It is worth noting that one of the causes of obesity is about changes in kinds of jobs. Many people work all day without moving, sitting behind a desk or office computers and are doing their jobs.

Among the solutions to solve this problem is a daily regular walk for 20 minutes to 30 minutes a day. This requires the provision of walking in the park and installation of appropriate sports equipment in collaboration with the municipal agencies (4, 7).

As a recommendation for the prevention of abdominal obesity it must be said that the way to combat obesity, a combination of healthy diet and physical activity, is also a way to fight abdominal obesity.

Research has shown that regular walking can decreases 7 to 10 percent of the weight of obese patients, and that their abdominal obesity can be controlled. It is noteworthy that many of the metabolic abnormalities of obesity could be controlled by this amount of weight loss.

Nutrition experts always recommend the use of food containing complex carbohydrates. In contrast, it is recommended not to use sweets or sugars that are quickly absorbed and converted into fat tissue in the body's metabolism.

However, in principle we should try to reduce eating rate, eat more slowly to satiety signals has a chance to get the brain, and those with abdominal obesity must eat the first meal of salad and vegetables, so the large size of their stomachs to be filled up and then proceeded to eat the main course.

Conclusion

It can be stated that the best and most consistent way to reduce weight and an ideal weight is through diet and exercise (4, 6). Supportive environments and communities are fundamental in shaping people's choices, making the healthier choice of foods and regular physical activity the easiest choice (accessible, available and affordable), and therefore preventing obesity. Providing people a healthy lifestyle. The food industry can play a significant role in promoting healthy diets by reducing the fat, sugar and salt content of processed foods and providing healthy and nutritious choices to consumers.

Suggested uses of standards for preventing childhood obesity:

- **Families** can join in planning programs to prevent childhood obesity and encourage healthy living. Families may also want to incorporate some of these same strategies and practices at home.
- **Caregivers/Teachers** can develop practices, policies, and staff training to ensure that children's programs include healthy, age-appropriate feeding, abundant physical activity, and limited screen time.
- **Health Care Professionals** are able to assist families and caregivers/teachers to choose feeding plans, develop active playtimes, and limit screen time that encourage children's development of healthy habits.
- **Regulators** have evidence-based rationale to develop regulations that support the prevention of obesity and promote healthy habits.
- **Early Childhood Systems** can build integrated nutrition and physical activity components into their systems that promote healthy lifestyles for all children.
- **Policy-makers** are equipped with sound science to meet emerging challenges to children's development of lifelong healthy behavior and life styles.

While these statistics are striking, there is much

reason to be hopeful. There is considerable knowledge about the risk factors associated with childhood obesity. Research and scientific information on the causes and consequences of childhood obesity form the platform on which to build our national policies and partner with the private sector to end the childhood obesity epidemic. Effective policies and tools to guide healthy eating and active living are within our grasp.

For children twenty-four months of age and older, sex-specific height and weight graphs should be plotted by the primary care provider in addition to body mass index (BMI). BMI is classified as underweight (less than 5%), healthy weight (BMI 5%-84%), overweight (BMI 85%-94%), and obese (BMI equal to or greater than 95%). Follow up visits with the child's primary care provider that include a full assessment and laboratory evaluations should be scheduled for children with weight for length greater than 95% and BMI greater than 85%. School health services can meet this standard for school-age children in care if they meet the AAP's standards for school-age children and if the results of each child's examinations are shared with the caregiver/teacher as well as with the school health system. With parental/ guardian consent, pertinent health information should be exchanged among the child's routine source of health care and all participants in the child's care, including any school health program involved in the care of the child.(Preventing Childhood Obesity in Early Care and Education Programs).

Obesity generally occurs when there is an imbalance between energy intake and energy expenditure. Various factors including genetics, age, sex, improper diet, eating high-calorie, high-fat and high-sugar foods, lack of exercise, eating disorders, hypersomnia, depression and economic situation could lead to obesity.(5) Although inheritance has been suggested as a factor in obesity but environmental factors also play a significant role in obesity.

Prevalence of overweight and obesity is increasing worldwide, and in some studies it is stated that the prevalence of obesity has doubled. Increasing the prevalence of obesity is not only for high-income developed countries but its prevalence also is increased in developing and poor countries. "Globesity" used in some reports indicates the worldwide severity of this problem. According to the latest statistics provided by the World Health Organization, one out of every three people worldwide is overweight and one in ten of them are obese (8). Given these statistics, it is predicted that by 2015, more than 3.2 billion people worldwide will be overweight patients.

While developing countries are trying to reduce malnutrition and starvation, they are faced on the one hand with the more complex problems of obesity and overweighting. In recent years, increasing the number of peoples with obesity in these countries exceeds the number of people suffering from food shortages.

Obesity has many side effects including diabetes, arthritis, gout, lumbar disc, respiratory failure, asthmatic attacks, gall stones, varicose veins, atherosclerosis, reproductive disorders, high blood pressure, high cholesterol, stroke, and mental illness. Among the existing solutions to address this problem, it can be pointed out to observe proper diet and regular physical activity (10).

It should be noted that in the diets that individual develop feeding themselves without expert opinion, usually is designed with removal or reduction of a meal, such as breakfast. After excluding a meal individuals develop low blood sugar and decrease daily efficacy and even become prone to aggression, and overeaten at subsequent meals to catch it. In addition a person by reducing the consumption of meals does not consume enough of the essential nutrients and so become prone to malnutrition (1, 6).

The best diet in a scientific basis is which one that all the nutrients needed for the body to be supplied in that. This plan will be established by experts and nutritionists (12). According to those mentioned above, this issue is quite remarkable.

References

1. Must A . Morbidity and mortality associated with elevated body weight in children and adolescents. Am J Clin Nutr 2008;63(3 Suppl):445S–7S.
2. World Health Organization. Obesity and overweight. Geneva, Switzerland: World Health Organization. 2011
3. Hollar D, Lombardo M, Lopez-Mitnik G, et al. Effective multi-level, multi-sector, school-based obesity prevention programming improves weight, blood pressure and academic performance, especially among low-income, minority children. J Health Care Poor Underserved 2010;21:93–108.

4. Brown T, Summerbell C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health Research and Clinical Excellence. Obes Rev 2009;10:110–41
5. Hawkins SS, Cole TJ, Law C . The Millennium Cohort Study Child Health group. Maternal employment and early childhood overweight: findings from the UK Millennium Cohort study. Int J Obes 2008;32:30–8.
6. Galvez MP, Hong L, Choi E, et al. . Childhood obesity and neighbourhood food store availability in an inner city community. Acad Pediatr 2009;9:339–43.
7. Robinson TN, Borzekowski DLG, Matheson DM, et al . Effects of fast food branding on young children›s taste preferences. Arch Pediatr Adolesc Med 2007;161:792–7.
8. Effects of fast food branding on young children›s taste preferences. Arch Pediatr Adolesc Med 2007;161:792–7.
9. Himes JH, Ring K, Gittelsohn J, et a. Impact of the pathways intervention on dietary intakes of American Indian school children. Prev Med 2003;37:S55–61
10. Brown T, Summerbell C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health Research and Clinical Excellence. Obes Rev 2009;10:110–41.
11. Must A . Morbidity and mortality associated with elevated body weight in children and adolescents. Am J Clin Nutr 2008;63(3 Suppl):445S–7S.
12. Cachera MF, Peneau S. Stabilization in the prevalence of childhood obesity: a Rolland role for early nutrition? Int J Obes 2010;34:1524–5.
16. Hollar D, Lombardo M, Lopez-Mitnik G, et al. Effective multi-level, multi-sector, school-based obesity prevention programming improves weight, blood pressure and academic performance, especially among low-income, minority children. J Health Care Poor Underserved 2010;21:93–108.
14. Brown T, Summerbell C. Systematic review of school-based interventions that focus on changing dietary intake and physical activity levels to prevent childhood obesity: an update to the obesity guidance produced by the National Institute for Health Research and Clinical Excellence. Obes Rev 2009;10:110–41.
15. Galvez MP, Hong L, Choi E, et al. . Childhood obesity and neighbourhood food store availability in an inner city community. Acad Pediatr 2009;9:339–43.

World Health Organization. Obesity and overweight. Geneva, Switzerland: World Health Organization. 2011

17. Cachera MF, Peneau S. Stabilization in the prevalence of childhood obesity: a Rolland role for early nutrition? Int J Obes 2010;34:1524–5.
18. World Health Organization. Obesity and overweight. Geneva, Switzerland: World Health Organization. 2011
19. Do Obese Children Become Obese Adults? A Review of the Literature. M.K. Serdula, D. Ivery, R.J. Coates, D.S. Freedman, D.F. Williamson, T. Byers: Preventive Medicine: Volume 22, Issue 2, March 1993, Pages 167–177
20. Barness LA, Opitz JM, Gilbert-Barness E. 2007. Obesity: Genetic, molecular, and environmental aspects. Am J Med Genet Part A 143A:3016–3034
21. Cole, T. J. (2007), Early causes of child obesity and implications for prevention. Acta Paediatrica, 96: 2–4. doi: 10.1111/j.1651-2227.2007.00162.x
22. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of obesity and trends in body mass index among US children and adolescents, 1999-2010. Journal of the American Medical Association 2012;307(5):483-490.
23. National Center for Health Statistics. Health, United States, 2011: With Special Features on Socioeconomic Status and Health. Hyattsville, MD; U.S. Department of Health and Human Services; 2012.
24. Daniels SR, Arnett DK, Eckel RH, et al. Overweight in children and adolescents: pathophysiology, consequences, prevention, and treatment. Circulation 2005;111;1999–2002.
25. Office of the Surgeon General. The Surgeon General's Vision for a Healthy and Fit Nation. Rockville, MD, U.S. Department of Health and Human Services; 2010.
26. National Institutes of Health, National Heart, Lung, and Blood Institute. Disease and Conditions Index: What Are Overweight and Obesity? Bethesda, MD: National Institutes of Health; 2010.
27. Krebs NF, Himes JH, Jacobson D, Nicklas TA, Guilday P, Styne D. Assessment of child and adolescent overweight and obesity. Pediatrics 2007;120:S193–S228.
28. Li C, Ford ES, Zhao G, Mokdad AH. Prevalence of pre-diabetes and its association with clustering of cardiometabolic risk factors and hyperinsulinemia among US adolescents: NHANES 2005–2006. Diabetes Care 2009;32:342–347.
29. CDC. National diabetes fact sheet: national estimates and general information on diabetes and prediabetes in the United States, 2011. Atlanta, GA: U.S. Department of Health and Human Services.
30. Dietz WH. Overweight in childhood and adolescence. New England Journal of Medicine 2004;350:855-857.
31. Guo SS, Chumlea WC. Tracking of body mass index in children in relation to overweight in adulthood. American Journal of Clinical Nutrition 1999;70:S145–148.
32. Freedman DS, Kettel L, Serdula MK, Dietz WH, Srinivasan SR, Berenson GS. The relation of childhood BMI to adult adiposity: the Bogalusa Heart Study. Pediatrics2005;115:22–27.
33. Freedman D, Wang J, Thornton JC, et al. Classification of body fatness by body mass index-for-age categories among children. Archives of Pediatric and Adolescent Medicine 2009;163:801–811.
34. Freedman DS, Khan LK, Dietz WH, Srinivasan SA, Berenson GS. Relationship of childhood obesity to coronary heart disease risk factors in adulthood: the Bogalusa Heart Study. Pediatrics 2001;108:712–718.

35. Allison A. Hedley, Cynthia L. Ogden, Clifford L. Johnson, Margaret D. Carroll, Lester R. Curtin, Katherine M. Flegal. Prevalence of Overweight and Obesity Among US Children, Adolescents, and Adults, 1999-2002. JAMA. 2004;291(23):2847-2850. doi:10.1001/jama.291.23.2847.
36. Richard S. Strauss, Judith Knight . Influence of the Home Environment on the Development of Obesity in Children. Pediatrics Vol. 103 No. 6 June 1, 1999, pp. e85.
37. Lissau, T.I.A. So/rensen, Dr Med Sci , I. Lissau. Parental neglect during childhood and increased risk of obesity in young adulthood. The lancet .Volume 343, Issue 8893, 5 February 1994, Pages 324–327

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