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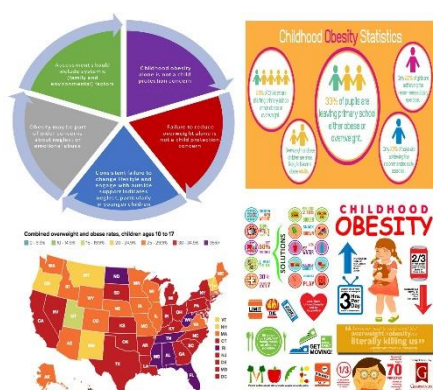
Investigating the Predictors of Overweight and Obesity in Children

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GRAPHICAL ABSTRACT

ABSTRACT

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Today, the number of obese people is increasing. This problem is considered a problem of developed and industrialized countries. It is now on the rise all over the world, where food shortages are often the main nutritional problem. In addition, reducing the age of obesity and its prevalence in children and adolescents is also very important, as obesity at this age has a greater impact on health. In many cases, adult obesity begins in childhood, and effective prevention depends on how to deal with and control childhood obesity. Obesity in childhood and adolescence, especially during the second decade of life, is a strong predictor of adult obesity. The prevalence of obesity among children and adolescents is increasing in many countries throughout the world, even in countries where malnutrition due to malnutrition is still a public health problem. Accordingly, there is a close relationship between childhood obesity and the increased risk of adult obesity and the resulting physical problems. Today, overweight and obesity is a chronic disease that has become a health problem. It is one of the most serious public health challenges of the 21st century. According to the World Health Organization, 30% of the Middle East population is overweight. Today, overweight in children has become an epidemic, and in the age group of 6-12 years, overweight has more than doubled in the last decade.

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Introduction

According to studies, the prevalence of obesity in all Iranian schools is 5-10%. Some studies in Iran revealed that the prevalence of obesity has been increasing in the last decade, so that in a study of female primary school students in Tehran, the prevalence of overweight and obesity were 13.3% and 7.7%, respectively [1]. In 2010, a study in Rasht demonstrated that, the prevalence of overweight among primary school girls and boys was 15% and 11.5%, respectively. Also the prevalence of obesity was 5% among boys and 5.9% among primary school girls [2].

One simple way to diagnose obesity is to measure a child's weight and height and compare it to standard weight and height charts. Using these charts, they gain the normal or normal weight of the child according to his height and size. If a child is heavier than 95% of children of the same age, he should be considered obese, because the child's weight is the simplest and most important indicator of the child's growth.

Proper weight not only indicates proper nutrition of the child, but also illustrates the health of the child. In the child's growth chart, which is actually a chart of the child's growth and physical development, weight measurement is considered an important factor because by measuring and determining its weight (weight gain and obesity, stability and weight loss) in the child is actually monitoring the child's health. So far, no specific cause has been identified in human obesity and no

specific cause can be considered as causing obesity in humans.

Obesity is a disease with no known cause but several factors are involved in its development. Genetic factors, endocrine secretions, psychiatric factors and environmental factors, including lifestyle, play an important role in obesity. However, the most important cause of obesity is the imbalance between energy consumption and intake.

If the energy received from the fuel of the food eaten or the energy consumed in the body that is used by activity and metabolism is equal, the energy balance is created and the person's weight remains constant. If the energy received is less than the energy consumed A negative balance is created and the person loses weight, and if the energy received is more than the energy consumed, the person is in a positive balance and becomes obese [3].

According to the US National Center for the Nutrition and Health in 2006, the increase in overweight in children could be due to the poor lifestyle habits of children and adolescents. In addition to posing a threat to the health of this vulnerable age group, these habits "put countries at risk of becoming overweight and obese over the next two decades."

The increase in the prevalence of overweight and obesity in children in developed countries is due to the lifestyle changes that are largely related to variables related to new urban lifestyles such as spending a lot of time watching TV, playing computer games, and sleep deprivation. Eating a high-fat diet and

being sedentary are some of the factors that accelerate it [4].

Recently, the rapid increase in childhood overweight and obesity has been attributed to environmental improvements. Inadequate physical activity, changes in eating habits, and environmental and environmental factors are widely associated with overweight in children and adults.

Genetic factors for early childhood obesity, eating habits such as excessive energy intake and eating junk food, lack of physical activity watching TV, obesity of parents, maternal employment, maternal literacy, socioeconomic status of the family and irresponsibility have been found. Parental resilience affects the development of childhood obesity. Children with obese parents are also at risk for obesity, which may be due to genetic effects. Many obese children become obese adults so that they are more likely to remain obese with age and the severity of obesity increases. Overweight children over the age of 15 are more than twice as likely to remain overweight as children. Years old is overweight.

The possibility of becoming obese in childhood and remaining obese until adulthood is also influenced by family history. If one parent is obese, the child is three times more likely to become obese in adulthood, but if both parents are obese, the ratio increases to 10. Obesity is familial, it can be related to genetic factors or to the impact of a similar environment. Some of these children are overweight from childhood to school. Children who, under the influence of individual and social characteristics, have a

natural tendency to store fat in the body, they are more likely than children with normal individual and social characteristics to gain weight during life [5].

Some families eat fast food several times a week, which increases the number of calories and fat they eat, which in turn leads to obesity. If parents consume a high-calorie food, their children are also encouraged to eat such foods. These environmental factors also play a role in causing obesity.



Figure 1. What is Childhood Obesity??

Many eating patterns, such as skipping breakfast, eating snacks, snacking, and the frequency with which food is eaten, and eating a variety of foods such as fast foods and soft drinks, are associated with weight gain in children. According to recent studies, the relationship between consumption of dairy foods, fruits, vegetables, cereals and snack foods and childhood obesity is scattered and contradictory. There is conflicting evidence between the number of meals and its effects on obesity. No direct relationship has been found

between the prevalence of obesity and the increased energy intake. In addition, the assessment of the role of energy consumption in the etiology of obesity has often been reported incorrectly. The results of many studies revealed that leisure physical activity is increasingly declining due to the high availability of entertainment such as television. Video and computer games. This sedentary behavior is emerging as an important component of obesity [6].

In addition, the increase in urbanization reduced the frequency and duration of children's physical activities, such as walking to school. Dietary patterns and reduced physical activity are also involved. In recent years, in Iran, as in many developing countries, on the one hand, the physical activity of children and adolescents has decreased, and on the other hand, watching TV and computer games, as well as consuming high-calorie foods have increased.

It was reported that there is a close relationship between childhood and adulthood overweight, because eating habits and physical activity patterns are established in the early years of life and continue in other periods. Problems and complications of obesity begin in childhood. Obesity is not good for children's health and its side effects start even in childhood and affect many vital organs of the body. Complications of obesity are divided into three categories: Early complications, which include orthopedic problems, asthma, nocturnal respiratory arrest, decreased ventilation of the lungs and gallstones.

Complications of the second category include risks that increase cardiovascular problems and its continuation in adulthood. The third category of complications is a long-term complication and includes atherosclerosis and colon cancer. But the most common complication of obesity is its persistence in adulthood. Obesity has short-term and long-term side effects. Among its short-term side effects, decreased self-esteem and long-term side effects include cardiovascular disease, diabetes, and hypertension. Approximately 60% of overweight people have at least one risk factor for cardiovascular disease and more than 25% have more than one risk factor.

Overweight and obesity are a major risk factor for chronic nutrition-related diseases, including type 2 diabetes, cardiovascular disease, cerebrovascular disease, some cancers, mental disorders, osteoarthritis, and an increased risk of premature death, which reduces the risk of premature death. Overall quality of life. Nutritional control, exercise and physical activity, changes in eating habits, social and family support, pharmacological interventions and surgery are very important in the treatment of obesity [7-9].

However, since the implementation of these pharmacological and surgical procedures is difficult and less successful and generally fails. Therefore, preventive measures are more important and attractive, and among them, preventive measures that are better enforceable have more priority. Although various measures have been proposed to prevent obesity, but the best and least

complication method of preventing childhood obesity is to create a proper eating pattern and habit from childhood and infancy.

Mortality rates and many side effects associated with this disease point to evidence.

It requires a clear understanding of the predictors and causes of childhood obesity that lead to the development of effective strategies to prevent obesity [10].



Figure 2. Outdoor Play: Helping to Reduce Obesity in Children

Since childhood obesity is one of the most important causes of obesity in adulthood and according to research, it is estimated that one third of pre-school obesity is half of school-age obesity and 70-80% of obese adolescents in adulthood. They will stay fat. So, childhood obesity is one of the most important challenges of this period. Thus, obesity in today's children will mean a lower quality of life in tomorrow's adults and the need for higher medical costs in the future.

Diagnosis of obesity in children is one of the principles of pediatric preventive medicine to prevent emotional, social and physical problems. Therefore, the best way to prevent obesity and its complications is to know the

predictors and control them and more attention should be paid to preventing childhood obesity because children who are overweight or obese at the age of 7 tend to maintain these conditions before puberty.

Nurses can educate, inform and introduce healthy and hygienic behaviors and habits as well as unhealthy and unhealthy behaviors and habits to change and correct behaviors and create a proper lifestyle in order to have a desirable body mass index and prevent overweight and obesity as a health problem in Community to play an important role. Although the predictors of obesity and overweight are a multidimensional concept, few studies have examined the relationship between all these dimensions and the problem of obesity and overweight, and most studies have measured the effect of one or more limited variables, such as few studies. In the field of the relationship between culture and geography with overweight and obesity has been done. However, the difference between the statistics of overweight and obesity in different countries and regions can be due to the effect of culture and place of residence on overweight and obesity, so in this study we have tried to examine broader dimensions [11].

Given this issue, and considering that 7-year-old children are the first age group to enter the new school environment, and this issue often causes changes in some of their habits and lifestyles, and primary school children are a special group in terms of social vulnerability, Constitute health and wellness. We decided to conduct this study to identify and link each of

the factors in the development of obesity and overweight in this age group and provide solutions to prevent and treat obesity, in addition to maintaining and promoting health and well-being of the community and preventing many costs. The economics of treating obesity and related diseases have taken steps to increase nurses' knowledge so that they can play an effective role in controlling and preventing obesity and overweight [12].

Weight Imbalance: Overweight and Obesity

A certain amount of fat in the body is necessary to maintain life. This amount is 18-20% in women and 15% in men. In puberty girls, it happens when their body fat level has reached a certain level to produce fat-soluble sex hormones. This amount of natural fat is known. Obesity is a word from the Latin root *Obeder* meaning very fat. In fact, obesity is a condition in which fat stores in the body increase to the point that it harms a person's health.

Overweight is also defined as a condition in which a person's weight exceeds its standard value in terms of height. Although obesity is often considered equivalent to being overweight, this is not necessarily the case. People who have a muscular body without extra fat tissue may be considered obese, or a person may be obese and still weigh normally. However, in most people, obesity and overweight are synonymous. Child weight is one of the basic criteria for assessing a child's health and development. In fact, the appropriate weight of the child indicates his

proper growth and health. Although proper weight at any age in a child indicates a child's health, but changes in it, both decreasing and increasing, indicate a health disorder.

Today, it has been found that weight gain and obesity occur due to increased energy intake, which is dangerous for human health. Unfortunately, recent findings indicate an increase in the prevalence of obesity in children worldwide. According to experts from the World Health Organization, obesity is spreading among all children in the world as a health problem and the roots of this disorder should be investigated as soon as possible [13]. According to the World Health Organization, approximately 155 million school-age children worldwide are overweight or obese. The prevalence of obesity in children has increased significantly over the last two to three decades. Today, obesity is one of the most important problems in the growth and nutrition of children and adolescents. Between 5 and 20 percent of children and 10 to 15 percent of teens in the United States suffer from obesity and overweight. This issue is still growing. In the last 15 to 20 years, the number of obese children (between six and twelve years old) has increased by about 54% and the number of obese adolescents (thirteen to seventeen years old) by about 39%. Efforts to lose weight and prevent obesity have failed [14].

Factors Related to Obesity

So far, no specific cause has been identified in human obesity and no specific factor can be considered as the cause of obesity in humans,

because several factors are involved in its occurrence. But increasing energy intake is one of the most important causes of obesity. When the energy intake is more than the energy consumed in the body, this increase in energy intake occurs in the body as stored fat and obesity [15].

In this regard, Shojaei Tehrani, quoting Park and Park (2002), also stated that obesity is a nutritional health problem that the main reason is high energy intake [15]. From a scientific point of view, all hypotheses about obesity are attributed to excessive energy consumption through food. This is a valid basis for treatment and prevention recommendations. Although obesity occurs continuously and for a long time due to increased energy intake more than the body needs, but factors such as endocrine disorders, central nervous system disorders, social factors and genetic issues also play an important role in this regard. Bahrman (2004) also believes that in addition to energy intake, environmental and genetic factors play an important role in causing obesity. Diseases are also among the factors that can affect the weight gain of children.

Genetic Factors and Obesity

Genetics is one of the factors influencing the development of obesity. Wang (2003) argues that obese parents have a significant effect on the development of childhood obesity, with the prevalence of obesity in children with both obese parents being 80%, whereas in children

born to non-obese parents. Obese is 14%. Obesity is common in families. The inheritance of body weight is similar to the inheritance of height. But its inheritance is usually not Mendelian and it is difficult to identify the role of genes and environmental factors [16].

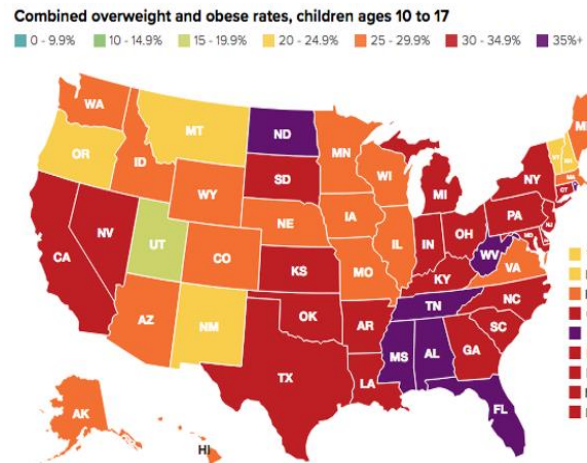


Figure 3. Study says Florida ranks 4th in nation for childhood obesity

The fact that adopted children are usually similar to their biological parents in terms of obesity and not to the parents who adopted them is a strong reason for genetic influence. Many of the neurological and hormonal factors involved in weight regulation work genetically. Early studies on the role of heredity in obesity put it at 66 to 88 %, but a more accurate estimate of the role of this factor has been around 33 %. The number of genes, factors and chromosomal markers associated with obesity phenotypes has been around more than 250 [17].

Diseases and Obesity

Diseases are also among the factors that can affect the weight gain of children. Iranzad (2002) in this regard suggests that endocrine disorders and central nervous system damage are the causes of obesity, but they are rare factors in causing obesity. In this regard, Jazayeri (2003) also suggests that endocrine disorders such as hypothyroidism and adrenal hyperplasia have an effect on obesity. But only one percent of obesity is caused by these disorders [18].

Ovarian cysts also rarely cause obesity. Wang (2003) also estimates that less than 5% of obesity cases in children occur due to underlying diseases such as hypothyroidism, elevated blood insulin levels, neurological dysfunction due to cancer, trauma, infection and vascular accidents. Aging is associated with a reduction in calorie expenditure due to a 2% gradual reduction in resting metabolism per 10 years as well as a decrease in physical activity. Basically, a certain amount of fat is essential for the production of female hormones [19].

Obesity and Pathogenicity

Obesity is important in causing many non-communicable diseases, while in the past it was only expressed as a factor associated with this disease. In 1998, the American Heart Association announced that obesity had changed from a predisposing risk factor to a major risk factor [16]. Obesity is a chronic disease that cannot be considered a condition

that only destroys a person's beauty or changes people's judgment of the person. In obese people, the mortality rate increases 12 times.

Diabetes and Insulin Resistance

Elevated blood insulin and insulin resistance are common clinical signs of obesity that increase with weight gain and decrease with weight loss. Insulin resistance is more associated with intra-abdominal fat than fat in other parts of the body. Scientists have been searching for years for a molecular link between obesity and insulin resistance in tissues such as fat, muscle and liver, but the exact mechanism of insulin resistance is not yet fully understood. With increasing severity of obesity, basal insulin levels increase, which may be due to increased insulin secretion or decreased catabolism in the liver. There is also a reduction in the number of insulin receptors in the tissues. Obesity is also a major risk factor for diabetes, and approximately 80% of patients with type 2 diabetes are obese [20].

Environmental factors and obesity

Whatever the role of genes, the impact of the environment on obesity is important and obvious. Evidence of this is the fact that famine prevents obesity, even in susceptible individuals. In addition, the recent increase in the prevalence of obesity in the United States is so rapid that it cannot be attributed to changes in gene storage. Susceptibility to obesity is effective. In industrial societies, obesity is more common among poor women, while in

developing countries most wealthy women are obese. In children, obesity is to some extent related to the amount spent watching television. Environmental factors include lifestyle behaviors. Such as eating habits, diet and activity level, watching TV, sleeping and resting [21].

Childhood OBESITY

Breastfeeding Reduces Childhood Obesity Risk

Obesity Linked to Cognitive Processing Speed in Adolescents

Prenatal Exposure to Perfluoroalkyl Substances and Body Fat in Girls

Early Antibiotic Exposure and Risk of Childhood Obesity in Latinos

Ethnic Differences in Lipid Profiles of Overweight, Obese, and Severely Obese Children

The Interplay among BMI z-Score, Peer Victimization, and Self-Concept



Figure 4. Childhood obesity declines project identifies community-based obesity strategies

Nutrition and Obesity

The relationship between nutrition and health has been studied by researchers for many years. The results of studies show that diet is not only associated with a range of diseases but is also the most important factor influencing it. Scientists believe that about 70% of diseases are directly related to diet, and the role of poor diet in many diseases, including cancer, metabolic diseases and cardiovascular and cerebral diseases has been proven. Most obese children and adolescents are usually overweight. The food they eat is equal to or

only slightly more than the food of normal children and adolescents of the same age. These children often have little physical activity. Therefore, some of their energy intake is stored in the form of fat due to excess. If this extra energy is only 50 calories a day, it will reach a significant amount after a few weeks or months and will produce a lot of weight. The way people eat and eat at any given time depends on the economic situation and customs of that community. Today, the machine lifestyle, especially in large cities where the parents of the family are socially active and responsible outside the home, has changed the way families eat [22].

In Exercise, Physical Activity and Obesity

Many epidemiological studies have shown that people who exercise regularly are healthier than those who do not. Regular exercise, about half an hour a day, three times a week, can increase to reduce diseases and deaths clearly. Whether a person's lifestyle is active or sedentary depends on several factors. The most important of these factors can be a person's culture and preferences for leisure and work. External factors include air pollution, lack of free time and lack of adequate support, which are obstacles to engaging in sports. The positive effects of exercise on health are exerted by increasing blood flow, reducing myocardial oxygen demand, maintaining and promoting joint flexibility, maintaining bone mass, increasing glucose tolerance and lowering blood sugar, increasing the HDL ratio.

In addition, regular exercise helps to control weight, lose weight and reduce body fat percentage, also reduces stress, stress and depressive symptoms. People who exercise regularly or do other sports say that exercise always makes them feel good. Exercise promotes good health by reducing the conditions created by sitting and sedentary lifestyle obesity. In today's urban and machine life, most children and students use cars to go to school and do their chores. They do not have much opportunity for walking and other physical activities. This lifestyle leads to overweight and obesity. Therefore, children and adolescents need physical activity such as exercise to prevent overweight and maintain fitness [23].

In addition to sports programs in schools and high schools, there are private gyms for bodybuilding, flexibility, karate and fitness that are of interest to young people and adolescents. These exercises and physical activities help to nourish the body and grow muscle tissue, strengthen the organs of the body such as the heart and lungs, and regulate and control the appetite. It is one of the causes of obesity [24].

Sleep, Rest and Obesity

Sleep and rest are usually categorized and discussed. Although the nature of sleep is not yet fully understood, it has been shown that the amount of sleep people need depends on several variables, including age, activity, and health status. Today's lifestyle seems to lead people to have short sleep, while insufficient

sleep and rest make a person vulnerable to many physical and mental illnesses.

Sleep patterns in children follow a certain trend with the growth and development of the child, which is associated with a gradual increase in deep sleep and the development of regular sleep cycles. Rapid eye (REM) and sleep without fast eye movements (NONREM) are defined. Most children wake up at night later in the first year of life, often due to a common illness, and sometimes develop night-time wake patterns that require years of correction and require behavioral therapy. Due to the side effects of insufficient sleep on mood and cognitive functions, the relationship between obesity and reduced sleep duration in children and adults has been proven. Some researchers have suggested that this may be due to changes in the levels of some of the neuropeptides that regulate appetite [25].

Complications of Obesity

With the advancement of science, it has been proven that obesity is a health problem and has many physical and psychological effects. They write that although in the past, obesity and overweight were considered as health symptoms and slimming was considered as a disorder, but now this thinking has changed and obesity is considered as a disease and health problem. Problems and complications of obesity begin in childhood. Obesity is not good for children's health and its side effects start even in childhood and affect many vital organs of the body.

According to research, these complications are divided into three categories: early complications, which include orthopedic problems, asthma, nocturnal respiratory arrest, decreased pulmonary ventilation, and gallstones. Complications of the second category include risks that increase cardiovascular problems and its continuation in adulthood. Complications of the third category are considered long-term complications and include atherosclerosis and colon cancer, but the most common complication of obesity is its persistence in adulthood. Obesity has short-term and long-term side effects. Among its short-term side effects, decreased self-esteem and long-term side effects, we can mention cardiovascular diseases, diabetes, and hypertension.

Approximately 60% of overweight people have at least one risk factor for cardiovascular disease and more than 25% have more than one risk factor. Obese children have more health problems than other children, such as bone and joint pain. Can be named. Being overweight puts a lot of pressure on the lower extremities. As a result of these pressures, the bones of the legs and thighs become crooked and deformed. This problem is more common in young children. Obese children have other problems, some of which are not visible, but are very serious and dangerous. Obesity and high cholesterol levels are more common in obese children than in normal children. Metabolic disorders such as diabetes are more common in obese children. This metabolic problem in later life forms in the form of

diabetes. In addition to physical disabilities and physical disabilities, obese children also have psychological and neurological problems.

Treatment of Obesity

The best treatment for obesity is to prevent it from developing, so the sooner parents find out about their child's obesity and overweight problem, the sooner they can find a solution. The hopeful thing about this is that with a proper weight loss program, you can lose between 20 % and 30 % of your weight. This amount of weight loss brings more obese children to their normal weight. There is no hope for adults, as only 5% of these people return to normal weight using a diet. Most adults do not continue their weight loss diet until they reach a normal weight, and as a result, they regain the lost weight after a while.

Obesity Treatment Goals

Basically, the treatment of obesity is long and difficult. It has been found that obese people have specific goals for weight loss that are different from the goals of experts. Specialists therefore intervene in the work of patients and try to consider a more realistic process for them. In addition to setting realistic goals, there is a specific comprehensive assessment for patients who weigh 40 percent or more above the standard [26].

Biological, psychological, social and behavioral factors should be considered in this plan. The general goals of weight loss and control include the following:

- 1- Weight loss and maintaining a healthy body composition (percentage of fat mass versus muscle mass)
- 2- Losing and maintaining body weight in a long period
- 3- Prevent future weight gain (27)

General Principles of Obesity Treatment

Before starting any weight loss therapy, it is important to determine the patient's level of motivation. It is also important to remember that an obese person who is trying to get help from members of a health team has certainly tried many ways to lose weight before and has not achieved the desired result. No advice will be useful until you are aware of his previous methods and why they have not worked, and you will not have the power to advise until you know the wrong ideas of the person and their basis.

Treatment of Obesity by Modifying Behavior

Behavior modification principles underlie many current weight loss programs. The patient is usually asked to control and record eating events and rewards are designed to correct misbehaviors. Counseling may be helpful in fixed groups over long periods of time after weight loss. However, the safest program that is most successful emphasizes a healthy lifestyle. The strategies used to treat obesity are also based on Weber's theories of reliance on the general notion that behaviors that have caused weight gain are somewhat learnable, so they can be changed.

Diet Treatment

Reducing calorie intake to achieve slow and gradual weight loss is a major part of obesity treatment. The underlying goal is to maintain a reduction in energy consumption less than energy consumption. The difficulty in achieving this goal leads to the suggestion of extensive diets that vary in the recommended caloric content from complete fasting to slight reduction, as well as in the content and form of certain foods such as liquid versus solid.

Recent studies have shown that preventing obesity in children is very important to their health. According to observations, fat cells that form in childhood remain in the body throughout life. When a child eats more than he needs or is not active in his energy intake, a large number of fat cells are formed in his body. If parents neglect their child's overeating and obesity, a large amount of fat will accumulate in this cell and their volume and weight will increase [28].

Obesity and overweight are a problem caused by the presence of a large number of fat cells, the enlargement of these cells, or a combination of both. The best help for obese children and adolescents is to consult a pediatrician or nutritionist and dietitian. You should never force a child to lose weight without consulting a pediatrician or nutritionist. Of course, parents have a keen interest in their child's health and well-being, but the knowledge of nutrition and nutrients needed for his growth and development is

good. They do not know. The nutritionist and doctor will make a proper diet plan for the child according to his / her physical condition, age and weight. He monitors the child's weight loss process and adjusts or modifies the diet as needed according to the results.

In weight management programs for obese children, they usually try to keep the weight constant instead of losing weight. As the baby grows and grows taller, after a while the necessary proportions are established between his height and weight. In a weight loss diet, if the low-fat, low-calorie foods gradually replace fatty and high-calorie foods, this replacement will not be noticeable. This diet can help the child maintain a stable weight. In a balanced diet used to lose weight in obese children, they usually reduce the energy of the diet by about 30%.

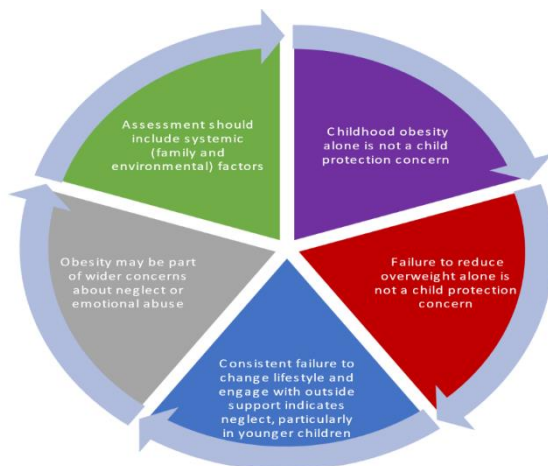


Figure 5. Childhood obesity

Exercise Treatment

Exercise is an important component of the general approach to treating obesity. Increasing energy intake is the most obvious mechanism of effect of exercise. It is very

difficult to prove the effectiveness of exercise diet as a treatment for obesity alone. On the other hand, exercise seems to be an important means of maintaining weight. Even if exercise does not have such a unique effect, it is valuable in obese people because of its effects on cardiovascular tone and blood pressure.

Because many obese people do not exercise regularly and may also have cardiovascular risk factors, starting exercise in these people, especially obese people, should be gradual and under medical supervision. It may just involve increasing your daily activities, such as climbing stairs or taking slow steps.

Over time, depending on the rate of progression, the amount of weight lost and functional capacity may begin to be more intense. The person should be encouraged to engage in moderate-intensity physical activity for 30 to 45 minutes, 3 to 5 days a week. The long-term goal should be at least 60 minutes of moderate-intensity exercise every day of the week. Aerobic exercise such as swimming reduces glycogen stores and thus uses fat as the body's main fuel. Endurance exercises increase muscle tissue and are also effective in strengthening bones, which is very important in women. It should be noted that weight loss does not necessarily reduce weight because exercise increases muscle mass, which is heavier than fat. However, muscle tissue increases to a limited extent and weight loss occurs with continued exercise. Children and adolescents need physical activity such as exercise to prevent overweight and maintain fitness. For this purpose, students can

participate in school sports teams and competitions such as swimming, cycling, table tennis, football, volleyball and basketball. Nutrition and diet play an important role in fitness and give the child the necessary strength to perform well in sports. The most important thing in the nutrition of children and adolescent athletes is to provide enough energy for the body [29].

Elementary school children (seven to 10 years old) who participate in sports or gymnastics sometimes need 3,000 to 4,000 calories a day, and teens who engage in strenuous exercise and physical activity need up to 5,000 calories a day. In addition to controlling and monitoring the child's diet, parents should encourage their children to exercise and physical activity, and if the child is obese, force him to exercise regularly and increase his activity.

A review of Related Studies

A study was conducted between 1991 and 2000 by Christian et al. As predictors of overweight and obesity in children aged 5-7 years in Germany. This descriptive cross-sectional study was conducted in different urban and rural areas in the east. And West Germany was done. The purpose of this study was to investigate the factors associated with obesity and overweight in German children aged 5-7 years. The sample size in this study was 35434 German children aged 5 to 7 years, 50.9% of whom were boys and the rest were girls. In cross-sectional studies between 1991 and 2000 in different urban and rural areas in

the east and West Germany participated in the study upon entering school [30].

Questionnaires were sent to parents in West Germany every three years (2000, 1997, 1994, 1991) and in East Germany questionnaires were sent to parents every year. Children's height and weight were measured in school entrance exams conducted by local health officials. Shoeless height and weight were also measured with underwear. Body mass index (BMI) was calculated by dividing weight (kg) by height squared (square meters).

Findings obtained in this study showed that the mean body mass index of children was 15.8 kg / m². Of the children participating in this project, 15.5% were classified as overweight and 4.3% as obese. The mean age of children was 6.3 years and half of the children were boys and the other half were girls. A descriptive study on lifestyle risk factors for obesity in 7-year-old primary school children in Olo, northern Finland, was conducted in 2004 by Van Hall et al. This cross-sectional study was performed to determine the prevalence of overweight and obesity and related risk factors in 7-year-old primary school children in Finland. The sample size in this study was 1278 7-year-old children entering school, of which 855 About 66.9% of them participated in this project. The children had started primary school in the city of Oulu. All the children were invited by the school to take part in the project and then were given a questionnaire to be filled out by their parents. 85% of the questionnaires

were filled out by mothers, 12% by fathers and 1% by other people.

Findings obtained in this study showed that: the prevalence of overweight in 3-year-old children was 8.3%, in 5-year-old children was 13% and in 7-year-old children was 16.7%. The prevalence of obesity was 1.9% in 3-year-old children, 3.4% at 5 years of age and 4.5% at 7 years of age. Children between the ages of 3 and 5 who were overweight or obese were more likely to be obese at age 7. Fifty-seven percent of overweight parents did not consider their child overweight. There was a difference between parents' perceptions of their child's weight status. Another study was conducted in 2006 by Budak et al. To examine the risk factors for obesity in Turkish children. The aim of this study was to determine the relationship between obesity and specific risk factors in children aged 6-14 years living in Istanbul.

Data were collected from 592 children aged 6 to 14 years who had been referred to a pediatric clinic from January to June 2006. Height and weight of children and their parents were measured by an experienced nutritionist. Their weight was measured with underwear and with a scale with an accuracy of 0.1 kg and their height was measured with a portable meter that was fixed on the wall and had an accuracy of 0.5 cm. While the child is standing upright, the heel is attached to the wall. Body mass index was calculated based on the weight formula (kg) divided by height squared (m) and children whose BMI was higher than 95th percentile were obese and those whose BMI was between 5th and 85th percentile. Were

identified as non-obese. Parents with a BMI of 30 were identified as obese. Findings from this study showed that out of 592 children between the ages of 6-14 years who were studied, 31.1% were obese and 68.9% were non-obese. Regular daily physical activity was 13.6% in obese children and 40.9% in non-obese children. And there was a significant difference between the two groups. Although 17.4% of mothers with obese children were obese, but only 9.8% of mothers whose children were not obese were obese. The rate of obesity in fathers of obese and non-obese children was 22.8% and 17.9%, respectively. In the analysis of obesity-related factors, it was found that several factors are significantly associated with obesity that energy received , Obesity of parents , Obesity in the maternal family, having a sedentary lifestyle and having a working mother outside the home were factors related to obesity that the parents' history of obesity was evaluated as an effective factor in causing obesity [31].

Overall, the results of this study indicated that: Maternal employment and reduced physical activity had a significant effect on the prevalence of obesity in children in Istanbul. A study conducted in 2007 by Leshan et al. On the risk factors for obesity in preschool children in urban areas in China. This case-control study was conducted to investigate the risk factors for childhood obesity in preschool children in Hunan, China. The sample size in this study was 2530 children who were selected from 10 kindergartens in Hunan. Parents' consent was

obtained before starting the study. The child's height and weight were obtained based on the annual physical examination file in the kindergarten. Children with secondary obesity, gastrointestinal diseases, metabolic diseases, cardiovascular diseases, endocrine diseases and severe osteoporosis were excluded from the study [32-34].

Children's body mass index was determined based on age and sex, and for each obese child, a child with a normal body mass index with the same kindergarten class and the same age, sex and height was selected as the control group. Information was filled out by a questionnaire filled by parents. The questionnaire was given to the parents in the parent-teacher meeting and was collected with the cooperation of the kindergarten teacher. Finally, the results of this study showed that children with macrosomia were born by cesarean section, complementary feeding was started earlier than 4 months, and their mothers were exposed to music, which is associated with an increased risk of obesity in preschool. Another study was conducted between 2006 and 2007 by Mr. Madah and Ms. Nikoei entitled Factors related to overweight in school children in Rasht. This study is a cross-sectional study with the aim of investigating the determinants of overweight and obesity. Students aged 6-11 years old were studied in northern Iran. The study population was 6-11 years old children who were studying in primary schools in Rasht. The sample size in this study was 6760 students who were selected from primary schools in Rasht and this selection was based on the level of schools and

because the age of 125 students was not in the desired age range, they were excluded from the study and the sample size was 6635 that 3551 boys and 3084 were girls. The findings were as follows: In general, the prevalence of overweight was 11.5% among boys and 15% among girls and the prevalence of obesity was 5% for boys and 5.9% for girls. This means that girls are more likely than boys to be obese and overweight [35].

Conclusion

This research study demonstrated that the body mass index of the majority of subjects (71.5%) is in the normal range. The prevalence of overweight and obesity was estimated to be 8.6% and 19% in boys and 14% and 15.3% in girls, respectively, and a total of 11.3% of overweight children and 17.2% of obese children. Some studies conducted in Iran revealed that the prevalence of obesity increased in the last decade, so that in a study of female primary school students in Tehran, the prevalence of overweight and obesity were 13.3% and 7.7%, respectively. In a study conducted by the Brotherhood (2008) in Yazd, the prevalence of overweight and obesity in preschool children in Yazd was 4.3% and 3.8%, respectively. Also, in a study conducted by Shahraki (2010) for the epidemiological study of obesity and overweight in Zahedan, the rate of overweight was estimated at 8.9% in boys and 10.3% in girls aged 6-11 years.

According to the researcher, these differences may be due to the age range studied. Has made them prone to overweight and obesity.

According to Kalantari et al. (2010), birth weight was not significantly associated with childhood overweight and obesity. Also, according to the findings of Akhavan et al. (2008), birth weight was not associated with the prevalence of overweight and obesity in childhood (66). Mickels et al. (2007) in a cohort study comparing birth weight between obese and normal groups showed that birth weight in the obese group was higher than the normal group, but this relationship was not significant. Dimitrios et al. (2009) in their case-control study as risk factors for childhood obesity in Greece found that childhood obesity in children aged 7-15 years was not significantly associated with weight gain at birth. In a longitudinal cohort study, Zahang et al. (2009) found that children 3 to 6 years old with a birth weight of less than 2,500 grams were less likely to be overweight and obese than children born with a birth weight of 2,500 to 2,999 grams. A study by Van Hall et al. (2004) in Finland found that low physical activity is an important risk factor for overweight and obesity.

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