REVIEW PAPERS
HEALTH PROGRAMS FIGHTING OVERWEIGHT AND OBESITY AMONG CHILDREN AND ADOLESCENTS CONDUCTED IN GDANSK

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SUMMARY

The fact that overweight and obesity also affect children is very worrying. In 2010, overweight was found in over 42 million children under five years old. The WHO predicts that in the coming years the number of overweight people will increase significantly and recommends the implementation of programs preventing overweight and obesity. Fighting these problems at the population level is very difficult; it requires a systematic approach and the involvement of many sectors, including the scientific community, health care, health promotion and government administration.

The aim of this study is to present the range of actions undertaken to prevent overweight and obesity among children and adolescents in Gdansk.

The essence of such programs is not to decrease body weight but to convince children and adolescents to lead a healthy lifestyle. These assumptions were the main scope of health programs realized in Gdansk. The Gdansk Model for Health Promotion and Civilization Diseases' Prevention for Children and Youth has been created, whose tasks are carried out by educational institutions, municipal units and the University Clinical Center. The study presents various actions concerning weight problem such as: “Keep Fit”, “Healthy Life of Your Child” and Program “6–10–14 for Health”. Thanks to the early detection of risk factors and the implementation of proper intervention, it is possible to effectively prevent weight problems among children and adolescents, as well as the serious consequences of these medical issues. The health programs can show society how dangerous the problem of excessive body weight occurring at a young age is.

Introduction

Obesity is a metabolic and so-called social disease, which is a major health issue for an increasing number of societies throughout the world. In recent years, the number of people with an excessive body weight has increased at an alarming rate, including among adults and children. Obesity has become one of the most widespread public health problems, even more common than AIDS and malnutrition. According to data from the World Health Organization (WHO), the number of people with obesity has doubled since 1980. In 2008, overweight was found in 1.5 billion adults (aged 20 and older), including over 200 million men and 300 million women who were obese. Of most concern is the fact that both overweight and obesity is becoming more and more often a health problem of the youngest social groups. The incidence of these diseases in the youngest age groups is growing at a similar rate as in the adult population. In 2010 there were over 42 million children younger than five years old who suffered from overweight. Almost 35 million of them are citizens of developing countries [1, 2, 3, 4]. The World Health Organization predicts that in the coming years, the num-
ber of obese people among adults and children will significantly increase. Therefore, numerous international organizations and individual countries are undertaking various actions to reduce the epidemic and reverse this increasing trend. Different health programs, considering the prevention of overweight and obesity, are being implemented and carried out, although interventions on the population level are always very complicated and complex, and require a systematic approach and the engagement of many different sectors – including scientific society, health care, health promotion, the public authorities, and of course the societies themselves [5].

Aim of the study

The main aim of this review article is to present the range of actions considering overweight and obesity problems among children and juveniles undertaken in the City of Gdansk. It is, therefore, necessary to present the prevalence of overweight and obesity problems among children and adolescents in the context of public health.

The problem of overweight and obesity among children and adolescents in the world, Europe, and Poland

The problem of overweight and obesity is a serious health issue in countries all over the world. According to research carried out in different countries of the world, mostly done on adult populations, but also with the attendance of adolescents and children, overweight and obesity can be called an epidemic [6, 7, 8]. From the late 1970s to the early 1990s, in the United States, Europe, and some parts of the western Pacific, a high prevalence of overweight and obesity was observed among children and adolescents. These diseases affect around 20–30% of the discussed populations. Of course there are some areas of the world, for example Southeast Asia and Middle-East regions of Africa, where the prevalence of overweight and obesity is very low, affecting only 0.2–4% of people from the youngest age groups. According to data from 2003–2004, it is estimated that around 17.1% of children and adolescents in the US suffer from obesity, with 4% of them being severely obese (Body Mass Index over 35). A dramatic increase in prevalence of weight problems among children and adolescents (both overweight and obesity) can be also observed in countries where these problems used to be very rare, such as China and Japan among others. It is estimated that currently one in five children in the cities and every fourteenth child in the rural areas of China are affected by overweight or obesity, while in Japan the problem has increased 2.3 times over the last 20 years. The number of children with weight problems is also getting higher in developing countries, which in recent years have experienced political and economic transformation. Into this group of countries we can include among others Brazil, where an increase in the percentage of children with overweight and obesity was observed from 4.1–13.9%. In Europe, it is currently estimated that a weight problem even occurs in 16.3 million children and adolescents, including around 4–6% young people who are obese. In both groups, younger children (age 9) and older children (age 15), overweight and obesity occurs more often in the southern countries of Europe than in Western Europe. According to the International Obesity Task Force (IOTF) report, the prevalence of overweight among children in northern parts of Europe is observed at a level around 10–20%, although the prevalence is higher among children from countries situated in the south part of Europe, and is at a level around 20–35%. Such a large number of children with overweight and obesity in the Mediterranean Sea countries can be explained by the “Americanization” of their lifestyle, insufficient physical activity and abandoning the Mediterranean diet [9].

As has been mentioned before, a high percentage of children and adolescents with weight problems are also observed in developing countries, and countries that have experienced political transformation in recent years. Political and economic changes of the national system have resulted in changes in lifestyle, better financial situation of citizens, and higher accessibility of consumer goods. Examples of these countries are the Czech Republic, Slovakia, and Poland among others.

The scale of the problem of overweight and obesity among children and adolescents in Poland has been carefully monitored since the 1970s. In comparison with other countries, the severity of problems associated with weight in Poland is at a medium level, although a distinct growing trend has been observed for many years [10].

The outcomes of Polish studies have shown that weight problems are an important health issue. Between 1994–1995 the Institute of Mother and Child conducted studies on the population of children and adolescents aged 6–17 years old. These studies have shown that 8.7% of children and adolescents suffer from overweight and 3.4% of them are obese. It has been noticed that the percentage of children with over-
weight and obesity increases with age. Among boys prevalence of obesity varied from 6.1% in the youngest age group to 14.8% for the oldest boys. Among girls prevalence of obesity was also the highest in the oldest age group (13.7%). Another countrywide survey on a representative group of children aged 7–8 years old was conducted in 2001. This survey showed that overweight and obesity affects 15.8% of girls and 15% boys, including 3.7% of girls and 3.6% of boys who suffer from obesity. This indicates a significant increase in the prevalence of overweight and obesity in the discussed population in comparison to the studies conducted in the early 1990s. Comparable results indicating the growing problem of overweight and obesity, were obtained by the Food and Nutrition Institute, which conducted a study on school youth aged 11–15 years old living in Warsaw in the years 1971, 1982–1985, 1988–1991, and 1999-2000.

At baseline in 1971, weight problems occurred among 9.2% of boys and 8.2% of girls. In the next study period, a few percent increase in the percentage of young people affected by the presented issue was observed. In 1988-1991 the relative stability of indicators was observed, with a slight increase only in the population of girls being observed. However, the results obtained between 1999–2000 showed a dramatic increase in the percentage of boys who had problems with body weight (prevalence of overweight had almost doubled). For girls, the increase was much less intense [11].

In 2007 the Institute of Mother and Child conducted studies aimed not only at a description of the overall seriousness of the weight problem in Poland, but which also defined the prevalence in different parts of the country. These outcomes have shown that the highest percentage of children with weight problem is in the Podlasie Voivodeship (15.0%) and the Pomeranian Voivodeship (14.7%), and the lowest in the Kuyavian-Pomeranian Voivodeship (10.9%).

The current medical knowledge clearly shows that genetic disorders are involved in the development of Body Mass Index (BMI) at a level around 20–30%. Progress in research allows recognizing two forms of disease: monogenic and polygenic. Monogenic forms of a discussed disorder are very rare as they are mostly inherited in an autosomal recessive way. They cause impairment of functioning of the leptin and melanocortin system. The problem with weight is determined by the overlap of many varieties of the genes affecting one phenotype [12].

The main cause of obesity is considered to be environmental factors. Of course, it is difficult to unques-

**The role of prophylactic activities in preventing overweight and obesity among children and adolescents**

Overweight and obesity are a major public health problem, and they are thus the subject of many actions in a field of this science. A good example of such interventions is a framework developed by the WHO in 2008, which is supposed to help member states in monitor-
ing and evaluating the implementation of DPAS (Global Strategy on Diet, Physical Activity and Health). The framework assumes that the governments of member states should practice leadership and facilitate collaborative action in the implementation of policies and programs aimed at the promotion of supportive environments for health.

The undertaken actions are expected, as a result, to help in obtaining positive changes in diet and physical activity behavior. These in turn will result in health, social, environmental and economic improving outcomes.

According to the example of DPAS implementation, it is clear that intervention from the area of health promotion or prevention of diseases has two types of effects: immediate effects (called outputs), and long-term effects (called outcomes). Particular countries, including Poland, should be involved in the creation of supportive surroundings for children, and as a result obtain changes in behavior (for example eating behaviors) and health outcomes (for example a decrease in mean BMI, a decrease in the number of people suffering from social diseases and others). As a result of this fact, many different activities including the promotion of health are undertaken [16]. There are many definitions of health promotion. Most of them specify that health promotion is the process of enabling people to have more control over their health. Health promoting activities concentrate on the health of the population and an increase of its potential. Due to the fact that only around 10% of adolescents who have weight problems look for medical, dietary help, it is necessary to develop well-designed and effective ways of preventing this problem. This is why stronger emphasis is placed on prevention than on treatment. Being aware of the importance of prevention in dealing with childhood obesity, health promotion should mostly be focused on encouraging children and their parents to follow the rules of a healthy lifestyle, spending free time in an active way and convincing young people about the importance of a healthy lifestyle for their future [17].

The primary prevention of overweight and obesity for youth is based on activities that eliminate factors causing obesity. This mostly concentrates on promoting a healthy lifestyle, positive examples of possible activities to be adopted by the whole family, and shaping healthy behavior which focus on good nutrition and physical activity [18]. These tasks are realized through health education designed specifically for each group and dedicated to parents, adolescents and children. Secondary prevention concerns those with an increased risk of obesity, and aims to identify children and adolescents with developmental disharmony through screening and preventive medical checkups. The next steps are aimed at activities limiting the development of overweight and obesity. Tertiary prevention includes medical counseling for people suffering from obesity. These measures are intended to further prevent the unwanted effects of overweight and obesity. All promotional and preventive activities are accompanied by health education, which guides young people to lead a healthy lifestyle and teaches them to take at least part of the responsibility for their own health. It is justified that, apart from children, parents, and the school authorities should be involved in the health education of the youngest. To avoid stigmatization of children with excessive body weight, interventions that are being implemented are designed to promote a healthy lifestyle and good practices in health promotion. The emphasis is put not on fighting with overweight or obesity, but on the health promotion activities that should be adopted by the whole society, not only by people with weight problems. Those undertaken activities are mainly dedicated to changes in eating habits through eliminating high fats and sweet snacks, and increasing the intake of fruits and vegetables. The mentioned activities are also aimed at convincing people to be active and encourage people to do at least half hour of physical activity per day. The essence of these interventions is to obtain long-term effects, resulting in an improvement in the general health status of the population. Children, who participate those programs (not only those with weight problems but also healthy ones), should consider the rules of a healthy lifestyle they have learnt about, as habits that should be present in their everyday lives. A way of obtaining this aim is to design such interventions so they are attractive and interesting for the whole society, meaning presenting general rules of leading a healthy lifestyle [19]. Activities, that are coherent with the mentioned criteria, have been implemented in Gdansk to fight with a dramatically high prevalence of obesity. These measures are intended to further prevent the unwanted effects of overweight and obesity. 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Health programs fighting overweight and obesity among children and adolescents conducted in Gdansk

Health promotion activities undertaken in Gdansk considering overweight and obesity problems among children and adolescents

An increase that is being observed in Gdansk in the number of children who are in danger of social diseases has made the authorities of the Pomeranian Voivodeship coordinate activities strengthening the mechanisms of the prevention of these diseases. As a result of this situation, some institutions have started to perform their activities. These institutions are among others: The Model of Health Promotion and Prevention of Society Diseases among Children and Adolescents in Gdansk, whose postulates are realized by schools, centers of coordination situated throughout the entire Tri-City agglomeration and the University Clinical Center of the University of Gdansk.

On 22 May 2004, the World Health Organization accepted a project of the Global Strategy on Diet, Physical Activity and Health, on which basis a Pomeranian educational program called “Trzymaj Formę” (“Keep Fit”), which showed the advantages of a healthy diet and physical activity, was developed.

The program is dedicated to student classes IV–VI in primary schools and I–III in grammar schools, and their parents. During the school year 2010/2011, the program covered over 8,000 students from 45 schools in the City of Gdansk (17 primary schools, 28 grammar schools).

The coordinators of the program were school counselors, speech therapists, school nurses, and teachers of physical education, biology, chemistry, and the Polish language [20].

The main idea and aim of the “Keep Fit!” program was to educate children and their parents about health, create healthy behavior and make people more aware of the rules of a healthy lifestyle.

It is possible because of placing emphasis on activities presenting the advantages of physical activity and its importance in people’s life, as well as providing information and knowledge regarding the labeling of food packaging, and teaching the principles of fitting a healthy diet into lifestyle [20].

The program provides a variety of interventions – each edition of the program is geared to a slightly different form of influence. During the year 2011/2012, it was focused on the involvement of children’s families in fighting for the health of the youngest, especially through spending free time together and shared sports. The year 2012/2013 is the year of the fight against unhealthy food and introducing positive changes into the menus of children. A unit, which is also involved

![Fig. 1. Prevalence of overweight and obesity among children in Gdansk aged 9, 10, 11 and 14 years old](source)

Source: Own study on the basis of data "Center for Health Promotion and Fitness for Children in Gdansk"
in promoting a healthy lifestyle among children, adolescents and their parents, is the Center for Health Promotion and Fitness for Children in Gdańsk. The institution implements programs such as an interdisciplinary health program for children aged 6–7 years old called “Zdrowe Życie Twojego Dziecka” (“A Healthy Life of Your Child”), and a comprehensive program called “Zdrowy Uczeń” (“Healthy Student”) for children aged 9–11 years old. The health promotion program entitled “A Healthy Life of Your Child” was founded in 2003. It is aimed at children 6–7 years old and their parents. Every year, around 3,500 children from all educational institutions of the City of Gdańsk (schools and pre-schools) attend this program, which represents over 80% of the children of Gdańsk at this age. The main objective is to promote a healthy lifestyle and to assess health, mental and physical development, and to identify the threats to health of a child. This is achieved through promotion of healthy behavior, reduction of risk factors for health and the support of health education of children [21].

Another very important intervention undertaken in Gdańsk is the “Healthy Student” program. This is a screening test program assessing body weight and posture, blood pressure and physical fitness of children from classes II–VI in primary schools carried out in the City of Gdańsk. This program includes around 4,000 children per year. The aim of the program is to create and promote the ideal way of convincing young people to lead a healthy lifestyle. Implemented activities are focused on maintaining a healthy body weight of a child and, if necessary, apply corrective measures like rehabilitation, as well as showing healthy eating habits. The program is divided into three parts: diagnostic, educational/informational and reporting. The first part is performed by physicians and includes a study of body posture, assessing BMI, blood pressure measurements, and evaluation of physical fitness of the organism. The second includes information and education about activities presented on the individual child’s test card and educational materials. During the third part, evaluation reports are prepared about the activities undertaken during the program [22].

A very important health program, especially for the greatness of its scale, is “6–10–14 dla Zdrowia” (“6–10–14 for Health”), conducted by the University Clinical Center of the Medical University of Gdańsk in cooperation with the Center for Health Promotion and Fitness for Children. This is Poland’s first comprehensive program of diagnostics and treatment of civilization diseases – mainly overweight and obesity among children and adolescents. Implementation of this program began in 2011 and is planned to be continued until the end of 2013. It is entirely funded by the City of Gdańsk. The program’s budget for one year is around 1 million PLN. The main goal of the program is to improve the health status of the population of children and adolescents living in Gdańsk by conducting comprehensive educational and health promoting activities in children selected by detection factors of lifestyle diseases. The specific objectives of this program may include a reduction in the incidence of overweight and obesity, and a reduction of excess body weight among children covered by the program. An additional goal is to obtain early identification of children and adolescents with metabolic diseases and high blood pressure, as well as the introduction of proper nutrition and health behavior during the program, and their strengthening after the end of the program. The program covers all children in selected periods of time, aged 6 and 14 years, and selected groups of children aged 9–11 years. The total number of participants is estimated at 30,000 children and young people during the three years of the program. In addition, the program is also directed to parents and school communities, and consists of two phases. The first relates to the screening of the population of Gdańsk children and their families, and estimation of the parameters of the health of children and identification of health problems. The second stage involves specialized counseling for children diagnosed with risk factors. Every child who is overweight or obese is invited to the annual program of intervention, where under the care of specialists they will be trained to modify their own health behavior. A dietary plan is prepared during the consultation. The whole family of a child is encouraged to participate in it. Very strong attention is paid to the impact of the family in the fight against overweight and obese children and adolescents, which is why the program creators organize educational courses for parents [23]. During the 2011/2012 school year in the program concerning school environments attended 52 institutions. Seven of them conducted nutritional education, and 21 – education in the field of diabetes. From September to December during the 2011/2012 school year, around 2,400 children aged 6, 9–11, and 14 years old were examined, out of which 94 were included in the specialist program. However, since January 2013, 1,736 children aged 6 years old were examined, out of which 213 were accepted on the program, 1,597 children from primary schools were examined, out of which 314 were enrolled in the program, and 1,374 junior high school students were examined, out of which 304 were also accepted on the program.
Summary

The problem of overweight and obesity is often underestimated and we do not see its gravity. It is important to take appropriate measures to prevent further expansion of this phenomenon. For this purpose, through preventive and educational measures, society is being educated that excessive body weight and physical inactivity cause not only obesity, but also serious associated complications. This should motivate both children and their families to undertake healthy behavior, of which the most effective are physical activity and a balanced diet.

Initiatives conducted in Gdansk, especially the multi-threaded program "6, 10, 14 for Health" are activities which carry benefits to the young citizens of our city by improving their quality of life now, and protecting them from the mentioned health consequences in the future. They are also a form of influence on the family, science and education environments, and at the same time create clear scientific data that are likely to form the basis of wider ranging changes.

LITERATURE
