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Obesity and overweight among children and adolescents in the light of health education principles

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Abstract

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Keywords

obesity, overweight, children, adolescents, education, health

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Authors' Contribution:

- A Study Design
- B Data Collection
- C Statistical Analysis
- D Data Interpretation
- E Manuscript Preparation
- F Literature Search
- G Funds Collection

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abstract

Pedagogical and educational institutions play an important role in health education. The proposed systemic principles should account for biological, environmental and cultural factors that determine the health of children and adolescents. Young people's individual needs should constitute the framework of educational policy in the prevention of obesity and overweight. An analysis of health education practice in the Polish educational system indicates that the adopted measures, their practical applications and educational goals are adequate. Despite the above, the proposed systemic solutions are not always deployed or correctly implemented by the responsible institutions at various levels of local or social governance. The operations of pedagogical and educational institutions should place greater emphasis on supporting individuals in their quest for self-determination in the health context. The aim of health education is not only to convey knowledge, but, above all, to promote attitudes and behaviors that contribute to health, and the family plays a very important role in this process. Health education in the family should instill health-promoting behaviors which are influenced not only by lifestyle, but also by customs, traditions and the peer community. Health education for the prevention of obesity and overweight should also account for the parents' educational needs in this area.

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INTRODUCTION

The systemic principles of health education should account for biological, environmental and cultural factors that determine the health of children and adolescents. Young people's individual needs should constitute the framework of educational policy in the prevention of obesity and overweight. Healthy nutrition and physical activity are the key elements in ensuring the health of children and adolescents. An analysis of published data indicates that biological factors and genetic determinants of obesity and overweight are often activated by strong environmental influences that contribute to obesity. Prevention of excessive weight in children and adolescents should promote the activation of the individual and supportive measures in the local community [1].

The priority issue in global health policy is to combat the obesity epidemic among children and adolescents; therefore, the objective of this study was to analyze the published data on health education in Polish and foreign literature relating to systemic solutions to prevent obesity in this population group. This study also aimed to identify systemic solutions targeting the needs of children and adolescents and to pinpoint areas that require improvement. Reports and recommendations of the responsible authorities and professional literature on health education were reviewed. Polish policies, mainly in the area of health education, the type of implemented solutions and their effectiveness, were compared with the core assumptions of the American system where the prevention of overweight and obesity among children and adolescents has remained a challenge for many years.

HEALTH EDUCATION

Health education is a sub-discipline of pedagogy known as health pedagogy. Health pedagogy is not an individual area of study in many English-speaking countries where it is regarded as synonymous with health education. According to Demel, "health pedagogy constitutes the theoretical framework of health education. Its main aim is to propose a formula for linking pedagogy with medicine and to transcribe medical definitions into pedagogical objectives (...). This approach contributes to holistic pedagogy which focuses on the whole person. "According to Kacprzak, the educational process should be based on a holistic approach, and educators should be aware of the associations between biological and social sciences. This approach promotes the view that "education does not only shape the brain, but the whole child," and that the body "is the second, most important target of the educational process (...). We do not intend to biologize pedagogy, quite the opposite - we want to pedagogize the physical aspect and make it a part of the educational process based on true facts about human nature" [2]. Health pedagogy and health education have not yet found the deserved recognition in theory and, more importantly, in pedagogical practice. The continuous education and improvement of teachers and educators is an important part of health education. Educators and teachers should also receive adequate training to broaden their understanding of the psychological underpinnings of unhealthy behaviors in children and adolescents [3].

In line with the long-awaited Public Health Act, which was adopted on 11 September 2015, the National Health Program (NHP) is the main health policy document [4]. The program sets strategic and operational goals as well

as the key measures for improving public health and the quality of life. The main objective of the NHP for 2016–2020 is to increase life expectancy and to improve the health of Polish citizens. Operational goals include improvement in the nutritional status and physical activity of the Polish population [5]. The strategic goals of the NHP should particularly address the needs of social groups at higher risk of overweight and obesity, including children and adolescents. These needs are targeted by the Regulation of the Minister of National Education of 17 June 2016 amending the regulation on the core curricula for kindergartens and various types of schools. The above regulation relies on the assumption that by the end of kindergarten children should be able to take good care of their health and should have rudimentary knowledge about healthy nutrition and a healthy lifestyle. During early education (grades 1–3), the core curriculum in natural sciences should provide children with knowledge about healthy nutrition, promote the awareness that they are responsible for controlling their own health, following the advice of doctors and dentists, protecting their own and other persons' health and safety to the level of their ability. Students of grades 4–6 should be able to identify factors that have a positive and negative impact on their well-being in school and at home, and they should be able to eliminate negative factors from their lifestyle. Students should be aware of the health implications of rest, sleep, healthy nutrition and physical activity; they should be familiar with effective learning strategies and should apply them in practice [6]. The educational outcomes of core curricula indicate that the main goals of health education in schools should be to empower students with health habits and provide them with the necessary skills to improve their own and other people's health. Health education in schools should focus on the promotion of health and the elimination of risk factors to improve general health and minimize the risk of disease in the future. Therefore, schools should play a very important role in promoting personal responsibility for one's health.

According to Woynarowska, health promotion should be regarded as a global strategy rooted in health education. Individuals should be provided with the necessary information in the educational process to elicit their participation in health promotion measures and to encourage them to introduce changes to their lifestyle and environment. Health education should address various environments, age groups, healthy and ailing individuals, the family, kindergartens, schools and healthcare institutions [7]. In psychology and sociology, health education is defined as a process whose participants learn to take good care of own and other people's health. Health education is a pedagogical as well as an educational process which promotes health behaviors among children and adolescents who learn how to improve their own and other people's health. This process creates a supportive environment for health promotion, and it encourages people with health impairments or disabilities to actively participate in treatment and rehabilitation, to cope with disease and minimize its negative consequences [8]. It should be noted that health education is effective only if schools, students and parents are willing to participate in health initiatives. This is possible only if health goals are approved by all members of the community who are familiar with basic concepts in health promotion and have a strong sense of social identity and responsibility [9].

Health education in schools is a worthwhile investment in public health, and it should constitute a priority in public health policy. School experiences, learned behaviors and attitudes towards the world are critical factors that influence young people's self-esteem and future choices [10]. In practice, health education is not highly prioritized by education authorities. It is often narrowed down to the dissemination of knowledge about hygiene and somatic health. This approach runs contrary to the holistic concept of health and health education. In Poland, the first schools teaching health education were established in 1994. Three years later, health education became part of the core curriculum. In 1999–2002, health education made inroads into schools as an educational program entitled "pro-health education". The program was implemented in all types of schools [7].

In line with the core curriculum and the recommendations formulated by the Ministry of National Education, the main goals of health education are:

- to promote self-awareness, track own development, identify and resolve own health problems;
- to understand the concept of health, its determinants, why health is important and how to maintain health;
- to develop a sense of responsibility for one's own and other people's health;
- to reinforce self-esteem and belief in one's own abilities;
- to develop personal and social skills that contribute to well-being in order to positively adapt to daily tasks and challenges;
- to prepare students for active participation in health promotion, to create a healthy environment at home, in school, workplace and the local community [5, 11].

Specific goals in health education require the continuous involvement of suitably trained educators as well as cooperation between the school and the family environment [11].

The "health promoting schools" initiative has been developed by the International Union for Health Promotion and Education to further health education around the world. There is no single definition of a health promoting school, and this concept is interpreted individually by every country and every school. A health promoting school is a place where all members of the school community work together to promote the well-being of all students by accumulating positive experiences and creating structures for health promotion and protection. Their activities focus on disease prevention, increasing students' awareness of various health issues, improving own and other people's health, and fostering decision-making skills [7, 11]. In line with the Polish concept, a health promoting school should foster the students' well-being, teach skills which enable students to take care of their own and other people's health, and create a healthy environment. A health promoting school should be a fundamental source of support for students by disseminating reliable information about health, giving emotional support and instilling healthy behaviors. The teacher's role should change accordingly. The teacher is no longer an unerring expert, and he or she becomes a guide and a mentor in matters pertaining to health promotion [7]. This type of education is part of a broader concept where students develop self-education skills and learn to create social justice in line with sustainable development principles [12].

Health promoting schools place special emphasis on the following values in the educational process:

- a. equity – defined as equal access to a full range of health education opportunities for all students (reducing inequalities in health);
- b. sustainability – ongoing commitment to health promotion in schools contributes to long-term, sustainable development of the wider community;
- c. social inclusion – all participants of the health education process, including students, teachers, parents and members of the local community, are involved in health promotion while learning to respect diversity;
- d. empowerment and action competence – encouraging young people to actively participate in the school life and the local community, and to achieve common health goals;
- e. democracy – building respect for democratic values, law observance and learning to take responsibility for one's own and other people's lives [7, 8, 13].

The network of health promoting schools has been developing steadily in Poland since 1991. In addition to various types of schools, the network also brings together educational institutions such as kindergartens, student dormitories and holiday camps for children. According to the Center for Education Development, there were 3238 health promoting schools in Poland in January 2016 [14]. Health education programs based on the "health promoting school" concept should receive support from the central government and local authorities, and that the effectiveness of the adopted methodological solutions should be verified [15].

Modern health education programs are increasingly likely to focus on the students' learning process. This area of the educational process involves active acquisition of knowledge and skills, rather than passive learning. The teacher's role has to change accordingly. The teacher is no longer an unerring expert, and he or she becomes a guide and a mentor in matters pertaining to health promotion [16]. Student activation techniques such as debate, role playing, problem analysis, problem solving, team work, project development and visualization techniques play a very important role in this process [11]. According to some researchers, communication between children and adolescents should be encouraged on matters that were previously limited to classroom discourse, in particular with regard to risk-taking behaviors such as drinking alcohol or smoking. Several studies have demonstrated that young people were more likely to avoid risky behaviors if encouraged to do so by their peers rather than teachers [17].

OBESITY PREVENTION ACTIVITIES INITIATED AS PART OF HEALTH EDUCATION PROGRAMS

The EC Council Resolution of 23 November 1988 on the implementation of health education in schools defines health education as a process based on scientific principles which employ planned learning opportunities to enable individuals to make and act upon informed decisions about matters relating to health. It is a comprehensive teaching process for which responsibility has to be taken by the family as well as the educational and social community. In view of the above, the most desirable educational model is one that teaches students to choose behaviors that promote their own and other people's health. Schools play a very important role in this process. Every child has the right to

health education, and health is important for the educational process itself – a healthy student is more willing to learn, he or she achieves better results and disseminates pro-health attitudes in the peer community [7, 11]. According to Woynarowska, the main goals of health education include the promotion of healthy eating, dissemination of reliable knowledge about food products and nutrition, developing the ability to gauge one's own health, understand physical signs and symptoms of disease and satisfy nutritional needs, teaching consumer skills, effective food management, meal preparation, appropriate food serving and eating behaviors [7].

According to the World Health Organization, health education programs implemented in schools are effective in preventing risky behavior among children and adolescents. The educational process should be continued at all levels, and different topics should be included in the curricula for primary and secondary school students [18]. American research indicates that the importance of weight control, healthy eating habits and physical education should be emphasized in the last two years of primary school (grades 7 and 8 in the American system) and at the beginning of secondary school [3]. In 2007, the WHO published the results of a 10-year study analyzing the effectiveness of health education programs, which revealed that in the most successful programs, students were provided with reliable information and learned skills for coping with difficult, unusual and dangerous situations [18].

Obesity poses a significant social problem in the US, which is why obesity prevention programs play a very important role in the American educational system [19]. According to the American Cancer Society, the American Diabetes Association and the American Health Association, the quality of health education in American schools can be improved by:

- adopting health education programs based on the National Health Education Standards,
- employing highly qualified and effective health educators,
- including the minimum required number of health education classes in school curricula at every level of education,
- developing a national budget and expenditure plan to support health education initiatives in schools [20].

The National Health Education Standards provide guidance in health education and define the key knowledge areas, skills and social competencies that should be acquired by students. The standards describe the recommended teaching methods and assessment techniques. In the US, health education programs are based on 8 standards:

- students will comprehend concepts related to health promotion and disease prevention to enhance health,
- students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors,
- students will demonstrate the ability to access valid information, products, and services to enhance health,
- students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks,
- students will demonstrate the ability to use decision-making skills to enhance health,

- students will demonstrate the ability to use goal-setting skills to enhance health,
- students will demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks,
- students will demonstrate the ability to advocate for personal, family, and community health [20].

According to the National Health Education Standards, state authorities are allowed considerable freedom in formulating health education programs in schools. The Centers for Disease Control and Prevention (CDC) have developed 10 strategic categories to increase the effectiveness of health education programs. Schools should comply with the recommendations of the Coordinated School Health Program (CSHP) which supports the assessment and modification of programs in the area of physical activity and healthy eating. CDC guidelines also encourage professional training for teachers and educators, and implementation of physical education and physical activity programs, and provide methods for assessing health and the relationships between health and a healthy lifestyle. Health education should not end at school, and local communities should strive to create an environment that is conducive to maintaining a healthy lifestyle [21]. According to the Joint Committee on National Health Education Standards, students in grades 1 and 2 should receive a minimum of 40 hours and older students should receive 80 hours of instruction in health education per academic year [20].

The goals of the Polish educational system in the area of health education were analyzed in view of the described guidelines of the WHO and the Joint Committee on National Health Education Standards. In the Core Curriculum in General Education, approved by the MNE on 15 February 1999 (known as the “old” core curriculum), the main goal of the teaching profession was to promote the general development of students. Teachers strived to impart to students an integrated system of knowledge, skills and attitudes in order to promote their personal growth. The process of integrating school-taught knowledge involved the introduction of educational profiles, including a pro-health profile, to achieve the following learning outcomes:

- the ability to take good care of one’s own health and to collaborate with adults in this respect;
- the ability to differentiate between factors that have a positive and negative influence on health and development;
- the ability to manage free time and study time at home;
- the ability to identify and respond to threats [7].

The above outcomes were not easy to achieve with the use of traditional didactic methods. This led to the development of a modern approach that relies on scientific advancements in psychology, biology and philosophy. Special emphasis was placed on:

- student activation techniques to ensure that students are not passive recipients of knowledge;
- creating a supportive classroom environment that provides students with a sense of security, acceptance and tolerance;
- gathering information about the students’ knowledge and experiences, and correcting mistakes before beginning classroom work;
- evaluating in-class work and regularly analyzing evaluation results [11, 22].

The content and the skills taught as part of the pro-health profile were organized in the form of subject blocks or separate subjects. Every option had certain advantages and limitations. The list of advantages of the intercurricular profile, where every teacher is responsible for instilling healthy habits in students, laid the foundations for a new approach to health education as part of the new Core Curriculum in General Education (nCCGE) [11, 23].

Pursuant to the provisions of a resolution of the Ministry of National Education, nCCGE was implemented at different levels of education as of the 2009/2010 academic year. It was initially introduced in grade 1 in primary schools and grade 1 in lower secondary schools. In successive years, nCCGE was implemented in the remaining grades, and the process was completed in the 2014/2015 school year. The nCCGE eliminated educational profiles which were highly criticized by teachers, and the teaching content was incorporated into various subjects. According to critics, elimination of a separate "subject" (pro-health educational profile) would have a negative impact on teaching the relevant content, but this was not the case. The relevant content incorporated into all school subjects is treated more seriously by both students and teachers, especially after a separate exam in natural sciences at the end of lower secondary education had been introduced. The content of the pro-health profile was incorporated into the integrated education curriculum in primary school grades 1–3, into Science in primary school grades 4–6, and into Biology in lower secondary schools. Health education received particularly broad coverage in lower secondary schools for a number of reasons:

- human anatomy and physiology are an important part of the curriculum in lower secondary schools; therefore, the existing material was supplemented with hygiene;
- the lower secondary school is the last level of education with extensive biology-related content;
- health habits should be instilled in lower secondary school students, aged 13–15 years, who will carry these behaviors into adulthood [11].

Health-promotion topics were also included in Physical Education curricula at all levels. First aid is taught as part of Education for Safety (formerly Civil Defense Training), a subject with relatively few class hours in lower and higher secondary schools. Many health promotion topics, such as nutrition and prevention of contagious diseases, spiral into higher levels of education [23].

The new core curriculum reflects the MNE's efforts to create a supportive formal and organizational environment for health education in schools, including the prevention of overweight and obesity. The Regulation of the Minister of National Education of 19 August 2009 on the formal requirements for teaching two hourly Physical Education classes per week created new opportunities for engaging students in physical activities that correspond with their preferences, level of ability and health needs [24]. The MNE also popularized the Health Promoting School program as part of the European Network of Health Promoting Schools. On 1 January 2008, the program was renamed Schools for Health in Europe [12]. The Minister of Health supports the following initiatives in health education, including the prevention of overweight and obesity:

- publication of a monograph entitled "Principles of healthy nutrition for children and adolescents and healthy lifestyle guidelines";

- publication of a monograph entitled “Good hygiene practices in the preparation of school lunches and HACCP requirements for the preparation of school meals”;
- development and implementation of a program promoting a healthy lifestyle in schools and children’s homes, including publication of a monograph entitled “School breakfasts” and a handbook entitled “School stores”;
- training courses for school principals, teachers and educators relating to the role of healthy nutrition and current guidelines for the promotion of physical activity among children and adolescents, with special emphasis on the prevention of overweight and obesity;
- publication of the Resolution of the Minister of Health of 26 August 2015 on groups of food products intended for sale to children and adolescents in educational institutions and the requirements for food products used in the preparation of student meals in those institutions [23, 25].

The National Food and Nutrition Institute launched the following measures in the area of health education, in particular the prevention of obesity and overweight:

- publication of a monograph entitled “Principles of healthy nutrition for children and adolescents and healthy lifestyle guidelines”;
- publication of a monograph entitled “Good hygiene practices in the preparation of school lunches and HACCP requirements for the preparation of school meals”;
- development of a 10-point Nutrition and Physical Activity Charter for Children and Adolescents in the School Environment;
- publication of leaflets about the role of nutrition and physical activity and educational materials advocating salt reduction in school meals;
- development of principles for school competitions on healthy nutrition;
- development of recommendations for school nurses regarding the need to monitor the students’ body weight and height [23, 26].

Active measures should also be taken to instill and maintain healthy behaviors and positive attitudes towards healthy living among adults. Positive attitudes should be reinforced in the community to promote physical activity, healthy nutrition and personal growth [27]. People who, for various reasons, do not pursue a healthy lifestyle should not be stigmatized, excluded or isolated by members of the local community [28, 29]. Adult attitudes towards health promotion and health determinants play a key role in instilling healthy behaviors in children and youths. Those attitudes include nutritional choices as well as family relations and bonds [30]. The mass media expose the general public to contradictory messages by presenting information about the importance of a healthy lifestyle, while advertising highly processed, high-energy foods and foods with low nutritional value. Such information should be moderated by parents, other family members, teachers, educators or friends [31]. A young person should have a broad support network on which he or she can rely. This can be achieved through coordinated measures in health education, both inside and outside the school environment, with particular emphasis on physical activity [26, 32].

HEALTH EDUCATION – NECESSARY DIRECTIONS FOR FIGHTING OBESITY

Educational institutions such as kindergartens, schools, student dormitories and children’s homes play a very important role in health education. Health

education should promote the psychological, physical and social development of the young generation, with special emphasis on health [33]. For the developmental process to end in success, children and adolescents should be aware of the need to stay healthy and actively improve their health. Students should be provided with opportunities to develop values and attitudes that will help them to make well-informed choices, and will influence their present and future lives [19]. The Resolution of the Minister of Health of 26 August 2015 on groups of food products intended for sale to children and adolescents in educational institutions and the requirements for food products used in the preparation of student meals in those institutions offers such support. It describes healthy nutrition guidelines disseminated by the National Food and Nutrition Institute [25]. These recommendations elicited ambivalent responses from students and parents. The population aware of the importance of healthy nutrition and observing healthy nutrition principles in their daily diets regarded those suggestions as a positive contribution to their lifestyle. According to the opponents, the new dietary standards in schools run contrary to tradition and violate individuals' right to self-determination. Those discrepancies can probably be attributed to differences in individual responses to new situations that unleash powerful emotions, in this case, restrictive dietary changes. Sudden changes in dietary habits naturally evoke an emotional outpouring of opposition. American studies indicate that changes in lifestyle and eating habits should be made one small step at a time [34]. Students' emotional discomfort could be minimized by spreading the awareness that the provisions of the resolution constitute a long-term goal in the educational process. The traditional diet which is strongly rooted in the family setting should be modified gradually to ensure that the proposed changes are not regarded as means of repression and to encourage students to make healthy choices outside the school environment. The family, a social setting that is closest to the child, plays a hugely important role in implementing the provisions of the cited regulation, which suggests that all family members should be involved in the educational process of shaping healthy nutritional habits.

The formal underpinnings of health education seem to offer comprehensive solutions to combating overweight and obesity. In Poland, health education is based on the National Health Program (NHP), and the previous programming period covered 2007–2015. One of the goals in the last programming period was to increase the number of students who eat school meals and to disseminate knowledge about healthy nutrition among school personnel responsible for the preparation of meals. The percentage of students eating school meals was monitored to evaluate the achievement of the above goal. According to operational objective 8 of the NHP for 2007–2015, the percentage of children and adolescents with healthy eating habits should be increased to promote the physical, psychological and social development of youths and prevent the most common health and social problems among children and adolescents. The priorities in health education should involve the promotion of life skills at all levels of education and the continued development of health promoting schools. These measures have been introduced to reduce the prevalence of obesity among Polish children and adolescents. The percentage of obese individuals in the school-age population will be an indicator of the severity of health problems affecting youths. The following parameters will be monitored as part of operational goal No. 1 in the NHP for 2016–2020 (improvement of eating habits, nutritional status and physical activity levels):

- incidence and prevalence of diabetes,
- BMI in the analyzed population,
- blood pressure,
- intake / availability of fruit and vegetables,
- percentage of physically active individuals in the analyzed period, across gender and age groups,
- percentage of schools which have access to a sports field and sports facilities [35].

Despite the above, the proposed solutions are not always deployed or used rationally by the institutions responsible for health education at various levels of local and social governance. According to the Supreme Audit Office of Poland (NIK), the main pitfalls in the implementation of healthy nutrition guidelines for children and adolescents include:

- failure to identify children's and adolescent's health needs, including in the area of healthy weight promotion (around 90% of audited institutions);
- failure to provide schools with the required support for promoting healthy nutrition and lifestyle (around 74% of audited institutions);
- the reluctance of municipal authorities to adopt local resolutions banning the sale of unhealthy foods in school stores and vending machines;
- school principals do not have access to screening studies, including studies that evaluate the prevalence of overweight and obesity (around 25% of audited institutions), and are not familiar with measures that could be implemented in the school setting to prevent overweight and obesity among students (around 73% of audited institutions);
- prevention of overweight and obesity among children and adolescents was not included in teacher training programs in any of the audited schools;
- failure to provide school lunches (around 27% of the audited institutions) [23].

The steady expansion of the government program entitled "My sports grounds - Orlik 2012" ("Moje boisko - Orlik 2012"), which encourages municipal authorities to build sports and recreational facilities for students, is an important part of health education in schools. Local authorities also initiate various sports and tourism events that promote different types of physical activity and a healthy lifestyle among children and adolescents [23]. Successful prevention of obesity and overweight among children and adolescents requires active support from government agencies, local communities, parents and students in organizing extracurricular sports activities [37]. Healthy attitudes and habits instilled in students during health education classes should be reinforced by the local community, and they should become a lifestyle choice [32, 36]. An active lifestyle should also be promoted among pre-school children. Parents are responsible for developing lifelong healthy habits in the youngest children [37].

Parents are the primary source of health knowledge for their children, and they often play a significant role in the child's health education, even if they are unaware of it. The family is not the only group responsible for a child's education and socialization, but due to the close ties between parents and children, the family plays a decisive role in the development of a child's subjective consciousness and other vital personality traits [9]. The educational process in the family can be spontaneous or organized. Families that provide

children with psychological stability, a sense of security, balance and support have vast knowledge potential in every area of education. Therefore, the family plays the leading role in health promotion. The family is responsible for health education and the reinforcement of positive attitudes towards health, personal hygiene habits, healthy behaviors, knowledge about health and diseases, and emotional attitudes towards health. Dysfunctional families, social dysfunctions in parents and the absence of health knowledge can have a detrimental influence on the child's health education [38]. Even the best health promotion programs in school cannot compensate for the deficits in health education in the family setting. The parents' knowledge about the influence of biological determinants, such as obesity, that contribute to the likelihood of obesity in children, also plays a very important role. For this reason, health education for parents should be a significant part of the educational process [39]. Parents should be able to identify the risk of obesity or overweight by monitoring their children's BMI scores [40].

Healthcare services are usually a competent and reliable source of information and support in health education. Doctors and nurses should contribute to the patients' personal development by promoting healthy behaviors and a sense of responsibility for own health. For those goals to be met, the medical profession should be reformed to place greater emphasis on humanitarian principles and the educational role of doctors and nurses [30]. Health care professionals should strive to expand and update their knowledge about nutrition to be able to dispense valuable advice to children and parent. Physicians are responsible for identifying children who are overweight and for estimating the risk of obesity based on biological and social factors. Comprehensive and verifiable standards for identifying, preventing and treating obesity should be developed [41]. Local communities' educational and medical needs should be identified in different regions of the world to improve the management of local health care facilities. Childhood obesity poses a significant public health issue in Poland and the USA, but it is rarely encountered in many countries around the world where the main focus is on combating malnutrition and communicable diseases [42].

The mass media plays an informal role in shaping the health attitudes of the general public, and it exerts an indirect influence on health education. The role of the mass media should not be underestimated because it is the only or the only reliable source of information for many people. The messages conveyed by the mass media exert a multisensory influence. Children and adolescents are particularly susceptible to external stimuli, which is why mass media content should be placed under greater control. Such control could be exercised through the implementation of systemic solutions that ban advertising of unhealthy foods for children as well as through parental control [43]. The mass media should be used productively to effectively promote health education. Food advertisements should not be misleading for consumers, in particular children and adolescents. For this reason, educational and promotional campaigns targeting children and adolescents should be fully approved by the National Institute of Public health before they are launched by food producers [44].

Despite years of efforts to improve health education programs in schools and combat obesity, the USA has not been able to significantly reduce the

prevalence of overweight and obesity among children and adolescents. Research conducted in 2011–2012 demonstrated that 32.2% of children in the United States between the ages of 2 to 19 were overweight, and 17.3% were obese, and these findings did not differ significantly from the data reported in 2009–2010 [45]. The prevalence of obesity increased among adolescents and remained constant or slightly decreased among pre-school children [46]. The latter observation gives hope that long-term health education programs aiming to reduce the percentage of overweight and obese youths will eventually bring the anticipated results. The undertaken measures have to be well coordinated, implemented at systemic level, they have to engage all members of the community and address every child's individual needs.

It should be emphasized that many health education tasks and challenges relating to the prevention of overweight and obesity can be effectively undertaken by the parents and other family members [31].

Health education is not only a process of imparting knowledge, but above all, it should reinforce behaviors and attitudes that contribute to health. Those elements of health education determine the quality of life not only in childhood and adolescence, but also in adulthood. The health of children and adolescents is a necessary prerequisite for success at school and a high quality of life. Health education should be adapted to cognitive abilities at different stages of development, and it should account for the background and specific needs of various social groups. According to Ostrowska, health education in adolescents should promote a lifestyle that is most conducive to personal development, maintenance of physical health and unleashing individual and collective developmental potentials for personal growth [39]. Personal development is not a process that ends with adolescence, although it can be very stormy during the period when young people search for the self. Health education should take place at every stage of development with the involvement of didactic measures and methods that promote the achievement of educational goals. Such measures should reinforce healthy attitudes and behaviors in young people. A healthy lifestyle is defined as healthy personal growth at a given developmental stage. Health education should involve organized measures which, with the active involvement of the student, will produce a mature individual and a fully functioning adult [47]. This process should reinforce the awareness that the physical and social environment impacts on attitudes towards health and a healthy lifestyle, determines personal health and contributes to well-informed personal decisions and social activities [39].

Health education in the family drives pro-health attitudes that are influenced by lifestyle, customs, traditions and the peer community. The family, a social setting that is closest to the child, plays a very important role in health promotion and disease prevention. The family environment can exert both positive and negative effects on the child's health, which is why health knowledge should be continuously updated and expanded [48]. The school, a formal organization that is largely responsible for the education and development of children and adolescents, should provide parents with support in the area of health education. An analysis of health education practice in the Polish educational system indicates that the adopted measures, their practical applications and educational goals are adequate. The proposed solutions provide parents with valuable support in instilling healthy attitudes in children. Despite the above,

teachers, educators and the local authorities are not always fully committed to the implementation of positive systemic solutions. For this reason, health education for the prevention of obesity and overweight should also account for the parents' educational needs in this area.

CONCLUSIONS

The results of this analysis indicate that the main goals of health education in the area of obesity and overweight prevention should include:

1. Expanding the parents' and children's knowledge about the nutrient requirements of children at various stages of development;
2. Increasing awareness about the need to instill self-control mechanisms relating to food intake and the need for higher levels of physical activity among children;
3. Increasing parents', teachers' and educators' awareness that spontaneous physical activity in children and adolescents is an important part of the educational process;
4. Providing parents, teachers and educators with support in the promotion of moderate and intense physical activity;
5. Increasing awareness about the parents' role in promoting healthy behaviors and activities among children and adolescents outside the school environment;
6. Including the specific needs of social groups at higher risk of overweight and obesity in educational programs;
7. Expanding the range of preventive and therapeutic measures for overweight and obese children to include the entire family;
8. Creating a supportive family and school environment for overweight and obese children and adolescents with the involvement of experts, such as therapists;
9. Developing psychological education programs that will teach overweight and obese children and adolescents to cope with stress and negative emotions, reinforce their strengths and build a sense of self-worth.

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