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The impact of advertising on formation of the eating habits of children and adolescents. The role of media in the development of obesity

The occurrence of overweight and obesity is a significant problem not only among adults but also among children and adolescents. Mass media – advertising on television, the Internet and the press – plays a big role in determining the daily dietary choices of children and adolescents. This population group is particularly susceptible to advertising and is a target group for many food advertisements. Food advertising accounts for up to 50% of the advertising emitted during children's programs. The most commonly advertised products include those rich in sugar, fat and salt, such as sweetened breakfast cereals, sweet drinks, sweets and salty snacks, and fast food. In Poland television advertising account for as much as 11% of programs watched by children. Young consumers themselves declare that they like watching TV commercials. An average child watches 40.000 ads per year on television. Education of children and adolescents, including both promoting healthy eating habits and increasing awareness of the impact of advertising on the consumer, can play a significant role in the prevention of overweight and obesity in this population.

Key words: mass media, body weight, nutrition, children, adolescent

Introduction

The occurrence of overweight and obesity is a significant problem not only among adults but also among children and adolescents. According to the World Health Organization data, 41 million children under 5 were obese in 2014 (WHO 2014). The growing number of overweight children and adolescents around the world has become a base for creating recommendations for the prevention and treat-

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ment of obesity by the Commission on Ending Childhood Obesity called by WHO in 2016 (WHO 2016).

Overweight and obesity, most frequently diagnosed according to the Body Mass Index (BMI) value, are strongly correlated with higher morbidity and mortality. High BMI was associated with four million deaths all over the world in 2015. Obesity level, classified by the BMI value for: I (BMI 25–29.9), II (BMI 30–39.9), and III (BMI 40), were associated with a nearly 2-fold, 3-fold, and 4-fold bigger possibility of having at least one of Cardiometabolic Risk Factors such as: elevated triglycerides, blood pressure, low high-density cholesterol and impaired blood glucose level (Kushner 2018).

Prevalence of obesity can be influenced by many factors, some of them being genetic makeup, others are individual and environmental agents. The increase of mechanisation limiting everyday physical activity, increased high-processed food consumption are part of the so-called obesogenic environment, as well as cultural acceptance of big-frame body size and lifestyle change (Swinburn *et al.* 2011). According to Swinburn *et al.* (2011), obesity is a result of a normal reaction of population finding itself in an obesogenic environment.

Obesity significantly influences quality of life and is connected with lower physical as well as psychological health state. Overweight people are considered to be more depressed and present less social interaction compared to their slim counterparts. What is more, many prejudices connected with obese people occur. Overweight children are more often perceived as lazy, stupid or ugly what is shown by social discrimination of this part of the population (Tobiasz-Adamczyk 2013: 63).

There is a higher risk of co-occurrence of other diseases among children who are overweight and obese, such as type II diabetes, hepatic steatosis, dysfunction of the endocrine system and motor organs. Children who are overweight may be as much as 17 times more likely to be obese during adulthood, especially if their parents are also overweight or obese. Even if reduction of body mass occurs during adulthood, those who developed obesity during adolescence are at higher risk of death when compared to those with normal BMI (Lobstein 2005).

Prevalence of obesity in Poland

Analysis of the results of the study “Comprehensive assessment of the diet of children aged 13–36 months in Poland” showed that 27% of children examined had the BMI above 85 centile, what is considered to be an obesity indicator. On the basis of the BMI z-score, overweight and obesity were diagnosed among 14.5% and 13% of children respectively (Weker 2013).

In the study led by Trzcińska *et al.* (2014), in which six year-olds were examined, 12.5% girls from urban regions and 16% from rural areas were diagnosed with overweight. The occurrence of obesity in the examined group of children was recognised among 3.5% subjects from urban areas and over 7% from rural areas.

Analysis of data collected using OLAF databases showed that the prevalence of overweight and obesity among Polish children aged 7–18 years was 18.8–24.6% among boys and 14.3–17.4% among girls. The incidence of obesity was 4.3–8.8% and 2.7–4.2% among boys and girls respectively (Kułaga *et al.* 2016).

Obesity among children is contemporary considered to be the biggest global problem (Tobiasz-Adamczyk 2013: 64).

Development of good eating habits plays a significant role in preventing the occurrence of excessive weight among children and adolescents (Sosnowska-Bielicz 2013).

Factors influencing the development of eating habits among children

One of the important factors that plays a role in shaping the dietary preferences of children is the way of feeding during infancy. It has been shown that children fed naturally have better dietary habits. Breastfeeding is also a significant element of prevention of overweight and obesity (Kozioł-Kozanowska *et al.* 2007).

It is assumed that good dietary behaviour is already formed during early childhood. Proper nutrition affects not only the child's normal psychosomatic development, but can also contribute to reducing the risk of diet-related diseases in adulthood (Weker 2013).

It is believed that the mother's age and education level are important elements in shaping the child's dietary preferences. An inverse correlation has been shown between these factors and the frequency of fast food consumption among children, whereas a positive correlation has been reported between the mother's education and the number of dairy products consumed by the child (Kozioł-Kozanowska *et al.* 2007).

Children's taste preferences – favouring sweet and salty – with a simultaneous rejection of sour and bitter products are largely genetically determined (Kolarzyk 2008). This group also tends to reject unknown food products without first trying them and they are even afraid of introducing new products into their diet, which is called neophobia. It is estimated that one of the causes of neophobia may be a monotonous diet in the family home (Kostecka 2013).

Children's dietary behaviours can be largely shaped by the mass media which often use fairy tales, celebrities, and well-known athletes as children's authority to

advertise food (Jakubowska 2015). Shaping dietary habits is much easier among the youngest consumers than among adults because they do not have much knowledge about products that are available on the market. Research shows that 80% of young consumers want the advertised product, while 68% urge parents to buy it. Most often children ask for ice cream, crisps, jelly and juices, and when asked about the reason for choosing a particular product, they declare that they have seen the advertisement and therefore they want to have it (Litwińska 2008).

Children co-decide on the purchase of certain food groups in their household. They usually make choices about yoghurts and cheese but also juices, carbonated drinks and breakfast cereals. Advertisers notice that they can reach adult consumers through advertisements directed at young consumers. They affect the negative change in the family's eating habits through advertising energy-dense, low-nutritional products (Frątczak-Rudnicka 2001).

According to the National Council of Telephony and Television, a statistical Pole over 4 years old watched television for 4 hours and 47 minutes a day in the first quarter of 2017 (KRRiT 2017). Time devoted to watching television is largely attributable to a reduced frequency and time devoted to physical activity. It is presumed that 29% of childhood obesity could be prevented by reducing television viewing time (Mazur *et al.* 2006).

Food advertising accounts for up to 50% of the advertisement emitted during children's programs (Halford 2005). The most advertised products include those rich in sugar, fat and salt such as sweetened breakfast cereals, sweet drinks, sweets and salty snacks, and fast food products (Nevile 2005; Harrison 2005). Almost 71.4% of food advertised on the Polish TV channels are high-fat and high-carbohydrates products, when 14.3% of commercials advertise sweet drinks. Only 14.3% of advertised products can be described as "healthy" (Mazur *et al.* 2008). In Poland, TV commercials account for as much as 11% of programs chosen by children and are more popular than good-night-cartoons or educational programs (Piórecka *et al.* 2012). Young consumers declare that they like watching TV commercials. An average child watches 40.000 commercials yearly (Mazur *et al.* 2006).

It is suggested that it is the food marketing, as well as lack of government intervention, that should be blamed for children obesity. This group of population is considered to have not enough nutrition knowledge to maturely notice the possible consequences of specific food choices. What is more, they do not get enough information to make conscious decisions and aggressive marketing does not take into consideration the long-term negative results and possible cost of future obesity treatment (Swinburn *et al.* 2011).

The effect of watching TV on the occurrence of overweight and obesity among children and adolescents

Keller *et al.* (2010) analyzed the ads displayed on seven TV channels available on Swedish television. They reported 11 613 ads, including 3061 promoting food products, in 1365 h recorded material from the researched channels. 55% of the surveyed food commercials included fast food and sweets. The authors of the study concluded that with an average of 110 minutes of daily television viewing, children watch 1232 food ads per year. With an average duration of 21s, an average child in Sweden spends 7 hours 11 minutes a year watching food advertising.

Data analysis of the Framingham Children Study showed that children who spend most of their time watching TV during the day had the highest weight gain in their adolescence period (Proctor *et al.* 2003). The study involved 106 children. The average age of participants at the beginning of the study was 4 years, while at the end of the study 11.1 years. Each year parents of the surveyed children completed a questionnaire about the average time spent by their children in front of the TV and on playing computer games. Anthropometric measurements were also made among the subjects: height, body weight, skin thickness. Information on the children's time spent on physical activity, their energy intake, percentage of energy from fat in the diet, age, weight and parental education level were also collected. Children who spent most of their time watching TV showed the highest increase in the BMI and skinfold thickness compared to the group who watched television the least. Children who watched television frequently and were physically active were characterized by a lower body weight gain compared to high frequency television viewers with low physical activity. In addition, high frequency television viewing and high activity children groups were characterized by the lower BMI than those with occasional television viewing and low physical activity. The level of parental education was negatively correlated with the amount of time children spent on watching TV (Proctor *et al.* 2003).

Chaudhari and Marathe (2007) found the highest incidence of obesity among children who spent at least four hours a day watching television.

In many households watching TV while eating meals is a daily routine. Analysis of the results of the study led by Marquis *et al.* (2005) showed that the consumption of children's meals in front of the TV was positively correlated with the consumption of products such as fries, ice cream, salty snacks, sweets, fruit and carbonated beverages. In the study of Crespo *et al.* (2001), participants who spent more than an hour in front of the TV had 175 kcal higher daily energy intake compared to those who watched television less than 1 hour per day.

Costa *et al.* (2012) evaluated the connection of TV viewing by schoolchildren and their eating behaviour, as well as the connection of exposure to food

advertising with food choices. The analysis of the results showed a significant correlation between the number of hours spent in front of the television and the body weight of the participants. Those who watched television during a meal were characterized by lower fruit and higher fruit drinks consumption compared to those who did not watch television while eating. 46.9% of the surveyed children admitted to watching food advertisements on television, and 54.9% were interested in the advertised products. The analysis of the study results also showed a positive correlation between the declaration of interest in the product and a desire to purchase it.

Analysis of the results of the simulation conducted by Veerman *et al.* (2009) has shown that reducing time spent by children in the United States from 80 minutes a week to zero would reduce energy intake by 4.5%. This would mean an average weight loss of about 2.1% body mass and the BMI of 0.38 kg/m², and would lead to a 2.7% reduction in overweight and obesity among boys and 2.4% among girls.

It is hard to unambiguously specify the influence of watching TV on weight gain among children and adolescents taking into consideration that obesity has a very multifactorial cause. What is more, many educational programmes are emitted and targeted at this population group that aim to increase their knowledge about a healthy lifestyle. It would be important to consider if the time spent on watching TV or the time spent on watching the unhealthy food and drinks advertisements between the TV programmes have the most significant influence on the youngs' habits.

Analysis of the results of the study led by Kelly *et al.* (2015) showed that it is not the time spent watching television programs but the exposure to advertisements that could have an impact on the development of negative eating habits among children. The strongest correlation between watching TV and monotonous diets was observed among viewers who watched commercial television, where programs were interrupted by commercials of unhealthy food. Watching commercial television with skipping ads feature was not correlated with unhealthy eating habits, and watching non-profit television was slightly correlated with a supply of unhealthy food and drinks.

The role of advertising in the determination of nutritional choices among children and adolescents

In the study of Lobstein and Dobb (2005) the relationship between the frequency of advertising of unhealthy food during programs aimed at children under 12 in 10 countries and the prevalence of overweight and obesity was evaluated. The analysis of the study results showed a significant positive correlation between the

frequency of commercial emission and the occurrence of overweight and obesity among children in the studied countries. The strongest relationship was shown between the frequency of sweet and fatty products ads emission and the occurrence of overweight and obesity among the tested children.

In the study of Gorn and Goldberg (Gorn 1982) children from 8 to 10 years of age, divided into two groups, were shown ads of a new brand of ice cream while watching a cartoon. The cartoon shown in the control group was not interrupted by the ad. Then, children from both groups could choose ice cream from many brands. Children from the studied group chose more often the brand advertised during the cartoon. The advertisement did not affect the ice cream intake – both, the test and control group, consumed a similar portion of ice cream.

In the study by Halford *et al.* (2007) a relationship between watching food advertising and the consumption of snacks represented by five food groups was studied in a group of children aged 9–11 years. These foods included low fat salty, low fat sweet, high fat sweet, high fat salty and low energy products. In the study, three recordings containing 10 food ads, 10 toy ads and a cartoon were used. After watching the recordings, the children were given the opportunity to eat the products they selected from the offered assortment of snacks: jellies, crisps, chocolates, and fruit. The participants were divided into two groups. In the first week the first group watched advertisements of toys, and the second advertisements of food products, then the two groups could choose a snack from the offered products. After two weeks, the study was repeated but the emitted videos were changed – for the group who viewed toy ads, food ads were played, and for the group who viewed food ads, toy ads were played. The analysis of the study results showed a positive correlation between consumption of chocolates, crisps, and jelly after exposure to food advertisements and the BMI among surveyed children.

Andreyeva *et al.* (2011) researched the relationship between fast-food ads viewing and the frequency of consumption of the tested products by children. The study group comprised of 9760 children chosen from the Early Childhood Longitudinal Program – Kindergarten Class (ELCS-K). The study was conducted in the years 1998–2007. A questionnaire covering fast food and beverage consumption data, television viewing frequency, socio-demographic data and anthropometric measurements were collected. Soda drinks, fast food and breakfast cereal advertising data for children aged 6–11 have been collected from the Nielsen Company. The authors of the study have observed an increased intake of fast food and carbonated beverages after exposure to television advertising of these products. The analysis of the study results showed a positive correlation between the time of exposure of children to TV commercials while watching television and the BMI value of the study group. There was a negative correlation between the BMI level

and the exposure to breakfast cereals ads viewing. The authors hypothesized that this may be related to the development of positive eating habits such as the consumption of breakfast by children.

Troć *et al.* (2012) showed a significant positive correlation between children's choice of fast food products such as fries, coke and Kinder Surprise from a global brand, the number of hours spent on watching television, frequency of consuming meals in front of the TV, participation in food shopping and fast-food bars visits by children.

Summary

Due to the low level of social and cognitive development of children and adolescents, these groups are susceptible to environmental influences including the media (Piórecka 2012).

Research on the effectiveness of teaching with multimedia use has shown that this method increases knowledge acquisition by 50% comparing to conventional teaching. The rate of multimedia learning is 60% more successful and the amount of knowledge acquired is 25% to 50% higher than in the standard way of transferring knowledge (Wasilewska 2007).

One of the methods of using the mass media to promote healthy nutrition can be the implementation of educational campaigns. In the study led by Białek-Dratwa *et al.* (2012) on the level of knowledge of primary, secondary school students and college students on social and food campaigns and the role of campaigns in shaping dietary habits were assessed 67.2% of primary school students, 26.2% of junior high school students, 41.9% of high school students and 52.4% of students confirmed that they saw social advertising on television. 46.2% of primary school students, 35.7% of junior high school students, 11.0% of high school students and 17.1% of students declared changing their eating habits under the influence of social campaigns. 52.5% of the surveyed participants responded that social campaigns for food and nutrition should appear on television.

A key element in fighting the problem of overweight and obesity among children and adolescents may be to limit the exposure of these groups to advertising of unhealthy foods. In the Scandinavian countries, food corporations are banned from sponsoring programs aimed at children. In Sweden and Norway, emitting advertisements for children under the age of 12 was banned as well as advertisement display during children television programmes.

The TV broadcasters' agreement on the principles of dissemination of advertisements and sponsorship indications concerning foodstuffs or beverages containing ingredients which presence in excessive amounts in the daily diet is not

recommended, was signed in Poland in 2014 on the initiative of the Advertising Council. According to the agreement of 1 January 2015, television broadcasters require advertisers to declare the content of the ad to be emitted before, during and after the broadcast for children with nutritional criteria for the nutritional composition of the advertised products (Rada Reklamy 2014).

Good practice may be to increase the exposure of children and adolescents to healthy food advertising or to set the criteria for food that can be advertised on television including its composition and nutritional value. Examples of this type of activity may be found in the actions of the Canadian Children's Food and Beverage Advertising Initiative (CFBAI). This institution defines regulations that must be followed by manufacturers who want to advertise their products for children younger than 12 year old. The criteria include the composition of products from all food groups: the proportion of calories from fat including saturated fatty acids, sodium and simple sugars.

Education including both promoting healthy eating habits and increasing awareness of the impact of advertising on the consumer can play a significant role in the prevention of overweight and obesity among children and adolescents. Activities aimed at shaping the correct eating habits in these population groups should be multidirectional.

It is believed that programmes aimed to prevent obesity through creating proper nutrition habits among children should be directed not only to parents and grandparents, but also to their relatives and friends so they could contribute to the creating of healthy habits and give good example as well (Tobiasz-Adamczyk 2013: 65).

Using mass media to promote healthy eating both by limiting exposure to unhealthy food products and increasing advertising and spots for social campaigns that promote healthy eating habits can play an important role in the prevention of overweight and obesity among young people.

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