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DIETARY BEHAVIOUR OF ADOLESCENTS BASED ON THE EXAMPLE OF FAT INTAKE AS A MEASURE OF CONSUMPTION OF UNHEALTHY FOODS IN THE CONTEXT OF SETTING SUSTAINABLE DEVELOPMENT GOALS

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Abstract: Identifying trends related to food consumption and discussing their relationship to the two Sustainable Development Goals (SDGs) is an important issue regarding the changes and transformations of the world, including meeting the needs of current and future generations. The aim of the article was to assess the nutritional behaviour of a selected group of adolescents aged 15–18 based on the example of fat intake as a measure of consumption of unhealthy foods, especially in the case of overconsumption. The study used the method of primary data analysis, critical analysis of the relevant literature, comparative analysis and the method of synthesis and logical inference. The group of adolescents studied (living in Gdynia, Poland) showed quite unhealthy behaviour based on the example of fat intake. According to the authors of the publication, further research monitoring pro-health attitudes and behaviour of young people is useful and justified as we need to know whether it is necessary to take action to promote development of healthier attitudes and hierarchy of health values. In the light of the challenges of the SDGs, hedonistic needs and trends are important, related, amongst other things, to the issues of ensuring good health and greater care for the mental and physical condition of young people and their families.

Keywords: quality of nutrition, health-related behaviour, youth, sustainable development.

1. INTRODUCTION

An analysis of the postulates contained in the Sustainable Development Goals enables us to confirm that they serve to ensure food and nutrition security, among other things [Garbowska, Radzymińska and Tarczyńska 2021]. This means that they should aim to develop and consolidate specific trends in food consumption or contribute to their development. Links between SDGs and food safety issues include,

but are not limited to, the following: 1. Ensuring healthy lives for all people of all ages and promoting well-being, as "We must continue to work more to tackle the multitude of diseases and emerging threats to health"; 2. Providing quality education for all and promoting lifelong learning, as "Quality education is a basis for improving people's lives and for sustainability. Universal access to education improves the quality of life and makes it possible to find innovative solutions to the biggest problems of the modern world." [Wiśniewska 2022].

An analysis of changes in consumer behaviour around the world enables us to put forward the thesis that trends in food consumers' behaviour are a consequence of existing threats translating into food and nutrition safety [Garbowska, Radzymińska and Tarczyńska 2021]. The main threat in the area of food security is a lack of physical and economic accessibility and adequacy of food. Physical availability means having enough food for the entire population at all times to sustain human life. Economic accessibility is associated with the possibility of purchasing food by all social groups – even the poorest. Next, adequacy is understood primarily in the category of a balanced food ration [Kozłowska-Burdziak 2019]. It is recognised that these values are closely linked to the SDGs as a roadmap for transforming the world so that the needs of the present generation can be met in a sustainable manner, with respect for the environment and also taking into account the needs of future generations [Świtalski, Ruszkowska and Kamińska 2021; Gęsiński and Ruszkowska 2022; Wiśniewska 2022; Zborowski and Mikulec 2022].

Health-related attitudes and behaviour depend on health awareness which is acquired throughout life, in particular in the process of upbringing and shaping attitudes during childhood and adolescence [Kropornicka et al. 2015; Wagner et al. 2015]. It is emphasised in the relevant literature [Kaczor-Szkodny and Szkodny 2021] that the formation and shaping of health-related attitudes and behaviour is determined by gender, self-perception in the field of health and social roles. Nutrition is one of the basic factors affecting the physical and mental development of a young person, as well as the proper functioning of their body in the future. Insufficient, excessive or poor quality food supply may affect well-being and health in childhood and adolescence [Ojo et al. 2018; Suliga et al. 2021; Sagili et al. 2022] and habits, acquired from an early age, determine how people eat in adulthood, are very difficult to change [Bieganowska and Kowaluk-Romanek 2013]. Along with the progress of civilisation, the lifestyle of adults, children and adolescents is changing and also has consequences for the health of individual population groups. Therefore, knowledge about human nutrition and lifestyle factors that affect human health is also constantly changing [Kelly and Ciclitira 2011; Spencer, Rehman and Kirk 2015; Wolnicka and Taraszewska 2019].

The aim of the study was to assess selected examples of health-related behaviour on the example of the frequency of consumption of food constituting a source of saturated fatty acids by a selected group of young people attending secondary schools in Gdynia.

2. RESEARCH METHODOLOGY

The research was conducted in 2022, in a group of young people aged 15–18 living in Gdynia and studying in secondary schools there (n = 242). 140 girls (57.9%) and 102 boys (42.1%) joined the study. The selection of this sample was deliberate. Interactions between gender and diet are conditioned by physiological, psychological and socio-cultural factors. This system of mutual interaction includes feedback: sex and gender shape the type and amount of food consumed by women and men [Grzymisławska et al. 2020].

Empirical research was carried out using the measurement survey method by the indirect interview technique. One of the aspects of health-related behavior was the consumption of fats as a measure of the consumption of foods not conducive to health, especially in the case of overconsumption. The frequency of food consumption was used in this evaluation [Gronowska-Senger 2009]. The evaluation used the Block Screening Questionnaire for Fat Intake (BSQF) [Thompson and Byers 1994] modified by Czarnocińska et al. [2013].

The BSQF questionnaire collected information on the habitual frequency of consumption of 13 food groups: fats and products containing fats [Thompson and Byers 1994]. The questions concerned the following products: burgers / cheeseburgers, red meat, poultry meat in fried form, weenies / frankfurters, salad dressings / mayonnaise, margarine / butter, yellow / processed cheese, milk with a fat content of 3.2%, chips / fries / popcorn / ice cream, donuts / cakes / cookies. 5 frequency categories of consumption were used, which were assigned points: "less than once a month" (0 points), "once a month" (1), "2–3 times a month" (1), "1–2 times a week" (2), "3–4 times a week" (3), "5 and more times a week" (4). Fat intake was expressed on a scale from 0 to 52 points.

Based on the total numberof points, groups with the following fat intakes were identified: very high (> 27), high (25–27 points), moderately high (22–24 points), correct (18–21 points), optimal (<18 points). In addition, groups with the following fat intakes were distinguished based on the total number of points in the BSQF questionnaire: inadequate (≥ 22 points) and appropriate (< 22 points). The results of the research were divided into girls and boys. The paper uses basic statistics, such as sample size and % of responses.

3. RESULTS

The relationship between attitudes towards health and eating behaviour is most often described in the relevant literature as positive and characterised by varying strength [Backman et al. 2002; Hearty et al. 2007; Sun 2008; Pieniak et al. 2010; Czarnocińska et al. 2013]. However, the results of some studies do not confirm the existence of such relationships. For example, the study by Aikman et al. [2006]

shows that views on the health benefits of food did not correlate with the frequency of its consumption in both women and men. Attitudes towards the health benefits of food did not significantly differentiate statistically the diversification of food consumption expressed by the number of products consumed during the week [Czarnocińska et al. 2013].

A positive attitude towards nutrition does not determine the consumption of a properly composed meal on a given day, for example due to the lack of access to appropriate food products, lack of time to prepare a meal, etc. On the other hand, the correct attitude towards nutrition is a good indicator of the correctness of nutrition in general, which is described by the principle of averaging, which indicates that the impact of attitudes on behaviour is more visible when not a single example of human behaviour is taken into account but its "average" in the long term [Myers 2003]. This approach to the relationship between attitudes and eating behaviour was adopted in the present study: the fat intake was measured not as a single example of behaviour but as the effect of taking into account the consumption of different products that are the source of a given ingredient or indicate a variety of food intake.

As part of the research, an attempt was made to select abnormal types of health-related behaviour of adolescents on the basis of the consumption of food products that are the source of saturated fatty acids.

Fatty acids are saturated with fats of animal origin. They are contained in butter, fatty dairy products (cheese, cream), egg yolk, meat, offal or lard. Trans isomers of fatty acids are a product of hardening vegetable oils by hydrogenation. They are present in blocks of hard margarine, confectionery, sweet and salty snacks, fast-foods (burgers, cutlets and pieces of coated chicken, fries). If hydrogenated or palm fat is mentioned in the composition of a product on the packaging, it can be assumed that it will be a trans fat [Jarosz 2019]. The nutritional norms for the Polish population [Jarosz et al. 2020] recommend as low as possible supply of saturated and trans fatty acids while ensuring the right nutritional value of the diet. In the case of saturated fatty acids, their maximum supply in the group of children and adolescents should be up to 10% of the energy demand per day. The rest of the energy demand should be satisfied by unsaturated fatty acids of plant origin and contained in sea fish, seafood or algae.

The saturated fatty acid intake by adolescents in general is presented in Table 1. 45.5% of the respondents (51.4% of the girls and 37.3% of the boys) ate little saturated fatty acids (these were the best cases). The intake of saturated fatty acids in the diet was normal in 16.9% of all the adolescents (19.3% of the girls and 13.7% of the boys). The moderately high dietary intake of saturated fatty acids was found in 12% of the respondents (10.7% of the girls and 13.7% of the boys. 5.8% consumed very high levels of saturated fatty acids (5.7% of the girls and 5.9% of the boys). As many as 20% of the respondents declared a high intake of saturated fatty acids in their diets, with a higher percentage of boys (29.4%) than girls (12.9%) (Tab. 1).

Research on the effect of consuming saturated fatty acids and trans isomers by children and adolescents has confirmed that these substances are responsible for the increase in the total cholesterol, LDL cholesterol and diastolic blood pressure. For the prevention of cardiovascular diseases and, accordingly, increased mortality, the consumption of these groups of fats should be as low as possible [Ekhmke vel Emczyńska-Seliga 2019]. Based on the total number of points in the BSQF questionnaire, the following groups of fat intake were distinguished: wrong (≥ 22 points) and right (< 22 points). 62.4% of all the adolescents (70.7% of the girls and 51% of the boys) consumed the right quantities of saturated fatty acids. 37.6% of the respondents (49% of the boys and 41% of the girls) ate too much saturated fatty acids (Tab. 1).

Table 1. Evaluation of the saturated fatty acid intake by the group of adolescents studied

Intake of saturated fatty acids	Total respondents (n = 114)		Girls (n = 67)		Boys (n = 47)	
	n	%	n	%	n	%
Very high intake of saturated fatty acids in the diet: total points > 27	48	20	18	12,9	30	29,4
High intake of saturated fatty acids in the diet: total points from 25 to 27	14	5,8	8	5,7	6	5,9
Moderately high intake of saturated fatty acids in the diet: total points from 22 to 24	29	12	15	10,7	14	13,7
Proper intake of saturated fatty acids in the diet: total points from 18 to 21	41	16,9	27	19,3	14	13,7
The optimum (i.e. low) intake of saturated fatty acids in the diet: total points <18	110	45,5	72	51,4	38	37,3
Right amount of saturated fatty acids in the diet: total points < 22	151	62,4	99	70,7	52	51
Wrong amount of saturated fatty acids in the diet: total points ≥ 22	91	37,6	41	29,3	50	49

Source: own research.

These results show that the group of adolescents studied paid attention to the adequate, low supply of saturated fatty acids in their diets (Tab. 3 and 4). According to Stachura et al. [2009], the mean share of saturated fatty acids in the diets of the students aged 16–18 was low: 11.2%.

The evaluation of the frequency of consumption of products containing saturated fatty acids by the whole group of respondents is presented in Table 2 and, taking into account the gender, in Tables 3 and 4. The most commonly consumed products containing saturated fatty acids by the students (≥ 10% of all the respondents) were: margarine or butter, processed and yellow cheese, milk with a fat content of 3%, eggs and confectionery (donuts, cakes, cookies and others).

On the other hand, the following products were consumed least often during the week (≤ 5% of all the respondents): ready meals (pizza / casserole / lasagna / hamburger), beef / steaks / roast, ice cream, chips and potato chips, sausage products (fatty sausages / pate / blood sausage / minced meats / bacon and weenies / frankfurters / snack stick sausages) (Tab. 2).

Table 2. Frequency of consumption of products containing saturated fatty acids by the studied group of adolescents

Food product	Frequency of consumption									
	Less than once a month		2–3 times a month		1–2 times a week		3–4 times a week		5 and more times a week	
	n	%	n	%	n	%	n	%	n	%
Pizza, casserole, lasagna, hamburger	84	34,7	72	29,7	70	28,9	14	5,8	2	0,8
Beef, steak, roast	106	43,8	56	23,1	59	24,4	16	6,6	5	2,1
Fried chicken or turkey	43	17,7	67	27,7	55	22,7	63	2,6	14	5,8
Sausages, frankfurters, snack stick sausages	104	43	48	19,8	53	21,9	26	10,7	11	4,5
Fatty sausages, pate, blood sausage, minced meat, bacon	144	59,5	33	13,6	30	12,4	25	10,3	10	4,1
Salad dressings, mayonnaise	85	35,1	55	22,7	43	17,8	41	16,9	18	7,4
Margarine or butter	72	29,7	38	15,7	26	10,74	51	21,1	57	23,5
Eggs	33	13,6	66	27,3	39	16,1	75	31	29	12
Processed and yellow cheese	42	17,3	55	22,7	34	14	67	27,7	44	18,2
Whole milk (3%)	57	23,5	35	14,5	37	15,3	70	28,9	43	17,8
Fries and potato chips	63	26	79	32,6	64	26,4	25	10,3	11	4,5
Ice cream	106	43,8	60	24,8	59	24,4	8	3,3	9	3,7
Donuts, cakes, biscuits, wafers and other confectionery	49	20,2	63	26	62	25,6	43	17,8	25	10,3

Source: own research.

Regarding the intake of saturated fatty acids by girls and boys, the adolescents consumed margarine or butter, processed and yellow cheese, milk with a fat content of 3% and eggs every day (Tab. 3–4). In addition, girls consumed confectionery (donuts, cakes, cakes and others) daily (Tab. 3) and boys ate salad dressings and mayonnaise (Tab. 4). It was also found that girls and boys (≥ 10% of all the respondents) consumed the following 3–4 times a week: fried chicken or turkey, salad dressings, mayonnaise, fries and potato chips (Tab. 3 and 4). Boys

(≥ 10% of the respondents) also ate cured products (fatty cold cuts / pate / blood sausage, minced meats, bacon and weenies / frankfurters / snack stick sausages) and confectionery (donuts, cakes, cookies and others) several times a week (Tab. 4).

Table 3. Frequency of consumption of products containing saturated fatty acids by the group of girls studied

Food product	Frequency of consumption									
	Less than once a month		2–3 times a month		1–2 times a week		3–4 times a week		5 and more times a week	
	n	%	n	%	n	%	n	%	n	%
Pizza, casserole, lasagna, hamburger	59	42,1	33	23,6	41	29,3	7	5	0	0
Beef, steak, roast	76	54,3	27	19,3	29	20,7	6	4,3	2	1,4
Fried chicken or turkey	34	24,3	36	25,7	24	17,1	32	22,8	4	2,8
Sausages, frankfurters, snack stick sausages	71	50,7	24	17,1	29	20,7	10	7,1	6	4,3
Fatty sausages, pate, blood sausage, minced meat, bacon	91	65	12	8,6	19	13,6	13	9,3	5	3,6
Salad dressings, mayonnaise	53	37,8	30	21,4	25	17,8	25	17,8	7	5
Margarine or butter	46	32,8	22	15,7	20	14,3	21	15	33	23,6
Eggs	22	15,7	38	27,1	24	17,1	40	28,6	16	11,4
Processed and yellow cheese	29	20,7	33	23,6	20	14,3	37	26,4	21	15
Whole milk (3%)	44	31,4	17	12,1	25	17,8	31	22,1	23	16,4
Fries and potato chips	39	27,8	46	32,8	37	26,4	14	10	4	2,8
Ice cream	58	41,4	41	29,3	32	22,8	4	2,8	5	3,6
Donuts, cakes, biscuits, wafers and other confectionery	28	20	37	26,4	39	27,8	18	12,8	18	12,8

Source: own study.

In the light of the relevant literature, there is a relationship between attitudes and eating behaviour. The more positive the attitude towards the health benefits of food is represented by the studied group, the more products containing fibre and less fat products they consume, which is statistically significant [Roininen and Tuorila 1999; Zandstra, de Graaf and van Staveren 2001; Provencher, Polivy and Herman 2009; Czarnocińska et al. 2013].

Many authors dealing with the assessment of attitudes, habits and eating behaviour emphasise, in their final conclusions, the need to conduct nutritional education and promote a healthy lifestyle among children and adolescents

[Czarniecka-Skubina and Namysłów 2008; Maksymowicz-Jaroszuk and Karczewski 2010]. The level of knowledge can influence eating behaviour in adulthood. However, knowledge alone does not translate directly into the appropriate behaviour. Often, people do not know how to use it in practice, and contradictory information provided by different sources (media) reduces the level of trust in this information. The inadequate amount of saturated fat in the diet of 37.6% of adolescents (Tab. 1) confirms the respondents' lack of knowledge about the principles of healthy nutrition or the inability of adolescents to apply dietary recommendations in everyday nutrition. According to nutritional recommendations for children, adolescents and adults, the supply of saturated fatty acids (SAFA) should be limited to a maximum of 10% of the total energy supply of the consumed diet – in order to maintain the normal lipid profile and body weight, depending on age and gender [Jarosz et al. 2020].

Table 4. Frequency of consumption of products containing saturated fatty acids by the group of boys studied

Food product	Frequency of consumption									
	Less than once a month		2–3 times a month		1–2 times a week		3–4 times a week		5 and more times a week	
	n	%	n	%	n	%	n	%	n	%
Pizza, casserole, lasagna, hamburger	25	24,5	39	38,2	29	28,4	7	6,9	2	2
Beef, steak, roast	30	29,4	29	28,4	30	29,4	10	9,8	3	2,9
Fried chicken or turkey	9	8,8	31	30,4	31	30,4	31	30,4	10	9,8
Sausages, frankfurters, snack stick sausages	33	32,3	24	23,5	24	23,5	16	15,7	5	4,9
Fatty sausages, pate, blood sausage, minced meat, bacon	53	52	21	20,6	21	20,6	12	11,8	5	4,9
Salad dressings, mayonnaise	32	31,4	25	24,5	18	17,6	16	15,7	11	10,8
Margarine or butter	26	25,5	16	15,7	6	5,9	30	29,4	24	23,5
Eggs	11	10,8	28	27,4	15	14,7	35	34,3	13	12,7
Processed and yellow cheese	13	12,7	22	21,6	14	13,7	30	29,4	23	22,5
Whole milk (3%)	13	12,7	18	17,6	12	11,8	39	38,2	20	19,6
Fries and potato chips	24	17,1	33	32,3	27	26,5	11	10,8	7	6,9
Ice cream	48	47	19	18,6	27	26,5	4	3,9	4	3,9
Donuts, cakes, biscuits, wafers and other confectionery	21	20,6	26	25,5	23	22,5	25	24,5	7	6,9

Source: own study.

4. CONCLUSIONS

It has been shown that the group of adolescents studied often consumed products that were a source of saturated fatty acids during the week, such as: margarine or butter, processed and yellow cheese, milk with a fat content of 3%, eggs and confectionery (donuts, cakes, cookies and others). On the other hand, the following were eaten least often: ready meals (pizza / casserole / lasagna / hamburger), beef / steaks / roast, ice cream, chips and potato chips, sausage products (fatty sausages / pate / blood sausage / minced / bacon and weenies / frankfurters / snack stick sausages). The results of their research are consistent with those obtained by other authors who have found that students in Poland show an average level of healthiness in their eating behaviour [Humeniuk et al. 2018; Zborowski and Mikulec 2021]; they eat irregularly and irrationally, consume too little vegetables, fruits and dairy products, and too much meat and fast-foods [Humeniuk et al. 2018; Platta 2020]. According to Wądołowska et al. [2019], school education related to diet and lifestyle over almost the whole of next year may reduce abdominal obesity in preschool children, despite a decrease in physical activity and a tendency to increase screen time. The reduction of this type of obesity can therefore be attributed to the improvement of nutritional knowledge in children and adolescents subjected to education and to the prevention of the development of abnormal eating habits [Wądołowska et al. 2019]. Getting to know the health-related behaviour of young people living and studying in Gdynia will enable such changes to be made to their lifestyles that may eliminate the development of nutritional diseases.

The results of the research are optimistic as adolescents (both girls and boys) did not consume too many products with a high content of saturated fatty acids on a daily basis. As many as 62.4% of all the respondents consumed appropriate quantities of saturated fatty acids. However, further research monitoring the nutritional behaviour of adolescents is justified as we need to know whether it is necessary to take action to promote the formation of attitudes and hierarchy of health values, because as many as 38% of all the adolescents surveyed had an inadequate, large or very large amount of saturated fatty acids in their usual diets.

Linking the SDGs to caring for the healthy lives for all people of all ages, promotion of well-being and quality education, and promotion of lifelong learning aims to develop, consolidate or contribute to specific trends in food consumption.

Education at various levels about the principles of proper nutrition and food hazards increases consumer awareness and safety. It also increases the odds for acquiring resources that enable a dignified life and ensure food security. The research described above is part of health risk management and health promotion in the Polish population.

5. CREDENTIALS

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