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Association between family meals vs. diet quality and leisure activities of young rural residents

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Abstract

Introduction and Objective. Research is required to better understand the variables related to the frequency and cohesiveness of family meals. The aim of the study was to determine the association of eating meals with the family with other types of eating behaviours, sedentary behaviours, and physical activity based on a self-reported questionnaire carried out on a sample of the Polish population of rural adolescents.

Materials and method. The analysis was performed among adolescents living in rural areas who participated in a survey conducted within the framework of the 'Trzymaj formę!' ('Keep Fit!') programme on eating behaviours. The survey questionnaire was completed by 2,362 teenagers aged 13–16.

Results. Generally, positive evidence in terms of eating behaviours resulted in a higher likelihood of eating meals together with family. Not eating breakfast resulted in a decreased chance of eating meals together with the family. The results show that with regard to the use of computers at weekends, in the case of using them for a rather limited time, i.e. from 0.5–2 hours a day, there was a greater chance of having meals together.

Conclusions. The results confirm the role of educational programmes in increasing the chances of sharing meals with the family, which confirms the validity of conducting this type of education among children and adolescents. It can be also concluded that the more positive eating behaviours of the surveyed junior high students aged 13–16, consisting in more frequent consumption of fruit, greater consumption of cereal products, and more water consumed during the day, is proof of the positive influence of parents on the nutritional behaviour of their children. This is consistent with good intra-family relationships reflected in a greater tendency to spend time together over a family meal.

Key words

physical activity, adolescents, sedentary behaviours, family meals

INTRODUCTION

Overweight and obesity are now major challenges for public health [1, 2], and obesity levels among children living in different regions of the world are still rising [3, 4]. Among European countries, Poland has relatively high levels of overweight and obesity among both children and young adults [4, 5, 6, 7]. There are numerous causes of obesity, ranging from genetic, physiological, to environmental and socio-economic, e.g. gender, family income and level of education [5, 8, 9, 10]. Although both genetic and biological factors play a vital role, the influence of environment and society should not be neglected. These are important, both at the level of food intake and in relation to the level of physical activity, and should be given special consideration in assessing the severity of obesity in the population [4, 10, 11].

Changes in leisure activities, a decrease in physical activity, peer group pressure, the use of electronic tools and unlimited access to food create a syndrome of factors that promote weight gain among children and adolescents, with two factors playing a special role, namely a sedentary lifestyle and an unhealthy diet [12, 13, 14, 15]. Children, especially in the early years, are influenced by the family environment, which is regarded as a major determinant of nutritional patterns among them. However, the influence of the peer environment, the media, celebrities, and school, among others, through educational programmes relating to proper food and nutrition principles, increases during adolescence [16]. During this period, crucial developmental aspects appear, i.a. being conscious of own sexuality and gender differences in nutrition, as well as in health and fitness. It is difficult to pinpoint at what age these changes in self-perception as an separate being and consumer occur, but the age of about 10–12 (depending on gender) is considered to be a transition period [17]. Therefore, the first stage of adolescence may at the same time be the last moment to implement the principles of a balanced school culture and nutrition education aimed at young people before their relatively stable eating habits have been formed [18].

Children and adolescents are observed to have many eating habits that are not entirely correct, among which the most common are: not eating breakfast, low consumption

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of fruits and vegetables, excessive consumption of fast food, snacking too often, and consuming sugary drinks [19]. In the majority of research, the link between consumption of fruit and vegetables and mental well-being among kindergartners and schoolchildren, a supposed beneficial influence was confirmed. However, it must be indicated that this was analysed only in a few research studies and the issue must be researched in other populations. At the same time, in a number of studies, it was found that not only the consumption of fruit and vegetables [20] alone was found to have a positive impact, but rather more general dietary habits, including also other factors of a wholesome diet and wholesome lifestyle [21]. Moreover, students, aged 10–12 years, with a significant food neophobia level may be characterized by lower vegetable consumption than those with a lower neophobia level. The link between food neophobia level and vegetable consumption among girls aged 10–12 years seems to be more significant than in the case of boys. Taking children aged 10–12 years into consideration, in order to boost their consumption of vegetables, educational programmes must be implemented to achieve a decrease in the food neophobia level [20]. The results of studies by other authors indicate that slightly older children and adolescents, such as those aged 13–16 and older, are more likely to make independent choices in the food market, therefore eating behaviours do not look much better in this age group [22, 23].

In the Polish population of school-age adolescents (12–17 years) most of the respondents displayed incorrect nutritional behaviours. Nutritional mistakes were observed among survey participants from both rural and urban areas, with the predominance of rural inhabitants [24].

In general, teenagers have a reputation for unhealthy food choices [25]. In developing countries, which may include Brazil, for example, adolescents are distinguished by a high intake of foods high in fat, sugar and salt, and a low intake of foods containing fibre and micronutrients [26, 27]. Similarly, a high intake of energy-dense foods, snacks and fast food was noted among Indian adolescents (14–15 years old), while a low intake of fresh fruits and vegetables was observed [28]. A survey of American teenagers aged 13–18 shows that they are distinguished by their high consumption of sweets, fried foods and fast food meals, and sodas [29]. Based on a survey of Canadian adolescents (11–18 years old), it can be concluded that the consumption of milk and dairy drinks and sweetened beverages decreases with age among both girls and boys. Water intake remains unchanged, while coffee and tea consumption is increasing [30]. However, for young people it is important to support the right choices in the food market in order to assist young adolescents in making healthy eating decisions, it is therefore crucial to increase their level of comprehensive nutrition education. In this way, they would be more adept at interpreting correctly nutritional facts and labels, thus, potentially, of making more informed food decisions [31].

Furthermore, sedentary behaviour, a low physical activity level, and unhealthy dietary patterns are risk factors for major chronic diseases, including obesity [32]. In addition to insufficient/short daily/weekly physical activity, the second challenge in improving the leisure behaviour of children and adolescents is to reduce the time spent using various electronic tools, or to reduce the number of hours spent in front of the TV [33]. Furthermore, girls, particularly urban inhabitants in their teenage years or those with lower socio-economic level, due to a combination of excessive screen time with insufficient levels of physical activity (PA), should be the demographic targets of public health initiatives to prevent obesity and enhance youth well-being. For future research, these conclusions might shed light on the importance of evaluating the risk of obesity through a combined classification of physical activity and screen time [34]. It seems that the outcome of obesity prevention initiatives is generally positive. Although the most common initiative regarding PA is to increase its duration, and regarding nutrition by nutrition education, the best approach to obtain major differences in both areas is not evident. The effect targeted at the BMI is limited. As for the use of new technologies, positive results are demonstrated in shifting behaviour and in the development of improved habits, although it is not evident what type of new technology it is better to employ [35].

In addition, the regularity of meals and the consumption of breakfast by children and adolescents also seems to be important [36]. Hamułka et al. estimated that 29% of students aged 11–13 did not consume breakfast every day [37]. Wądołowska et al. emphasized that in obesity prevention, avoiding high-energy dense foods is insufficient and needs to be supported by higher physical activity and frequent consumption of health-promoting foods, especially if breakfast and a school meal are frequently omitted.

The findings emphasise the importance of nutrition education among teenagers in forming their health-promoting dietary habits and active lifestyle to reduce adiposity risk, and the adverse impact of a lower economic status of the family, which promotes unhealthy patterns related to both diet and lifestyle [38]. Wądołowska et al. also concludes that diet-related and lifestyle-related school-based education, evaluated over almost 12 months, can lower central adiposity in pre-teenagers, in spite of the decrease in physical activity and the habit of increasing time spent in front of the screen. The reduction in central adiposity can result from the enhancement of nutrition knowledge in pre-teenagers provided by education and from stopping the increase in unhealthy dietary habits. Moreover, in order to reinforce the pro-healthy dietary habits of pre-teenagers, education programmes addressed to the adults who are responsible for children's nutrition [39].

It is therefore also important to educate about the role of shared meals eaten together with the family [40]. Schnettler et al. notes that research is required to better understand the variables related to the frequency and cohesiveness of family meals. In this regard, special emphasis should be placed on the correlation between domains of family, food and employment. Another essential issue that needs further research is linked with the variables (psychological, social, cultural, inherited or learned habits, etc.) that can explain why some parents use some food-related parental practices, while other parents do not, and also taking into account various family structures [41]. With regard to meals eaten with the family (a study among 14-year-old children, USA), Larson et al. emphasizes that family breakfast repetition was firmly associated with male gender, younger age, and living in an elementary family. Family breakfast frequency was related to numerous factors of improved diet quality (such as higher intake of fruit, whole grains, and fibre) and lower risk of being overweight/obese. Teenagers who declared consuming seven family breakfasts in the past/previous week ate an average of 0.4 additional daily fruit portions compared

with young adults who never experienced a shared breakfast meal. Moreover, eating together as a family at breakfast can also have a positive impact on adolescents who regularly eat the evening meal with their families, and hence parents should receive support on how to face obstacles, such as lack of time or culinary skills, as well as food insecurity [42].

OBJECTIVE

To the knowledge of the authors of this study, there is still little research relating to, among other things, the dietary behaviour of school-aged children and adolescents, especially those from rural environments. Therefore, the aim of the study was to examine the daily behaviour of adolescents aged approximately 13–16 years connected with nutrition, hydration and physical activity, and to determine the association of eating meals with family with other types of eating behaviours, sedentary behaviours and physical activity, based on a self-reported survey conducted on a sample of the Polish population of adolescents inhabiting rural areas.

MATERIALS AND METHOD

The research is part of a larger research project, the details of which in terms of sampling for the study and analysis of the findings for the overall research sample, have been discussed in earlier papers [43, 44].

The primary study included a quantitative survey on 'Evaluation of the effectiveness of the National Educational Programme 'Trzymaj formę!' – 'Keep Fit!' (11th edition of the programme) in terms of shaping the eating and health habits of its participants". The authors' own survey questionnaire, tested in pilot studies, was applied. The field survey was conducted between September and December 2016 on a nationwide group of 6,818 respondents. The survey used a combined sampling method: the quota selection method and the selection of typical units. The quota selection method, which involves selecting a group of respondents in a proportion corresponding to the structure of the general population (the population of students in lower secondary schools in Poland), was based on the place of residence in accordance with the study of the Central Statistical Office [45]. Subsequently, the selection of typical units was applied, i.e. a method involving the selection of representatives of a given community, divided into:
– students attending schools implementing the National Educational Programme 'Keep Fit!' and those directly involved in the implementation of the programme;
– students attending schools implementing the National Educational Programme 'Keep 'Fit! but not participating in the programme;
– students attending schools not implementing the programme and not participating.

An online survey questionnaire was used to collect empirical data, which comprised several parts. The first part was filled in by the school representative in terms of providing the institution's data, indicating the size of the town in which the school is located and whether the school participates in the National Educational Programme 'Keep Fit!'. The survey questionnaire was then completed by the students. This form ensured the credibility of the collected results in terms of the students' affiliation to specific school establishments.

The student survey questionnaire consisted of two parts. Part one of the questionnaire contained 38 specific questions in closed form. In constructing the questionnaire, single-choice and multiple-choice questions were used from a suggested answer cafeteria. The questions generally covered several thematic blocks, including: assessment of diet; assessment of physical activity; assessment of the degree of consumer awareness, including, among others, assessment of the use of selected information on food packaging. The second part of the survey questionnaire allowed for the characterisation of the respondents in terms of the following socio-demographic characteristics: gender, age, height and weight, class and number of people in the household divided into adults and children and adolescents.

In order to achieve the assumed research goal, the article presents data relating to selected aspects of the study referring to the diet, sedentary behaviour and physical activity, i.e. questions enabling the assessment of:
– frequency of eating meals at home and at school, snacking between meals, eating habits with family, consumption of certain types of food, amount of water consumed during the day;
– the amount of time devoted to physical activity in and outside school, as well as the amount of time spent using devices with TV screen or electronic devices (e.g. a computer, a tablet, a smartphone).

For the purpose of this article, the analysis was conducted on adolescents attending schools located in rural areas. The survey questionnaire was completed by 2,362 people aged 13–16, i.e. male and female junior high school students[1].

All variables used for analysis were qualitative in nature. Socio-demographic characteristics of the sample using frequency analysis were used for preliminary analysis of the results. The object of the actual statistical analysis was to develop a model regarding the influence of selected socio-demographic characteristics and children's eating behaviour on the social aspect of eating meals with the family.

In the model, the dependent variable was the frequency of eating at least one/any meal per week with the family. Due to the dichotomous nature of the dependent variable, Logistic Regression models were used in the model. The levels of the dependent variable were as follows:
1) eats at least 3–4 meals with family per week (modelled);
2) eats at most 2 meals with family per week.

The study made a prediction of eating at least three meals a week with the family. The dependent variable was eating at least three meals a week with the family, and among the independent variables in the model (explanatory variables, statistically significant variables included in the model) there were:
– number of meals per day;
– breakfast frequency – on school days;

1 In Poland during the 2018–2019 education reform, changes were introduced to the existing school system in which the last year of 3rd graders left junior high schools, and as of 1 September 2019, junior high schools ceased to exist in the Polish school system.

– whether he/she eats breakfast;
– where he/she eats lunch;
– consumption of products – fruits;
– consumption of products – cereal products;
– how much water he/she drinks;
– how much PC he/she uses – on weekends;
– activity – physical activity related with getting to school (walking, biking, rollerblading, etc.);
– activity – sports games and physical activities with peers.

All variables were statistically significant in the model at $p<0.05$. The developed model was adjusted for: gender, the class the student attended, and the student's participation in the 'Keep Fit!' project. No significant difference was observed in the values of the estimators between the unadjusted (crude) and adjusted models. The validity of both models was confirmed by Model Fit Statistics and the Hosmer and Lameshow Test.

RESULTS

Among the adolescents participating in the survey, the majority declared that they eat at least four or more meals per day (74.98%). Of those, the majority declared that they eat at least four or more meals a week with their families (78.20%). Consideration of the gender of the students surveyed indicates that slightly more girls than boys participated in the study (55.80% and 44.20%, respectively), and the fewest of all the surveyed attended the first grade of junior high school (26.67%). A slightly larger group of those participating in the survey declared participation in the 'Keep Fit!' project compared to non-participants (58.38% and 41.62%, respectively). Among those declaring participation in the project, most declared that they eat meals with their families at least 3 times a week (77.08%). Detailed characteristics of the survey sample is presented in Table 1.

Analysis of the results indicated that both 3–4 or more meals per day resulted in a greater chance of eating at least 3 meals with the family during the week by 123% (OR: 2.228), respectively. For those eating 3 meals a day – 120% (OR: 2.203), for those eating 4 or more meals per day versus those eating 2 or fewer meals per day. Not eating breakfast on school days resulted in a 30% reduction in the chance of sharing a meal with family at least 3 times a day in those who never eat breakfast (OR: 0.705), and 29% in those who sometimes eat breakfast (OR: 0.712), compared to the baseline (he/she eats breakfast daily). Young adults who did not bring breakfast to school had a reduced chance of a positive prognosis of the dependent variable by 17% for those buying breakfast at school (OR: 0.833), and by 39% for teenagers not eating breakfast at school (OR: 0.613), compared to those bringing it from home.

In young adults eating dinner outside the home, the chance of eating at least 3 meals with their family during the week decreased, and in the case of teenagers who did not eat dinner at all, it was 10 times lower than those who eat it at home (OR: 0.104), and this was the only statistically significant level of this variable in the model.

Frequent consumption of fruit increased the chance of a positive result of the dependent variable by 39%, respectively, (OR: 1.392) for eaters 2, 48% (OR: 1.482) for eating 3 servings a day in relation to eating 1 serving of fruit a day. The remaining levels of this variable were statistically insignificant in the model. Frequent consumption of cereal products increased the chance of having at least 3 meals eaten per week with the family by 20% (OR: 1.196) for those eating 2 servings, 45% (OR: 1.454) for those consuming three servings – 64% (OR: 1.642) for four servings, and 89% (OR: 1.888) for those consuming 5 servings of cereal products, versus those consuming one serving a day.

Drinking five or six glasses of water per day increased the chance of eating at least 3 meals with the family per week by 85% (OR: 1.852), 7–8 glasses by 94% (OR: 1.939) and more than 8 glasses doubled the chance (OR: 2.075), compared to the baseline (1–2 glasses per day).

Using PC on weekends – 0.5–2 hours a day, increased the chance of sharing a meal at least 3 times a week by 93% (OR: 1.931) and 3–4 hours a day by 50% (OR: 1.499), compared to not using PC at all on weekends. Physical activity related to getting to school (walking, biking, rollerblading, etc.) resulted in a 27% reduced chance (OR: 0.732) of having a meal with the family. Activity involving sports games and physical activities with peers increased by 51% (OR: 1.51) the chances of a positive prognosis of the dependent variable in relation to its absence (Tab. 2).

The study noted that there were no significant differences between the coefficients of the unadjusted (crude) and adjusted models.

For the model with the dependent variable 'Eats meals together with family at least 3 days a week', the independent demographic variables used to adjust the model (gender, junior school class, and student participation) had a statistically significant effect on the model.

Table 1. Sample profile (%, N)

		Meal with the family - how many			
		I do not consume at all, less than once a week, 1-2 days a week	3-4 days a week, 5-6 days a week, daily	Total	P value
	Total	582	1780	2362	
How many meals	2 or fewer meals a day	60	47	107	<.0001
		56.07	43.93	4.53	
	3 meals a day	136	348	484	
		28.10	71.90	20.49	
	at least 4 meals a day	386	1385	1771	
		21.80	78.20	74.98	
Gender	boy	211	833	1044	<.0001
		20.21	79.79	44.20	
	girl	371	947	1318	
		28.15	71.85	55.80	
Grade/age	first/13	127	503	630	<.0001
		20.16	79.84	26.67	
	second/14	207	689	896	
		23.10	76.90	37.93	
	third/15	248	588	836	
		29.67	70.33	35.39	
Participates in the programme	yes	316	1063	1379	0.0212
		22.92	77.08	58.38	
	no	266	717	983	
		27.06	72.94	41.62	

Table 2. Statistically significant variables and their estimation properties used to build the logistic regression model

Variable	Variable level	Estimate	Point Estimate	95% Wald Confidence Limits		P value
Intercept		-0.542 (-0.090)				0.2398 (0.8500)
Number of meals per day	4 or more meals a day	0.790 (0.809)	2.203 (2.245)	1.38 (1.41)	3.50 (3.58)	0.0008 (0.0007)
	3 meals a day	0.801 (0.832)	2.228 (2.297)	1.43 (1.47)	3.47 (3.60)	0.0004 (0.0003)
	1-2 meals a day (ref.)					
Breakfast frequency – on school days	never	-0.350 (-0.329)	0.705 (0.720)	0.53 (0.54)	0.93 (0.96)	0.0151 (0.0236)
	sometimes	-0.340 (-0.339)	0.712 (0.712)	0.56 (0.56)	0.90 (0.90)	0.0048 (0.0052)
	every day (ref.)					
Whether he/she eats breakfast	no, but I buy breakfast at school (in the shop/canteen)	-0.183 (-0.186)	0.833 (0.830)	0.64 (0.64)	0.98 (0.98)	0.0178 (0.0171)
	I do not eat breakfast while at school	-0.489 (-0.494)	0.613 (0.610)	0.45 (0.45)	0.82 (0.82)	0.0013 (0.0013)
	yes (ref.)					
Where he/she eats lunch	in the school canteen	-0.032 (-0.034)	0.969 (0.967)	0.75 (0.75)	1.24 (1.24)	0.802 (0.7914)
	On the school premises (e.g., in the classroom, in the school corridor or elsewhere)	-0.188 (-0.174)	0.829 (0.840)	0.53 (0.54)	1.29 (1.31)	0.4055 (0.4418)
	Another place outside the home and outside the school (e.g., with extended family, with friends)	-0.501 (-0.465)	0.606 (0.628)	0.16 (0.16)	2.33 (2.43)	0.4667 (0.5018)
	I do not eat lunch at all	-2.262 (-2.281)	0.104 (0.102)	0.03 (0.03)	0.31 (0.31)	<.0001 (<.0001)
	at home (ref.)					
Product consumption - fruits	two servings a day	0.331 (0.305)	1.392 (1.356)	1.09 (1.06)	1.77 (1.73)	0.0077 (0.0151)
	three servings a day	0.394 (0.394)	1.482 (1.482)	1.08 (1.08)	2.02 (2.02)	0.013 (0.0135)
	four servings a day	0.0065 (-0.024)	1.006 (0.976)	0.65 (0.64)	1.54 (1.50)	0.9762 (0.9115)
	five servings a day	0.273 (0.268)	1.313 (1.307)	0.87 (0.87)	1.96 (1.96)	0.1849 (0.1950)
	one serving a day (ref.)					
Product consumption - Cereal products	two servings a day	0.179 (0.223)	1.196 (1.250)	1.08 (1.03)	1.41 (1.69)	0.0242 (0.0147)
	three servings a day	0.375 (0.401)	1.454 (1.494)	1.06 (1.09)	1.98 (2.03)	0.0174 (0.0114)
	four servings a day	0.496 (0.492)	1.642 (1.636)	1.10 (1.09)	2.44 (2.44)	0.0144 (0.0159)
	five servings a day	0.636 (0.599)	1.888 (1.820)	1.22 (1.17)	2.91 (2.81)	0.004 (0.0071)
	one serving a day (ref.)					
How much water he/she drinks	3-4 glasses	0.146 (0.145)	1.158 (1.156)	0.72 (0.72)	1.84 (1.85)	0.5394 (0.5457)
	5-6 glasses	0.616 (0.615)	1.852 (1.849)	1.17 (1.16)	2.93 (2.93)	0.0086 (0.0092)
	7-8 glasses	0.662 (0.646)	1.939 (1.908)	1.19 (1.17)	3.15 (3.11)	0.0074 (0.0094)
	more than 8 glasses	0.730 (0.678)	2.075 (1.969)	1.28 (1.21)	3.36 (3.21)	0.0032 (0.0066)
	1-2 glasses (ref.)					
How much PC he/she uses - at weekends	0.5 to 2 hours a day	0.658 (0.603)	1.931 (1.828)	1.03 (1.09)	3.89 (3.69)	0.0457 (0.0429)
	3-4 hours a day	0.405 (0.397)	1.499 (1.487)	1.07 (1.04)	3.01 (2.99)	0.0258 (0.0266)
	5 and more hours a day	0.006 (0.013)	1.006 (1.013)	0.51 (0.51)	2.00 (2.02)	0.9873 (0.9705)
	at all (ref.)					
Activity: physical activity related to getting to school (walking, biking, rollerblading, etc.)	yes	-0.313 (-0.226)	0.732 (0.798)	0.59 (0.65)	0.89 (0.98)	0.0024 (0.0323)
	no (ref.)					
Activity: sports games and physical activities with peers	yes	0.412 (0.343)	1.51 (1.410)	1.16 (1.08)	1.95 (1.83)	0.0018 (0.0105)
	no (ref.)					
Gender	girl	(-0.285)	(0.752)	(0.61)	(0.93)	(0.0082)
	boy					
Grade	Second	(-0.200)	(0.819)	(0.62)	(0.97)	(0.0148)
	Third	(-0.470)	(0.625)	(0.48)	(0.81)	(0.0006)
	First (ref.)					
Participation in the project	no	(-0.172)	(0.842)	(0.68)	(0.93)	(0.01013)
	yes (ref.)					

Point estimate - OR (eβ); (95% CI) - 95% Wald Confidence Limits; ref.- reference group. Unadjusted model parameters (without parentheses), adjusted model parameters (in parentheses).

Girls were 24.8% less likely to eat at least 1 meal with their family compared to boys (OR: 0.752). Second-graders were 18.1% less likely than first-graders to eat with their families at least 3 days per week (OR: 0.819), and third-graders were 37.5% less likely (OR: 0.625). The chance of eating meals with family at least 3 days a week was 15.8% lower in students non-participating in the project than their participating peers (OR: 0.842).

Summing up, the results of the current study indicate that among the adolescents surveyed, selected patterns relating to food and nutrition, i.e. more frequent consumption of fruits, greater consumption of grain products, greater amounts of water consumed during the day, increased the likelihood of eating shared meals with the family.

DISCUSSION

Significance of selected factors in the tendency to eat meals together with the family. The results indicate that participation in the educational project contributes to an increased chance of having a meal eaten together with the family. In addition, the results of the study indicate that with more meals eaten during the day, there was a greater likelihood of eating meals together with the family in general during the week. And not eating breakfast resulted in a decreased chance of eating meals together with the family. Positive evidence in terms of eating behaviours, i.e., eating fruit more frequently, consuming grain products more often, and drinking 5–6 glasses of water, also resulted in a higher likelihood of eating meals together with family. In addition, adolescents playing sports games together with their peers increased the chance of eating meals together, which may indicate that the adolescents surveyed may be more socialized and prefer to meet both in a peer group, and with household members at mealtimes, and that the model of eating meals together with the family is promoted in their homes.

The literature indicates that eating meals together with family members is correlated with a higher quality of diet in children and adolescents. Children who reported eating dinner together with their family members more frequently displayed healthier food consumption patterns, including higher consumption of fruit and vegetables, fibre and micro-nutrients, and reduced consumption of fried foods, sweetened beverages, saturated fats and trans isomer-containing fats. Increased frequency of family dinners was also attributed to a higher intake of calcium, folic acid, iron, vitamins B_6, B_{12}, C and E. Children tended to eat what the adult members of the family ate at the table. Eating together was also a good form of shaping proper eating habits. However, a decline in the frequency of family meals is noted when children start secondary education. This is most likely influenced by the increased independence of children from their parents. Along with the afore-mentioned change, there is a deterioration in the nutritional quality of adolescents' diets, especially in terms of a decrease in the frequency of vegetable and fruit consumption, and an increase in the frequency of skipping breakfast and consumption of fast food [46].

Moreover, higher family dinner frequency was strongly associated with less soft drink consumption, consuming breakfast, the absence of a high body weight, having higher self-efficacy for healthy eating when at home with family, and during social times with friends [47]. The frequency of family meals has a beneficial impact on food consumption patterns (i.e., higher consumption of fruit and vegetables and lower consumption of sweets) both among parents and children. However, the association in children partially depended on the quality of their parents' diet. Therefore, the promotion of consuming meals together in the family is likely to be an effective strategy for initiatives on how to develop and maintain healthy food consumption patterns among children [48]. Moreover, in some research it was stated that eating 4 meals per day, compared with eating 3 meals per day, was associated with a lower risk of developing type 2 diabetes [49].

In addition, the findings also indicate that mental health can be improved by consuming regular family meals. Due to the fact that traits of psychological distress, which may have an impact on development, are often observed in children and teenagers before they have been formally diagnosed by a psychiatrist, it is of utmost importance to early identify common mental disorders and their concurrent risk, and to take protective measures [50].

Moreover, family meals may have a positive impact on all family members (family cohesion), and not just on adolescents [51]. On the other hand, the literature emphasises that children consuming breakfast with their family less than once a week, and those eating their weekend breakfast alone, displayed a higher occurrence of borderline/abnormal mental health status compared to those who declared consuming their breakfast 7 times a week, and weekend breakfast with their family members, respectively. These results indicate that family meals, especially breakfast, might promote better mental health among children [52]. Furthermore, other research concludes that skipping breakfast was habitual among schoolchildren. Moreover, those surveyed who avoided breakfast were more likely to display an unhealthy lifestyle profile [53].

In general, parents' education level seemed to have affected only the consumption of fruit. Family income was not relevant to the frequency at which the children consumed fruit or vegetables. Higher consumption of fruit and vegetables by children was linked with their positive dietary habits and the level of physical activity [54]. Fruit and vegetable intake had an impact on the frequency of family meals among pre-schoolers. Providing parents with education about the potential benefits of having shared meals on a regular basis may result in a higher fruit and vegetable intake among children at a pre-school age [55].

Computer screen time vs. sharing meals with family. The results of own research showed that with regard to the use of computers at weekends, in the case of using them for a rather limited time, i.e. from 0.5 – 2 hours a day, there was a greater chance of having meals together. Studies by other authors indicate that screen time duration and time devoted to video games and recreational computer use entailed lower health-related quality of life in general. Particularly, they were regarded as a factor contributing to a reduced quality of life of a psycho-social nature, which was manifested by lower emotional, social and school functioning in overweight and obese teenagers after controlling for a wide spectrum of confounding variables. Although this particular study did not show any impact of TV on any health-related quality of life factor, it has been shown to be related to excessive weight gain, obesity and cardio-metabolic risk factors in teenagers, and consequently, TV and other means of screen time activities should also be reduced [56].

Research by other authors also indicates that young adults with prolonged screen time on school and non-school days reported poorer health-related habits and academic achievements. Teenagers who devoted a great amount of their time to screen time activities on school days reported only a short sleep duration on school days and poorer academic achievements than on non-school days. A high duration of screen time which was observed in the 4 screen time profiles, and their variables were noted in various health and educational factors; therefore it is vital to take measures in order to lower screen time in these profiles. It is also crucial to enhance teenagers' healthy habits and academic achievements. It seems particularly vital to lower reduce time on school days in these screen time profiles to lengthen sleep duration on school days, as well as academic accomplishments [57]. In addition, literature data also show that there is moderate to significant evidence of the correlation between self-reported television watching time, total screen time and general sedentary lifestyle with adiposity/obesity, independent of dietary patterns. However, further research is still needed to determine whether the independent associations prevail when applying objective measures to evaluate overall sedentary time [58].

Strengths and limitations of the study. The strengths of the study are the large size of the research sample and the origin of the research participants from a rural environment due to the still insufficient number of this type of research among adolescents from rural backgrounds. The limitation of the study is a failure to include the role of sleep, which appears to be significant in connection with research on dietary behaviour, including shared family meals and leisure activities [59, 60]. However, this is an area of research that will be taken into account in future planned research on children and adolescents.

CONCLUSIONS

Overall, it can be concluded that eating meals together with the family is a space for socialization and communication within the family. At the same time, it can be assumed that this will also be a time when there will be no distraction among children and adolescents caused by the use of electronic tools or television, provided, of course, that they are not used as a so-called "passive companion" of shared meals.

The results confirm the role of educational programmes in increasing the chances of sharing meals with the family, which confirms the validity of conducting this type of education among children and adolescents. However, it also seems that this type of education, in addition to the active participation of children and adolescents, should include adults (teachers and parents) involved in educating children and adolescents.

To sum up, it can be concluded that the more positive eating behaviours of the surveyed junior high students aged 13–16 consisting in more frequent consumption of fruit, greater consumption of cereal products, and more water consumed during the day, is a proof of the positive influence of parents on the nutritional behaviour of their children, which is consistent with good intra-family relationships reflected in a greater tendency to spend time together over a family meal.

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