

MAREK KOS<sup>1</sup>, AGNIESZKA PARFIN<sup>1</sup>, BARTŁOMIEJ DROP<sup>2</sup>, JOLANTA HERDA<sup>1</sup>,  
KRYSTIAN WADOWIAK<sup>3</sup>, ALEKSANDR WITAS<sup>3</sup>, JUSTYNA DROGOŃ<sup>3</sup>, WITOLD WOJDAN<sup>3</sup>,  
MARTA KUSZNERUK<sup>1</sup>

## Lifestyle and eating habits of the high school students

### Abstract

**Introduction.** The youth is a group particularly prone to follow trends concerning nutrition and lifestyle. When studying the habits of this age group, it is possible to evaluate its members' knowledge concerning health behaviours, determine possible deficiencies and suggest appropriate educational programmes resulting in improvement of eating habits and physical activity, and consequently, in longer life in good health.

**Aim.** Lifestyle and eating habits of the high school students identification and analysis of those results in terms of future health condition and health education of the youth.

**Material and methods.** Anonymous survey study was conducted in electronic form among the students attending high schools and technical high schools all over Poland. The study was conducted with an authors' survey questionnaire (Google form) filled in via the Internet. The questionnaire mainly included closed questions verifying habits connected with eating, physical activity, using stimulants, and metrics (age, sex, voivodeship, size of the place of living, type of school). Statistical analysis was made with the use of Statistica software.

**Conclusions.** The majority of youth has good habits concerning physical activity and beverages consumption, moreover, smoking is not a frequent habit in this group. What needs to be done, is to raise the youth's awareness about appropriate carbohydrates consumption as well as about regularity and diversity of meals.

**Keywords:** lifestyle, high school youth, health education.

DOI: 10.2478/pjph-2020-0008

### INTRODUCTION

Habits concerning nutrition, physical activity, as well as stimulants are significant factors influencing health condition of a society. Certain behaviors shaped during youth are often unchanged in adult life, that is why they have serious health consequences. Considering that appropriate lifestyle practiced for years may prevent cardiovascular diseases and reduce the risk of cancer, e.g. colorectal cancer [1,2], it is crucial to develop in young people proper patterns that could be passed to and practiced by their children in the future. It is a priority, as conducting healthy lifestyle may prolong duration of life by even as long as 14 years [3-6].

Nowadays new trends concerning lifestyle appear very dynamically and the youth often has a thoughtless approach towards them, as young people are frequently unaware of the consequences of their actions. If taking risk and experimenting lie in the nature of teenagers, it seems necessary to conduct health education and prepare prophylactic programmes dedicated to them. Unfortunately, lack of direct relationship between harmful behaviour and negative consequences makes effective implementation of such programmes harder.

These days the subject of healthy lifestyle is present at schools, in the media and at the scientific conferences. Humans' interest in the pursuit of full health is inestimable – similarly to the value of research connected with health issues, which aim at revealing an attitude closest to the ideal. The sooner such interest is developed, the closer becomes the vision of a society actively fighting with civilization diseases, and dissemination of health behaviours will get the attention of young people, who constantly follow new trends. Promotion of healthy lifestyle is very important, as well as effective, as the youth are willing to change their lifestyle after campaigns. It is much harder for adults, who, due to their habits and adopted patterns, are not so prone to transformations. Therefore, the programs promoting proper lifestyle need to be implemented at schools at as early stage of education as possible [7] in order to achieve establishment of desired behaviours among the youth, which should be the basis of developing stage of conscious taking care of own health. Young people who conduct appropriate lifestyle, do sport, and follow the rules of hygiene, are much less exposed to be bullied at school by peers [8]. Additionally, healthy lifestyle positively influences mental health and thus, reduces the risk of low self-esteem and depression [9].

<sup>1</sup> Chair and Department of Public Health, Medical University of Lublin, Poland

<sup>2</sup> Department of Medical Informatics and Statistics with E-learning Lab, University of Lublin, Poland

<sup>3</sup> Students Scientific Association at Chair and Department of Public Health, University of Lublin, Poland

An aim of the work is to analyse lifestyle of the high school students. The complex insight into healthy and unhealthy behaviours among the students is the basis for evaluation of their knowledge and health condition. The physical activity was evaluated taking into account its frequency and type; age and frequency of using stimulants with special attention paid to cigarettes and e-cigarettes; the diet taking into account quantity of consumed meals, eating between meals, consumption of processed food and that containing a lot of carbohydrates. Increase of level of knowledge and need of doing sport among students allows to prevent unfavourable consequences of lack of physical activity, e.g. obesity and worse well-being, which may be connected with depression [10,11]. Therefore, it is important to take into consideration the level of physical activity in order to be able to control possible negative trends. Relatively recently placed on the market e-cigarettes are willingly chosen also by the youth – however they are considered dangerous [12], also due to incomplete knowledge concerning them, therefore every study on using those products or their popularity seem to be a valuable source of information. Both in Poland and in many other countries showing some features of the Western style of eating, obesity among young people is still an urgent problem [11,13]. Raising awareness among the youth of the mistakes that are made when choosing products to eat, also by encouraging them to take part in the study, may help them make more reasonable choices in the shop. In a longer perspective, changes in lives of the youth made thanks to modification of their lifestyle may lead to better well-being as well as to feeling better in own body, that is why it is so significant to take up these issues in scientific works. Unfortunately, studies concerning all of above mentioned aspects of teenagers' lives at the same time are rare. When studying the habits of this age group, it is possible to evaluate its members' knowledge concerning health behaviours, determine areas in which their knowledge is insufficient and begin appropriate educational programmes resulting in comprehension by young people how important are good health habits and how much they influence their future, which leads to increased responsibility for made by them decisions concerning nutrition and sport, as well as stimulants and consequently, to longer life in good health.

## AIM

Identification of habits concerning nutrition, physical activity and the use of stimulants among the high school students in order to analyse obtained data in terms of: knowledge of this group regarding healthy lifestyle, consequences of decisions made by them and selecting necessary educational programmes.

An aim of the work is to analyse lifestyle of the high school students. The diet was evaluated taking into account quantity of consumed meals, eating between meals, consumption of processed food and that containing a lot of carbohydrates, frequency and type of physical activity, as well as age and frequency of using stimulants with special attention paid to cigarettes and e-cigarettes. When studying the habits of this age group, it is possible to evaluate its members' knowledge concerning health behaviours, determine possible deficiencies and suggest appropriate educational programmes resulting in improvement of eating habits and physical activity, and consequently, in longer life in good health.

## MATERIAL AND METHOD

Anonymous survey study was conducted in electronic form among the group of 1373 students (1162 females and 211 males) aged from 15 to 20 years (statistical information concerning respondents' age is present in Table 1), attending high schools (1265 persons) and technical high schools (108 persons) all over Poland. Data concerning the size of the respondents' places of living are presented in Figure 1.

TABLE 1. Statistics of the respondents' age.

Table 1	
Median	18
Mode	18
Mode size	702
Minimum	15
Maximum	20
Lower quartile	18
Upper quartile	19

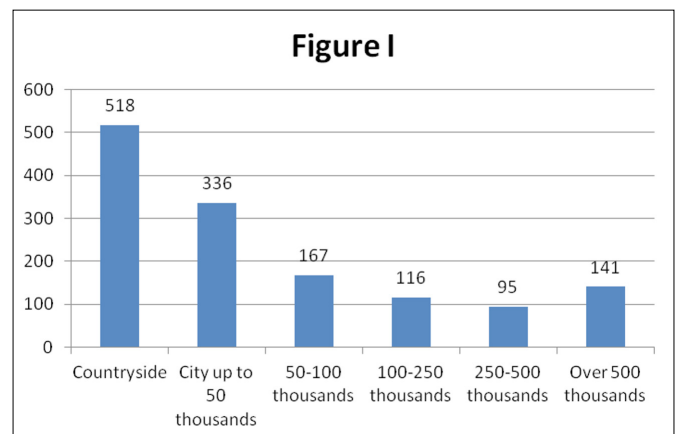


FIGURE 1. Size of the respondents' places of living.

The study was conducted with an authors' survey questionnaire (Google form) filled in via the Internet. The questionnaire mainly included closed questions verifying habits connected with eating, type of physical activity and devoted to this time, using stimulants, and metrics (age, sex, voivodeship, size of the place of living, type of school). Statistical analysis was made with the use of Statistica software (statistical analyses were made as well as summary tables which were used to make figures).

The statistical analyses were made with the use of: Pearson's chi square test (it was stated that when  $p < 0.05$  – relationship between data occurred), Cramer's V test (to determine strength of dependency), and contingency factor (when Cramer's V test was unavailable). For Cramer's V test and contingency factor the following scale was adopted:

- 0-0.2 weak dependency
- 0.2-0.4 rather weak dependency
- 0.4-0.6 moderate dependency
- 0.6-0.8 rather strong dependency
- 0.8-1 very strong dependency

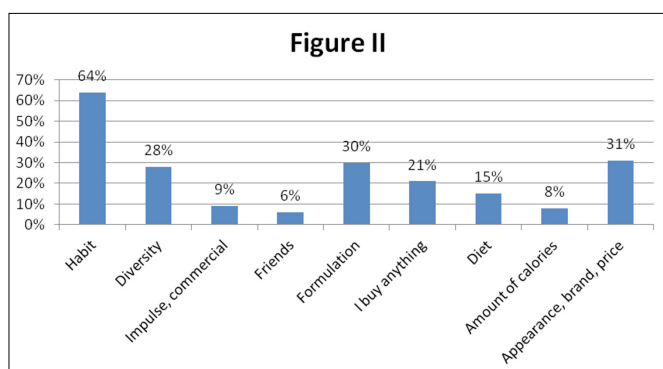
In Table 2 information concerning the respondents' places of living is presented.

**TABLE 2. The respondents' places of living.**

Table II	
Lower Silesian	61
Kuyavian-Pomeranian	52
Lublin	89
Lubusz	25
Łódź	70
Lesser Poland	128
Masovian	183
Opole	23
Subcarpathian	201
Podlaskie	37
Pomeranian	53
Silesian	140
Holy Cross	134
Warmian-Masurian	38
Greater Poland	107
West Pomeranian	32

**RESULTS**

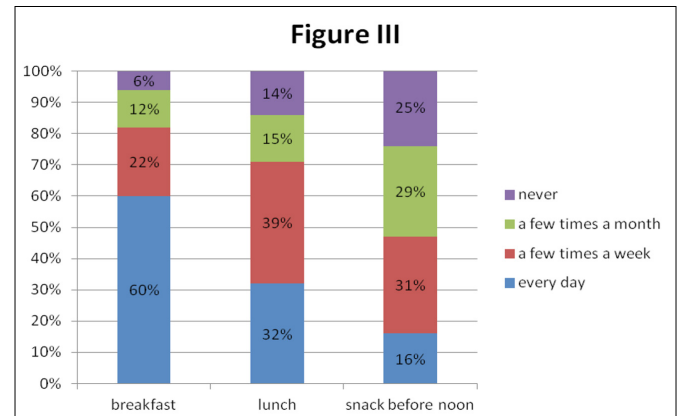
Answers for the question “What are you guided by when buying food?” are presented in figure II. The vast majority of the youth (64%) is guided by habit when buying food. It draws attention that there is one statistically significant dependency between sex and avoiding certain groups of products due to diet ( $p=0.049$ ), however its strength is very weak (0.053). Persons living in bigger places, more frequently pay attention to products formulation ( $p=0.009$ , weak dependency: 0.12) and avoid certain groups of products due to a diet ( $p=0.004$ , poor dependency: 0.11).



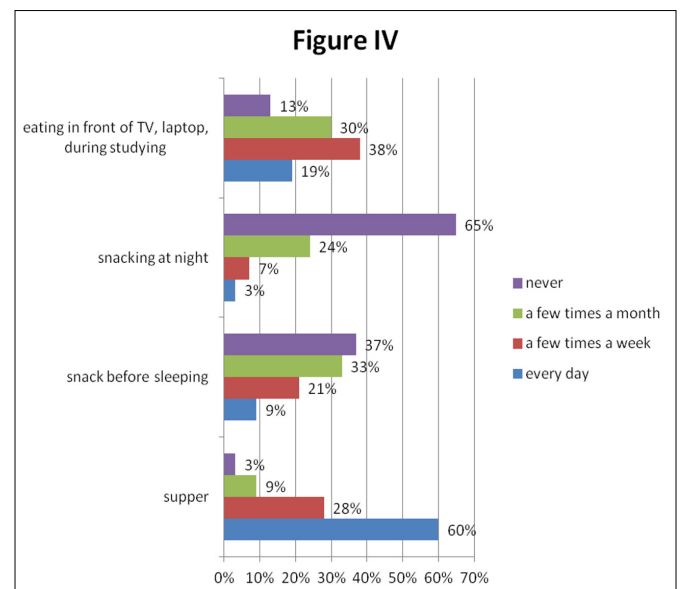
**FIGURE 2. Answers for the question “What are you guided by when buying food?”.**

Answers for the question “How often do you eat the following meals?” are presented in Figures 3 and 4. Breakfast is everyday eaten by the majority of respondents (60%), while every fourth student admits that he/she eats it a few times a week. Small number of persons (6%) totally omits this meal. The vast majority (82%) of respondents eats dinner every day. Supper is everyday eaten by the majority of the surveyed (60%), while every third person eats it a few times a week.

No relationship between the frequency of eating lunch and place of living was found. However, relationship was found between answer for this question and sex ( $p=0.0003$ ), Cramer's V test indicated that this dependency is weak (0.116).



**FIGURE 3. Answers for the question “How often do you eat the following meals?”.**



**FIGURE 4. Answers for the question “How often do you eat the following meals?”.**

The majority of respondents (73%) eats fast foods only a few times a month, while every fifth student totally eliminated those products from diet. Only 1% of students eats fast foods every day. Pastries, donuts and other sweet buns are consumed by the majority of respondents (57%) a few times a month, while every third young person avoids this kind of food. Fruits are eaten a few times a week by 44% of the high school students, whereas vegetables – by 38%. Very small percentage of the students did not include fruits and vegetables in their diet.

Among the surveyed youth, the most frequently eaten bread is white wheat bread, which is consumed by 40% of students every day, and by 33% – a few times a week. Brown rye bread is everyday (16%) or a few times a week (40%) eaten by 56% of the studied youth, while every third person (28%) eats it a few times a month. Over half of respondents eats potatoes a few times a week (56%), while every day – only 7%. Every third respondent eats those products a few times a month (32%). White rice and groats are not very common in a diet of young people, as over half of the them (58% and 55% respectively) consumes it only a few times a month.

Answers for the question “How often do you eat meat products and fish?” are presented in Figures 5, 6. The most frequently eaten product from this group among young people is ham, which is everyday eaten by every fifth respondent. Every third student avoids fried fish, while over half (57%) eats them a few times a month.

Pearson’s chi square test showed relationship between sex and frequency of consumption of: hams, ‘kabanosy’, Frankfurters, pate, chops, fried fish and herring. In each case Cramer’s V test indicated that this dependency is weak. Pearson’s chi square test showed relationship between the size of the place of living and frequency of consumption of: ‘kabanosy’ (p=0.016), Frankfurters (p=0.00041), chops (p=0.0038), salmon (p=0.0016) and sushi (p=0.005). In each case Cramer’s V test indicated that this dependency is weak.

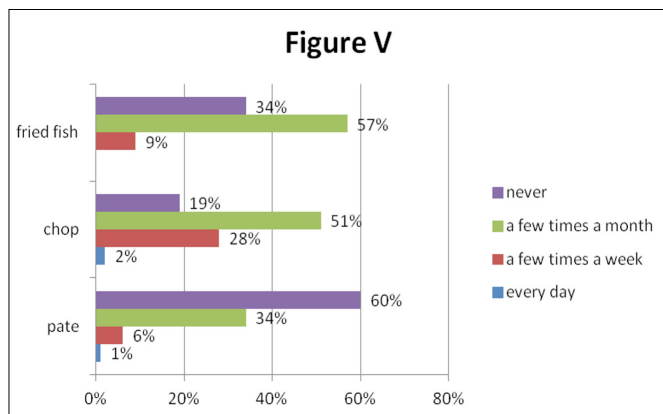


FIGURE 5. Answers for the question “How often do you eat meat products and fish?”.

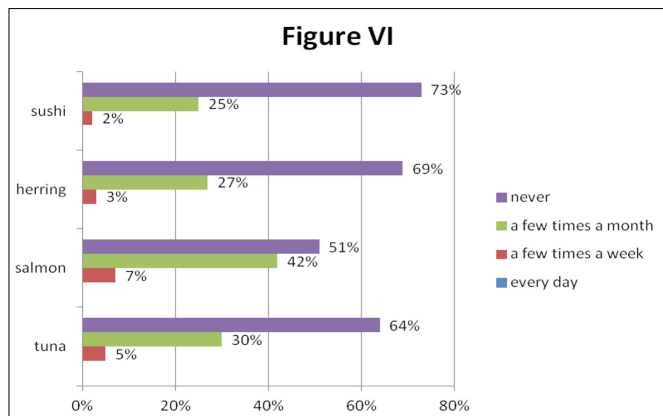


FIGURE 6. Answers for the question “How often do you eat meat products and fish?”.

Among the studied high school students, percentage differences between consumption of flavoured yoghurt and natural yoghurt are not numerous. Small percentage of respondents eats yoghurts every day, out of whom 3% – flavoured and 6% – natural one. The biggest percentage of students eats yoghurts a few times a month (39% – natural yoghurt, 43% – flavoured one). When it comes to consuming milk, the majority (62%) of respondents eats it every day (26%) or a few times a week (36%). Very popular among high school students is consuming eggs, which are eaten a few times a week by 51% of students, while every day – by 8%. Answers for the question about diet (vegan or vegetarian) are presented in figure VII. Pearson’s chi square test showed no relationship between the sex of respondents as well as the size of the place of living and answer to this question.

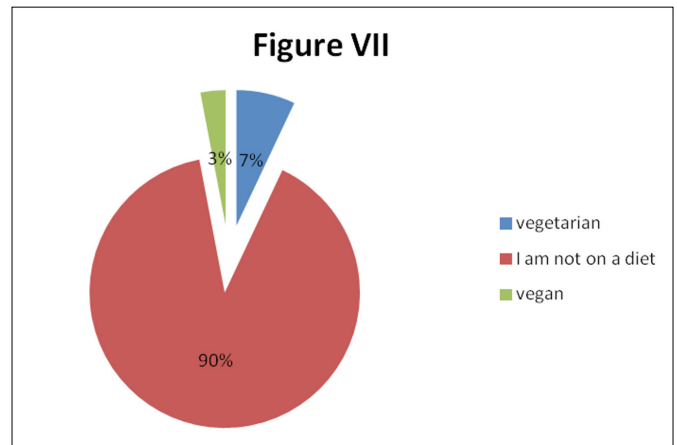


FIGURE 7. Answers for the question “What kind of diet are you on?”.

Answers for the question about other diets are presented in Table 3.

TABLE 3. Other kinds of diets of the respondents.

Table III	
Diet	Percentage
lactose-free	1.2%
no diet	91.6%
gluten-free	1.1%
diabetic	0.6%
fruitarianism	0.1%
reduction	0.2%
vegetarian	0.5%
caloric deficit	0.1%
flexitarianism	0.3%
easy digestible diet	0.5%
healthy diet	0.4%
caloric deficit	1.1%
paleo	0.1%
calories reduction	0.3%
allergies	0.1%
pescarianism	0.1%
low-carb	0.7%
cetogenic	0.3%
veganism	0.1%
periodic fasts	0.1%
low-fat	0.1%
low-sodium	0.1%
high-protein	0.4%

The majority of the high school students is not on any diet (90%). Among the respondents being on a diet, the most popular one is vegetarian diet (7%), another popular diet is vegan diet (3%). Part of the students is on less popular diets (8.5%), out of which there are mostly lactose-free diet (1.2%), gluten-free diet (1.1%), caloric deficit (1.1%). Pearson’s chi square test showed relationship between the sex of respondents and answer to this question (p=0.049), Cramer’s V test indicated that this dependency is weak. Pearson’s chi square test showed no relationship between the size of the place of living and answer to this question.



Answers for the question “How often do you drink following fluids?” are presented in Table 4.

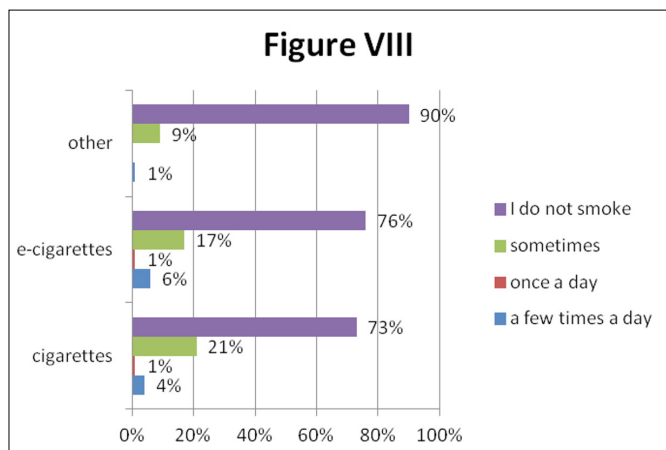
**TABLE 4. Declared participants’ intake of fluids.**

	still water	mineral water	sweet juices and drinks	energy drinks	instant coffee	tea
over 2 litres a day	17%	11%	1%	0%	4%	19%
1-2 litres a day	50%	38%	4%	1%	2%	18%
1 cup/can a day	15%	16%	10%	4%	11%	32%
a few times a week	8%	13%	24%	9%	9%	18%
a few times a month	4%	9%	41%	24%	13%	10%
I do not drink	6%	13%	20%	62%	61%	3%

Among the respondents, 72% do not drink water, while the vast majority drinks still and mineral water. Over two liters of still water daily is drunk by 17% of high school students, whereas half of the respondents declares drinking 1-2 liters of still water daily. Energy drinks and instant coffee are not the most frequently chosen drinks by respondents – 62% of them do not consume energy drinks at all, and 50% do not drink instant coffee.

Pearson’s chi square test showed relationship between sex and the quantity of drunk water: mineral water ( $p=0.00018$ ), flavoured water, sweet juices and drinks, fizzy drinks, energy drinks ( $p=0.044$ ), herbs ( $p=0.0023$ ). Cramer’s V test indicated that in the case of fizzy drinks dependency is rather weak, while in the remaining cases – weak. Pearson’s chi square test showed relationship between the size of the place of living and the quantity of drunk water: flavoured water ( $p=0.017$ ), fizzy drinks ( $p=0.021$ ), instant coffee ( $p=0.021$ ) and grain coffee ( $p=0.038$ ). In each case Cramer’s V test indicated that this dependency is weak.

Answers for the question “Do you smoke?” are presented in Figure 8. The majority of high school students does not smoke cigarettes (73%) or e-cigarettes (76%). When it comes to 26% of respondents, they admit to smoking, out of whom 21% smokes only sometimes, and 4% smokes a few times a day, while only 1% smokes once a day. Pearson’s chi square test showed relationship between sex and smoking: cigarettes (0.044), e-cigarettes (0.0066) and other tobacco products (0.002). In each case Cramer’s V test indicated that this dependency is weak. Pearson’s chi square test showed no relationship between the size of the place of living and answer to this question.



**FIGURE 8. Answers to the question “Do you smoke?”.**

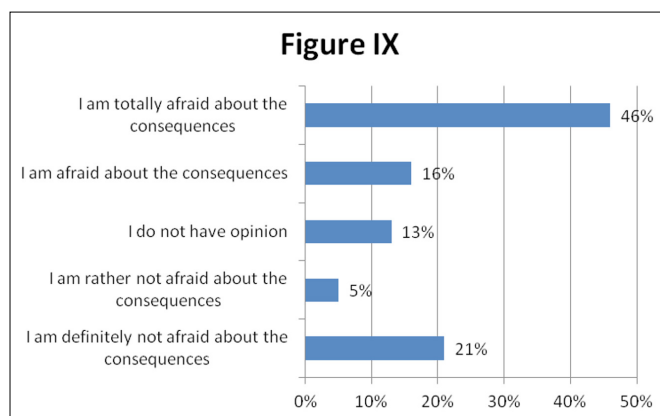
Answers for the question “At what age did you start smoking?” are presented in Table 5. The majority of high school students has never smoked (63.5%). Those the respondents who smoke (36.5%), the most frequently started smoking at the age of 17 (9.7%). Pearson’s chi square test showed relationship between sex and the answer to that question ( $p=0.046$ ). Cramer’s V test indicated that this dependency is weak. Pearson’s chi square test showed relationship between the size of the place of living and answer to this question ( $p=0.019$ ). Cramer’s V test indicated that this dependency is weak.

**TABLE 5. Declared participants’ age of onset of cigarette smoking.**

Age	Number of answers
10	1
11	1
12	4
13	18
14	37
15	87
16	114
17	133

The majority of high school students does not smoke cigarettes (65%). Among the smokers (35%), the majority smokes for company (16%), some also smoke for pleasure (11%), the remaining ones smoke because of stress (8%). Answers for the question “Do you think about an influence of the years of smoking on your future health?” are presented in Figure 9.

The majority of students is afraid of an influence of the years of smoking on future health (62%), most of whom is definitely afraid (46%). Pearson’s chi square test showed no relationship between sex and the answer to that question. Pearson’s chi square test showed relationship between the size of the place of living and answer to this question ( $p=0.035$ ). Cramer’s V test indicated that this dependency is weak.



**FIGURE 9. Answers for the question “Do you think about an influence of the years of smoking on your future health?”.**

According to the majority of high school students (55%), e-cigarettes are not healthier than traditional cigarettes. When it comes to 22% of respondents, they consider e-cigarettes as a healthier alternative, while 23% does not have any opinion concerning that.

Answers for the question “What kind of physical activity do you prefer?” are presented in figure X. Preferences of young people often go beyond the possibilities of PE lessons at school. The own studies indicated that as much as 50% of respondents prefers physical activity connected with a gym, aerobics or fitness. Slightly less – 45% chooses everyday walk lasting about 45 minutes. the same number of persons – 31% prefers running and team sports.

Pearson’s chi square test showed relationship between sex and the preferred sport in the case of: running ( $p=0.0005$ ), team sports ( $p=0.00016$ ), gym/aerobics/fitness ( $p=0.023$ ) and everyday walks lasting at least 45 minutes ( $p=0.001$ ). In each of those cases contingency factor indicated that dependency is weak. Pearson’s chi square test showed relationship between the size of the place of living and the choice of everyday walk lasting at least 45 minutes ( $p=0.035$ ). Cramer’s V test indicated that this dependency is weak.

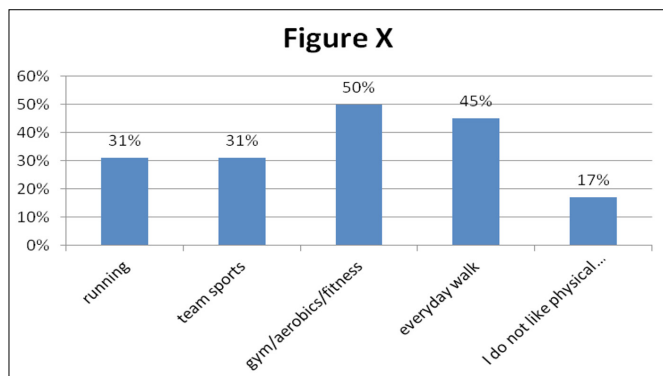


FIGURE 10. Answers for the question “What kind of physical activity do you prefer?”.

The majority of respondents, who declares doing a sport, is guided by improvement of well-being and maintenance of good health (61%). A lot of students take physical activity in order to improve their appearance (56%), while 35% just likes to be active. Among the respondents, 58% declares that they do a sport, while the main reason of giving up taking physical activity by respondents was lack of time and desire (39%). In the second place there was too distant location of sport facilities (10%).

Answers for the question “How much time a week do you devote to physical activity?” are presented in Table X. The biggest number of respondents (19.9%) devotes about 3 hours weekly to physical activity. When it comes to 14.7% of students, they spend 2 hours doing sport, while 6.9% – 1 hour a week. Big percentage of the surveyed youth (14.9%) does not devote even one full hour a week to physical activity. The conducted study showed that slightly over half of students devotes less than 3 hours per week to sport. Pearson’s chi square test showed no relationship between the sex of respondents as well as the size of their place of living and answer to this question.

TABLE 6. Quantity of time devoted to physical activity by participants.

Table VI	
Time in hours	Number of answers
0	205
1	95
2	202
3	273
4	151
5	168
6	83
7	64
8	30
9	9
10	47
11	8
12	10
13	2
14	11
15	7
18	2
20	4
24	1
30	1

Answers for the question “What kind of physical activity do you consider as beneficial to health?” are presented in Table 7. The vast majority (74%) of respondents as the best for health considers regular activity with low intensity. When it comes to 20% of students, they chose regular and intensive workouts, while small number of chosen answers regarded irregular activity with low intensity (3%). Pearson’s chi square test showed relationship between sex and the answer to this question ( $p=0.00003$ ). Cramer’s V test indicated that this dependency is weak. Pearson’s chi square test showed no relationship between the size of the place of living and the answer to this question.

TABLE 7. Participants’ perceived most important factor concerning physical activity.

Table VII	
Age	Number of answers
Regularity and intensity of training	274
Regularity of trainings	1019
Intensity of training	38
Neither regularity nor intensity of training	42

The most frequent answer to this question among respondents was lack of opinion concerning satisfaction with their appearance (38%). When it comes to 28% of high school students, they are rather satisfied with their appearance, while 6% is very satisfied.

## DISCUSSION

Nutrition is one of the most important environmental factors influencing physical development and health – that is why the youth's state of knowledge on this subject is crucial [14-16]. Obesity in young age may result in increase in the risk of cardiometabolic diseases and cancers in the later stage of life [17,18]. As the own studies show, the quantity of calories in the purchased products has little importance for the youth, what is alarming at a time when obesity among young people is still increasing [19,20].

However, a positive tendency is respondents' infrequent consumption of fast foods, which belongs to the unhealthiest, the most worthless, and the most caloric food products conducive to obesity and other diseases [19]. On the other hand, fruits, which should be ingredients of everyday diet and which are a source of vitamins and minerals necessary for proper functioning of an organism, are everyday consumed by only 41% of respondents. Decrease in eating fresh fruits and vegetables was already visible in the previous years in various age groups [20-22].

A bigger part of respondents more often eats white wheat bread than brown rye bread – low consumption of brown bread is unsatisfactory, as it has health value. Rye bread has low caloric index, contains more nutrients and can be produced without, so called, flavour improvers [23]. White rice and groans are not very popular in the diet of young people, as over half of them eats those products only a few times a month. It raises concerns because they are a source of group B vitamins and fiber, necessary for proper bowel functioning and effective action of gut bacteria [24].

Not really popular among the high school students are also brown rice, spelt, amaranthus and quinoa. This is not satisfactory, as amaranthus is considered the best cereal providing calcium and unsaturated fatty acids [25,26]. Quinoa, in turn, has attractive nutritional profile and has antioxidant properties [27,28], while spelt helps decrease level of cholesterol in blood and provides a sense of satiety, what makes the process of losing weight easier [29]. There are studies presenting legitimacy of elaborating enriched food products based on spelt grains and introducing them do a diet [30]. Every third respondent avoids fried fish, while over half (57%) eats them a few times a month, despite the fact that fish are great source of unsaturated fatty acids and ought to be consumed at least once a week [31].

High percentage of high school students eating eggs is very positive, as those products belong to the most valuable ones [31,32]. Relatively high frequency of eating milk and dairy products is also a positive indicator, as those products are main sources of calcium, which is basic building material of bones and teeth [32]. Adopting a vegetarian or vegan diet, what happened in 10% of respondents, is beneficial for health, according to the literature, due to reduced risk of hypertensive diseases and obesity disorders. Simultaneously, the risk of deficiency of vital minerals, such as vitamin B12, vitamin D or iron, is increased. For that reason, such diet requires using meat substitutes in an appropriate quantity [33,34].

According to nutritional norms for the Polish population, the recommended amount of water consumed with drinks and food products by girls aged 16-18 years is 2500 ml/d, while for the boys at the same age – 2000 ml/d. The consequences are known of both, drinking not enough and too much water for a human organism, that is why balanced liquids intake during

a day is so important [35]. The presented data suggest great diversity of drinks chosen by the youth, which are mostly taken in an appropriate proportion. Consumption of water and tea dominates, while energy drinks and coffee are drunk definitely less frequently. It is a surprising result in comparison with the studies from 2015 conducted among Polish students aged 12-20 years, out of whom 67% declared drinking energy drinks [36]. High tea consumption in Poland has been observed in various age groups, however drinking more than 10-12 cups a day (2-2.4 l, assuming that glass capacity is 200 ml, author's note) is not recommended due to anti-nutritional properties when taken excessively [36]. On the other hand, regular drinking tea in the amount not exceeding anti-nutritional dose leads, in some populations, to decreased risk of type II diabetes [37].

As it is widely known, sport is connected with various health benefits – both in physical and mental terms [38,39]. Exercises can prevent many diseases and adolescent obesity [40,41]. According to the studies from 2010 among the group of Polish high school students, physical activity of most of them is limited to participation in compulsory school classes, which do not fully satisfy their movement needs [42-44]. Therefore, it seems crucial that the respondents' activity turned out to go beyond PE classes framework. Data from the Central Statistics Office used in the Multi-center National Population Health Examination Survey (WOBASZ II) [45] has shown that the percentage of persons aged 15-19 years doing a sport in 2014 was equal to 49%, which means that the youth surveyed in the present study is physically active. Comparing the results of own studies to the above mentioned studies from 2010, the main reasons of giving up physical activity coincided: lack of time and desire, and too distant location of sport facilities. When comparing own results to those obtained during WOBASZ II survey, it may be said that more adult people over 20 year of age give up physical activity than young adults who took part in the own study. The vast majority (74%) of the respondents considers regular activity with low intensity as the best for health. Up to date recommendations, however, suggest that a health training should be done regularly, preferably 3-5 times a week, and its intensity ought to be moderate [46]. In order to consider the physical activity as healthy, awareness of the person doing exercises concerning the discussed guidelines is necessary.

Studies concerning nicotine found out that it has a direct influence on both, the whole organism and particular body systems. It affects, among others, central nervous system (CNS), cardiovascular system and has an impact on processes connected with cancer diseases. Moreover, it is a highly-toxic substance and has high addictive potential [47]. It seems to be a good tendency that the number of high school students smoking cigarettes decreased by 4% compared to studies from 2015 [48]. In relation to the studies from 2018 conducted among the American youth, at the Polish schools 3% more respondents admits smoking e-cigarettes, while 1% less of the Polish students smokes traditional cigarettes [49,50]. In the comparable group of respondents from the first year of studies from 2015 study, the causes of smoking are in an identical order as in the figure XIX, and percentage differences are small [50].

Because of the proved in the studies negative impact of substances included in cigarettes on cardiovascular system and CNS and increased risk of cancers, it seems alarming that 26% of respondents is not afraid of years of smoking consequences [51]. Nowadays the popularity of alternative tobacco products is raising [51,52]. An influence of years of e-cigarettes

smoking on an organism has not been fully found yet, however it is probably significantly smaller than in the case of the traditional cigarettes. E-cigarettes are also less addictive, as they provide the smoker with smaller amount of nicotine. Although in the studies from 2015 conducted among present and former smokers the majority of respondents was convinced that e-cigarettes are a healthier alternative (67%), in the case of present study the result is opposite and 55% of students does not consider e-cigarettes as a more beneficial for health choice [52].

Every third respondent was satisfied or very satisfied with his/her appearance, while 28% was unsatisfied. The period between 15 and 20 year of age embraces many transformations in physiognomy of a young adult. Acceptance of own appearance is one of the components of mental development which occurs at that time, and an influence on that may have a diet, the used stimulants and whether he/she does a sport [53-56].

## CONCLUSIONS

1. The most frequent factor taken into consideration by the youth when buying food is habit. It proves the importance of shaping appropriate eating habits among young people, as good habits in the youth will result in similar ones in the older age.
2. Awareness of the youth should be raised when it comes to eating between meals during everyday activities, as it leads to consumption of larger food quantity, in order to prevent obesity.
3. The majority of the youth has good eating habits concerning meat, fish and dairy products.
4. Noticeable part of the youth is on a vegan or vegetarian diet. Deeper analysis of their eating habits needs to be made in order to exclude nutritional errors and prevent possible health consequences of inappropriate nutrition.
5. The majority of the youth has good habits concerning the choice of drinks; consumption of fizzy drinks and energy drinks considerably decreased.
6. The vast majority of the youth do not smoke, the number of smokers decreased, however young people need to be constantly educated paying attention to the harmful influence of nicotine on health, in order to reduce the number of smokers, especially those under the age of 18.
7. One of the most frequent by the youth physical activity is working out at the gym. Deep analysis of this activity needs to be done taking into account frequency and type of exercises in order to detect errors and eliminate them.

## REFERENCES

1. Carr PR, Weigl K, Jansen L, et al. Healthy lifestyle factors associated with lower risk of colorectal cancer irrespective of genetic risk. *Gastroenterology*. 2018;155(6):1805-15.
2. Lv J, Yu C, Guo Y, et al. Adherence to healthy lifestyle and cardiovascular diseases in the Chinese population. *J Am Coll Cardiol*. 2017;69(9):1116-25.
3. Li Y, Pan A, Wang DD, et al. Impact of healthy lifestyle factors on life expectancies in the US population. *Circulation*. 2018;138(4):345-55.
4. Ponczek D, Olszowy I. Styl życia młodzieży i jego wpływ na zdrowie. *PHiE*. 2012;93(2):260-8.
5. Jaaskelainen T, Koponen P, Lundquist L, et al. Lifestyle of young adults – changes and accumulation. *Eur J Public Health*. 2019;29(4).
6. Suliburska J, Bogdański P, Pupek-Musiałik D, et al. Analysis of lifestyle of young adults in the rural and urban areas. *Ann Agric Environ Med*. 2012;19(1):307-13.
7. Đorđić V, Božić P, Milanović I, et al. Guidelines-driven educational intervention promotes healthy lifestyle among adolescents and adults: A Serbian national longitudinal study. *Medicina (Kaunas)*. 2019;55(2):39.
8. Shah N, Rao S, Inam S, et al. Healthy lifestyle as a preventive measure against victimization among school-going adolescents. *East Mediterr Health J*. 2019;25(9):604-12.
9. Zaman R, Hankir A, Jemni M. Lifestyle Factors and Mental Health. *Psychiatr Danub*. 2019;31(Suppl 3):217-20.
10. Kleppang AL, Hartz I, Thurston M, Hagquist C. The association between physical activity and symptoms of depression in different contexts – a cross-sectional study of Norwegian adolescents. *BMC Public Health*. 2018;18(1):1368.
11. Glinkowska B, Glinkowski WM. Association of sports and physical activity with obesity among teenagers. *PJOMEH*. 2018;31(6):771-82.
12. Richmond SA, Pike I, Maguire JL, Macpherson A. E-cigarettes: A new hazard for children and adolescents. *Paediatr Child Health*. 2018;23(4):255-9.
13. Kurdaningsih SV, Sudargo T, Lusmilasari L. Physical activity and sedentary lifestyle towards teenagers' overweight/obesity status. *Int J Community Med Public Health*. 2016;3:630-5.
14. Zalewska M, Maciorkowska E. Rola edukacji żywieniowej w populacji dzieci i młodzieży. *Med Og Nauk Zdr*. 2013;19(3):375-8.
15. Panasiuk L, Wdowiak L, Paprzycki P, Lukas W. Occurrence of overweight and obesity among adult rural population in Eastern Polans. Relationship between obesity and selected socio-economic factors. *Ann Agric Environ Med*. 2008;15(1):149-52.
16. Wojtyła A, Bojar I, Boyle P, et al. Nutritional behavior among pregnant women from rural and urban environments in Poland. *Ann Agric Environ Med*. 2011;18(1):169-74.
17. Weihrauch-Blüher S, Schwarz P, Klusmann JH. Childhood obesity: increased risk for cardiometabolic disease and cancer in adulthood. *Metabolism*. 2019;92:147-52.
18. Kowal M, Woronkiewicz A, Kryst Ł, et al. Sex differences in prevalence of overweight and obesity, and in extent of overweight index, in children and adolescents (3–18 years) from Kraków, Poland in 1983, 2000 and 2010. *Public Health Nutrition*. 2016;19(6):1035-46.
19. Wyka J, Grochowska-Niedworok E, Malczyk E, et al. Częstość spożycia produktów typu fast food przez młodzież męską. *Bromat Chem Toksykol*. 2012;XLV(3):675-9.
20. Jąder K. Zmiany w konsumpcji owoców i warzyw oraz ich przetworów w Polsce w latach 1998-2012. *Rocz Nauk Ekonom Rol i Rozw Obsz Wiej*. 2014;101(3):98-106.
21. Jąder K, Wawrzyniak J. Zmiany w spożyciu owoców i warzyw oraz ich przetworów w Polsce w latach 1999-2013, a zjawisko zrównoważonej konsumpcji. *JARD*. 2015;3(37):427-35.
22. Dean WR, Sharkey JR. Rural and urban differences in the associations between characteristics of the community food environment and fruit and vegetable intake. *J Nutr Educ Behav*. 2011;43(6):426-33.
23. Gambuś H, Litwinek D. Pieczywo – dlaczego warto jeść i jakie wybierać? [<https://www.mp.pl/pacjent/dieta/zasady/74904,pieczywo-dlaczego-warto-jesc-i-jakie-wybierac>]
24. Zdrojewicz Z, Jagodziński A, Kowalik M. Ryż to zdrowie – prawda czy mit? *Med Rodz*. 2017;1:53-9.
25. Kulczyński B, Gramza-Michałowska A, Grdeń M. Amarantus – wartość odżywcza i właściwości prozdrowotne. *AMARANTUS – Bromat Chem Toksykol*. 2017;1:1-7.
26. Preedy V, Watson R, Patel V. Flour and breads and their fortification in health and disease prevention (second edition). Cambridge: Academic Press; 2017.
27. Mystkowska I, Zarzecka K, Gugala M, Baranowska A. Właściwości odżywcze i prozdrowotne komosy ryżowej. *Probl Hig Epidemiol*. 2016; 97(1):29-31.



28. Li G, Zhu F. (2018) Quinoa starch: Structure, properties, and applications. *Carbohydrate Polymers*. 2018;181:851-61.
29. Rożnowski J, Klosowska J, Polzer P. Żywieniowe i prozdrowotne znaczenie pszenicy orkisz (*Triticum spelta* L.) *Post Fitoter*. 2015;1:45-9.
30. Mardar M, Znacek R, Zhygunov D, Macari A, Ustenko I. Spelt crisp bread - health food products, *Modern Technologies in the Food Industry*. 2018
31. Materac E, Marczyński Z, Bodek KH. Rola kwasów tłuszczowych omega-3 i omega-6 w organizmie człowieka. *Bromat Chem Toksykol*. 2013;XLVI(2):225-33.
32. Kijowski J, Leśniewski G, Cegielska-Radziejewska R. Jaja cennym źródłem składników bioaktywnych. *PTTŻ*. 2013;5(90):29-41.
33. Jarosz M. Normy żywieniowe dla populacji polskiej – nowelizacja. *Instytut Żywności i Żywienia*; 2012.
34. Pyrzyńska E. Dieta wegetariańska w świetle zasad prawidłowego odżywiania – postawy i zachowania wegetarian w Polsce. *Zesz Nauk UEK*. 2013;906:27-36.
35. Nowak D, Jasionowski A. Analysis of the consumption of caffeinated energy drinks among Polish adolescents. *Int J Environ Res Public Health*. 2015;12:7910-21.
36. Rusinek-Prystupa E, Samolińska W. Preferencje konsumenckie dotyczące spożycia herbaty i kawy wśród respondentów zamieszkałych w Lublinie i okolicach – doniesienie wstępne. *Probl Hig Epidemiol*. 2013;94(3):653-7.
37. Nguyen CT, Lee AH, Pham NM, et al. Habitual tea drinking associated with a lower risk of type 2 diabetes in Vietnamese adults. *APJCN*. 2018;27(3):701-6.
38. Downward P, Hallmann K, Rasciute S. Exploring the interrelationship between sport, health and social outcomes in the UK: implications for health policy. *EJPH*. 2018;28(1):99-104.
39. Swann C, Telenta J, Draper G, et al. Youth sport as a context for supporting mental health: Adolescent male perspectives. *Psychol Sport Exerc*. 2018;35:55-64.
40. Caramenti M, Lafortuna CL, Mugellini E, et al. Regular physical activity modulates perceived visual speed when running in treadmill-mediated virtual environments. *PLoS ONE*. 2019;14(6):e0219017.
41. Erwin H, Brusseau TA, Carson R, et al. SHAPE America's 50 million Strong™: Critical research questions related to youth physical activity. *Res Q Exerc Sport*. 2018; 89(3):286-297.
42. Wojtyła-Buciora P, Marcinkowski JT. Aktywność fizyczna w opinii młodzieży licealnej i ich rodziców. *Probl Hig Epidemiol*. 2010;91(4):644-9.
43. Oyhenart EE, Castro LE, Forte LM. Socioenvironmental conditions and nutritional status in urban and rural schoolchildren. *Am J Hum Biol*. 2008;20(4):399-405.
44. Liu J, Bennet KJ, Harun N, Probst JC. Urban-rural differences in overweight status and physical inactivity among US children aged 10-17 years. *J Rural Health*. 2008;24(4):407-15.
45. Badanie WOBASZ II (2013-2014), Komisja Promocji Zdrowia.
46. Ostręga W. Aktywność fizyczna jako kluczowy element zdrowego stylu życia. Warszawa: Instytut Matki i Dziecka; 2017.
47. Stępniewska A, Kowalczyk M, Cholewińska E, Ognik K. E-papierosy – pomoc w rzuceniu palenia czy zagrożenie? *Hygeia Public Health*. 2017;52(2):86-95.
48. Kolarczyk E. Zachowania zdrowotne młodzieży gimnazjalnej i ponadgimnazjalnej. *Piel Zdr Publ*. 2015;53(3):305-10.
49. Cullen K, Ambrose B, Gentzke A, et al. Notes from the field: Use of electronic cigarettes and any tobacco product among midland High School students – United States, 2011–2018. *Weekly*. 2018;67(45):1276-7.
50. Binkowska-Bury M, Sałacińska I, Więch P, Januszewicz P. Palenie tytoniu wśród studentów pierwszego roku rzeszowskich uczelni. *Med Og Nauk Zdr*. 2015;1:101-6.
51. Treur JL, Rozema AD, Mathijssen JJP, et al. E-cigarette and waterpipe use in two adolescent cohorts: cross-sectional and longitudinal associations with conventional cigarette smoking. *Eur J Epidemiol*. 2018;33:323-34.
52. Brown J, West R, Beard E, et al. Prevalence and characteristics of e-cigarette users in Great Britain: Findings from a general population survey of smokers. *Addict Behav*. 2014;39(6):1120-5.
53. Molińska M, Kram A. Rozpoznanie zasobów nastolatka i środowiska rozwoju. Późna faza dorastania. Warszawa: Instytut Badań Edukacyjnych; 2014.
54. Hupała A, Głogowska J. Wizerunek ciała aktywnej i nieaktywnej fizycznie młodzieży gimnazjalnej ZSP w Górzynie. *Zeszyty Naukowe WSKFiT*. 2016;11:55-60.
55. Koszowska A, Dittfeld A, Zubelewicz-Szkodzińska B. Psychologiczny aspekt odżywiania oraz wpływ wybranych substancji na zachowania i procesy myślowe. *Hygeia Public Health*. 2013;48(3):279-84.
56. Malinowska E, Dzwonkowska-Godula K, Garncarek E, et al. Kulturowe uwarunkowania postaw kobiet i mężczyzn w różnym wieku wobec swego wyglądu i zdrowia. Łódź: Wydawnictwo Uniwersytetu Łódzkiego ;2016.

**Corresponding author**

Marta Kuszneruk  
 Chair and Department of Public Health,  
 Medical University of Lublin  
 1/041 Chodźki St., 20-093 Lublin  
 E-mail: zdrowie.publiczne@umlub.pl