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## **RISK ASSESSMENT FOR DIABETES TYPE 2 CONDITIONS FOR NATURE IN NUTRITION IN ADOLESCENTS**

**Abstract:** This paper will present the results of a study on dietary habits in adolescents. The high school or adolescent era is a time of great physical and psychological changes, which cause instability and oscillations in the mood and behavior of high school students. Results obtained by interviewing secondary school students about eating habits and results obtained using a standardized questionnaire for the risk of type 2 diabetes were analyzed using a reliable statistical tool IBM SPSS Statistical, which offers a range of reliable analyzes and statistical tests. Previous research has shown that for each person with type 2 diabetes, one person finds out who does not know it. Discovery of pre-diabetes, in new potential patients, is necessary at the earliest age, when a number of factors affect lifestyles, such as irregular nutrition and obesity, physical inactivity, stress, and others become important for the development of this disease. Detection of risk levels in potential patients is important for both the individual and public health, and everyday clinical practice. After determining the degree of risk for a particular sample, a set of measures for a particular adolescent population will be recommended, so that the disease does not occur, or its onset will move for a later period of life.

**Keywords:** *nutrition, diabetes type 2, adolescente, risk factors.*

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## INTRODUCTION

Type 2 diabetes is an insulin-independent type of diabetes, in which insulin secretion is reduced (1). It can occur at any age, but most commonly in obese people. In the last decade, with significant numbers of adolescents, there is extreme obesity, mostly caused by improper nutrition, insufficient physical activity, stress, etc. (2) Along with the increase in obesity, there is an increase in type 2 diabetes, heart disease, stroke, diabetes retinopathy, which has an effect on vision, kidney failure, resulting in dialysis, poor circulation in the most commonly lower extremities, which can be caused by amputations and many other diseases (3), (4), (5).

Type 2 diabetes, which previously had the highest incidence in the elderly, begins to increase exponentially and even in children, especially in the period of puberty or adolescence (6), (7). In the last decade, with a significant number of adolescents, there is extreme obesity, mainly caused by irregular nutrition, insufficient physical activity, stress, etc. (8) In addition to the increase in obesity, type 2 diabetes also occurs (9), (10). Many studies in the country and abroad show that by reducing the intake of certain foods, weight can be reduced, and hence the risk of this disease (11), (5).

### 1. Structure of the sample

A total of 318 secondary school students from the Kolubara district participated in the research that will be presented in this paper. The structure of the sample consisted of 145 (45.6%) male students and 173 (54.4%) female students. Observed by the classes currently taught, the structure of students consists of: 71 (22.3%) students of the first year, 89 (28.0%) students of the second year, 79 (24.8%) students of the third year and 79 (24.8%) students of the fourth year. The center from which students come from: the urban environment 113 (35.5) students, suburban 114 (35.8%) students and the rural environment 91 (28.7) pupils. There are no statistically significant differences in the gender, class, or environment from which they come (Table 1).

**Table 1. Student sample structure**

Student sample structure					
		Frequency %	Percent	CS	CS(p)
Gender	male	145	45.6	2.465	0.116
	female	173	54.4		
Class	1. class	71	22.3	2.050	0.562
	2. class	89	28.0		
	3. class	79	24.8		
	4. class	79	24.8		

Student sample structure					
		Frequency %	Percent	CS	CS(p)
Environment	urban	113	35.5	3.489	0.175
	suburban	114	35.8		
	rural	91	28.7		

## 2. Subject research

In the first part of the study, students completed an anonymous questionnaire, which discusses their eating habits and the consumption of certain foods and beverages. The first part of the questionnaire, besides basic information such as gender, the class that they currently attend and the environment from which they come, contains a question about their assessment, opinion on the regularity of their nutrition. In the second group of questions, the students evaluated the average consumption of these types of foods such as fish, meat, milk and dairy products, bread, pastry and pastry, fruits, vegetables, cakes, sweets, water, fruit juices, energy, and aerated drinks. The third group of questions was issues related to the existence of health problems or hereditary diseases, keeping diets, their opinions and attitudes about diet, whether they necessarily have breakfast and generally affect food on health(6).

The second part of the study looked at the risk of type 2 diabetes. In a study of 318 students, 111 students volunteered to fill in an online standardized questionnaire, 48 (43.2%) male students and 63 (56.7%) female students. Since most students do not know the BMI value, a short online questionnaire was first made for calculating it, from which it is precisely possible to get the exact value. The standardized questionnaire for the type 2 diabetes risk contains 8 questions that students who want to answer can ask. The "pol" option is added to it, in order to compare student responses according to this criterion. The sum of the points obtained from the response provides a risk assessment of the onset of diabetes type 2 (7).

## 3. Methodological remarks

The results obtained using the questionnaire were analyzed using a reliable statistical tool IBM SPSS Statistical, which offers a range of reliable analyzes and statistical tests. Students' responses were on the 5-point Likert scale: (1 means very bad, 2 means bad, 3 means satisfactory, 4 means good, 5 is very good), Kruskal Wallis's H Test KW (H) and its significance KW (p) was used for this type of questions. To analyze the answer questions Yes/Neutral/No, the Chi-Square test (CS) and its significance CS (p) was used. For the analysis of the obtained results in the online

test for the risk of diabetes type 2 were used: Mean and One-Way ANOVA Test for comparing the answers of male and female students. (12), (13), (14).

Research hypotheses:

**H1: In adolescents aged 14 to 18 years, there are no statistically significant differences in consuming different foods by gender, age, or environment in which live.**

**H2: Small percentage (less than 15%) of adolescents has a risk of diabetes type 2, observed by sex of respondents.**

#### 4. Analysis of the obtained results

The students gave their opinion on their own nutrition to the first question asked. 12.7% of male students believe that it is properly fed, the vast majority of 69.0% of pupils are properly fed, while 18.3% think it is fed incorrectly. 12.5% of female students think that it is properly fed, the vast majority of 78.5% of students are fed properly, while 9.0% think that they are feeding incorrectly. There are no statistically significant differences in students' responses to gender (Table 2).

**Table 2. Students' opinions about their nutrition by gender, class, and environment from which they come**

Students' opinions about their nutrition by gender, class, and environment from which they come						
		Yes %	Neutral %	No %	KW(H)	KW(p)
Gender	male	12.7	69.0	18.3	2.538	0.111
	female	12.5	78.5	9.0		
Class	1. class	11.3	70.4	18.3	3.376	0.337
	2. class	20.9	65.1	14.0		
	3. class	9.0	82.0	9.0		
	4. class	8.0	80.0	12.0		
Environment	urban	13.7	75.2	11.1	0.810	0.667
	suburban	12.7	72.7	14.6		
	rural	10.0	74.4	14.6		

First-class students, total of 11.3% think that it is properly fed, partly properly fed by a large majority of 70.4% of students, while 18.3% think it is fed incorrectly. Second-class students 20.9% think that they are properly fed, the vast majority of 65.1% of students are fed partly properly, while 14.0% think that they are feeding incorrectly. Third-class students, total of 9.0% believe that they are properly fed, the vast majority of 82.0% of students are fed partly properly, while 9.0% think that they are feeding incorrectly. Students of the fourth class, total of 8.0% believe that it is properly fed, the vast majority of 80.0% of students are partially properly fed, while 12.0% think that they are feeding incorrectly. There are no statistically significant differences in pupils' responses to gender (Table 2).

Students from the urban environment, 13.7% of them think that they are properly fed, the vast majority of 75.2% of the students are partially properly fed, while 11.1% think that they are feeding incorrectly. About 12.7% of students in the suburban environment think that the majority of 72.7% of students are properly fed, while 14.6% believe that they are fed incorrectly. Around 10.0% of rural school students think that they are properly fed, the vast majority of 74.4% of students are fed partly properly, while 14.6% think that they are feeding incorrectly. There are no statistically significant differences in students' responses to gender (Table 2).

The second part of the questionnaire refers to students' habits in consuming certain groups of foods. By analyzing the responses of male (2.71) and female (2.66) students, there are no statistically significant differences in the consumption of fish and fish products. There are no statistically significant differences in the answers of the students of the first class (2.71), the second class (2.60), the third class (2.75) and the fourth class (2.68). In the answers from students from the urban environment (2.54), from the suburban environment (2.93), and the rural environment (2.53) there are statistically significant differences (Table 3).

**Table 3. Answers of students about consuming fish and fish products by gender, class, and environment from which students come**

How much do you consume fish and fish products?				
		Mean	KW(H)	KW(p)
Gender	male	2.71	0.252	0.615
	female	2.66		
Class	1. class	2.71	1.182	0.757
	2. class	2.60		
	3. class	2.75		
	4. class	2.68		

<b>Environment</b>	urban	2.54	9.787	<b>0.007</b>
	suburban	2.93		
	rural	2.53		

By analyzing the answers of male students (3.24) and female students (2.87), there are statistically significant differences in the consumption of meat and meat products. In the answers of the students of the first class (3.01), the second class (2.94), the third class (3.16) and the fourth class (3.04) there are no statistically significant differences. In the answers of students from the urban environment (3.08), there are no statistically significant differences from the suburban environment (2.99) and the rural environment (3.04) (Table 4).

**Table 4. Answers of students about consuming meat and meat products by gender, class, and environment from which students come**

How much do you consume meat and meat products?				
		Mean	KW(H)	KW(p)
<b>Gender</b>	male	3.24	9.667	<b>0.002</b>
	female	2.87		
<b>Class</b>	1. class	3.01	2.410	0.492
	2. class	2.94		
	3. class	3.16		
	4. class	3.04		
<b>Environment</b>	urban	3.08	0.211	0.900
	suburban	2.99		
	rural	3.04		

By analyzing the answers of male students (3.74) and female students (3.78), there are no statistically significant differences in the consumption of milk and dairy products. In the answers of students of the first class (3.80), second class (3.74), third class (3.85) and fourth class (3.67) there are no statistically significant differences. There are no statistically significant differences in the answers of students from the urban environment (3.79), from the suburban environment (3.68), and the rural environment (3.85). (Table 5).

**Table 5. Answers of students about consuming milk and dairy products according to the gender, class and environment from which students come**

How much do you consume milk and dairy products?				
		Mean	KW(H)	KW(p)
Gender	male	3.74	0.400	0.527
	female	3.78		
Class	1. class	3.80	1.892	0.595
	2. class	3.74		
	3. class	3.85		
	4. class	3.67		
Environment	urban	3.79	1.576	0.455
	suburban	3.68		
	rural	3.85		

By analyzing the responses of male students (3.61) and female students (3.41), there are no statistically significant differences in the consumption of bread, dough and pastry. In the answers of students of the first class (3.61), second class (3.49), third class (3.66) and fourth class (3.56) there are no statistically significant differences. In the answers of students from the urban environment (3.58), from the suburban environment (3.62), and the rural environment (3.51) there are no statistically significant differences. (Table 6).

**Table 6. Odgovori učenika o konzumiranju hleba, testa i peciva prema polu, razredu i sredini iz koje dolaze učenici**

How much do you eat bread, dough and pastries?				
		Mean	KW(H)	KW(p)
Gender	male	3.61	0.565	0.452
	female	3.41		
Class	1. class	3.61	1.114	0.767
	2. class	3.49		
	3. class	3.66		
	4. class	3.56		

Environment	urban	3.58	0.672	0.715
	suburban	3.62		
	rural	3.51		

Analizom odgovora učenika muškog pola (3.47) i ženskog pola (3.59) postoje statistički značajne razlike u konzumiranju voća i povrća. U odgovorima učenika prvog razreda (3.01), drugog razreda (2.94), trećeg razreda (3.16) i četvrtog razreda (3.04) nema statistički značajnih razlika. U odgovorima učenika iz gradske sredine (3.08), iz prigradske sredine (2.99), i seoske sredine (3.04) postoje statistički značajne razlike (Table 7).

**Table 7. Students' responses to the consumption of fruits and vegetables by gender, class, and environment from which they come**

How much do you consume fruits and vegetables?				
		Mean	KW(H)	KW(p)
Gender	male	3.47	0.655	0.418
	female	3.59		
Class	1. class	3.59	5.389	0.146
	2. class	3.73		
	3. class	3.45		
	4. class	3.33		
Environment	urban	3.58	6.214	<b>0.045</b>
	suburban	3.62		
	rural	3.51		

By analyzing the responses of male students (4.07) and female students (3.94), there are no statistically significant differences in the consumption of cakes and sweets. In the answers of the students of the first class (4.14), the second class (3.96), the third class (4.03) and the fourth class (3.90) there are no statistically significant differences. There are no statistically significant differences in the answers of students from the urban environment (3.96), from the suburban environment (3.96), and the rural environment (3.92) (Table 8).



**Table 8. Answers of students about consuming cakes and sweets by gender, class, and environment from which they come**

How much do you consume cakes and sweets?				
		Mean	KW(H)	KW(p)
Gender	male	4.07	1.434	0.231
	female	3.94		
Class	1. class	4.14	2.154	0.541
	2. class	3.96		
	3. class	4.03		
	4. class	3.90		
Environment	urban	3.96	1.125	0.570
	suburban	3.96		
	rural	3.92		

By analyzing the responses of male students (3.34) and female students (3.29) there are statistically significant differences in the consumption of water and fruit juices. In the answers of students of the first class (3.10), second class (3.41), third class (3.29) and fourth class (3.14) there are no statistically significant differences. In the answers of students from the urban environment (3.25), from the suburban environment (3.32), and the rural environment (3.40) there are no statistically significant differences (Table 9).

**Table 9. Answers of students about consuming water and fruit juices by gender, class and environment from which they come**

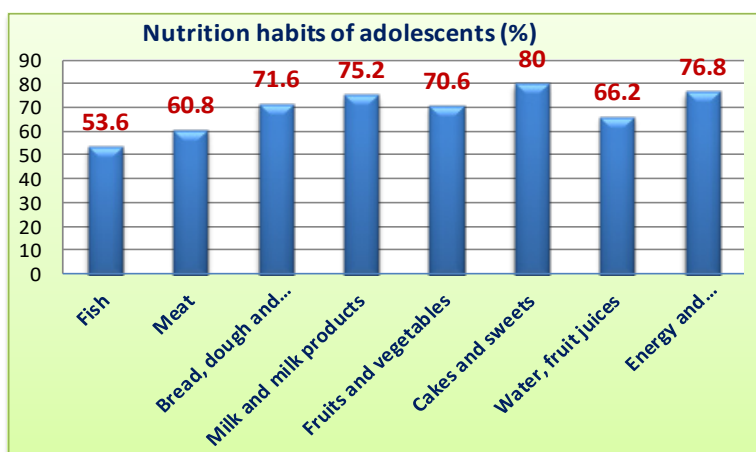
How much do you consume water and fruit juices?				
		Mean	KW(H)	KW(p)
Gender	male	3.34	0.270	0.603
	female	3.29		
Class	1. class	3.10	3.272	0.352
	2. class	3.41		
	3. class	3.29		
	4. class	3.14		
Environment	urban	3.25	0.685	0.710
	suburban	3.32		
	rural	3.40		

By analyzing the responses of male students (3.91) and female students (3.78) there are statistically significant differences in the consumption of energy and carbonated drinks. In the answers of the students of the first class (4.06), the second class (3.82), the third class (3.88) and the fourth class (3.62) there are no statistically significant differences. In the answers of students from the urban environment (3.83), from the suburban environment (3.78) and rural areas (3.92) there are no statistically significant differences (Table 10).

**Table 10. Answers of students about consuming energy and carbonated drinks by gender, class and environment from which they come**

How much do you consume energy and carbonated drinks?				
		Mean	KW(H)	KW(p)
Gender	male	3.91	0.510	0.475
	female	3.78		
Class	1. class	4.06	4.467	0.215
	2. class	3.82		
	3. class	3.88		
	4. class	3.62		
Environment	urban	3.83	0.047	0.977
	suburban	3.78		
	rural	3.92		

In Figure 1. graphs show the percentage values of all pupils on eating habits of each investigated food group.



**Figure 1.** Eating habits of adolescents by groups of foods tested.

The third group of questions was related to diet. By analyzing the responses of male students (3.73) and female students (3.61), there are no statistically significant differences in nutrition in the home or outside. In the answers of the students of the first class (3.85), the second class (3.69), the third class (3.38) and the fourth class (3.71) there are no statistically significant differences. In the answers of students from the urban environment (3.72), from the suburban environment (3.41), and the rural environment (3.94) there are statistically significant differences (Tabela 11).

**Table 11. Answers of students about diet by gender, class and environment from which they come**

Do you eat more in the house than outdoors?				
		Mean	KW(H)	KW(p)
Gender	male	3.73	0.536	0.215
	female	3.61		
Class	1. class	3.85	6.577	0.087
	2. class	3.69		
	3. class	3.38		
	4. class	3.71		
Environment	urban	3.72	6.266	0.044
	suburban	3.41		
	rural	3.94		

By analyzing students' responses to the existence of health problems or hereditary diseases, there are no statistically significant differences among male students (1.59) and female students (1.68). In the answers of the students of the first class (1.68), the second class (1.73), the third class (1.56) and the fourth class (1.64) there are no statistically significant differences. In the answers of students from the urban environment (1.73), from the suburban environment (1.64) and the rural environment (1.52) there are no statistically significant differences (Table 12).

**Tabela 12. Student's responses to health problems or hereditary diseases by gender, class and environment from which they come**

Do you have health problems or inherited diseases?				
		Mean	KW(H)	KW(p)
Gender	male	1.59	0.739	0.390
	female	1.68		

Class	1. class	1.73	0.453	0.929
	2. class	1.56		
	3. class	1.65		
	4. class	1.64		
Environment	urban	1.73	0.090	0.956
	suburban	1.64		
	rural	1.52		

By analyzing students' responses regarding diet, among male students (1.62) and female students (2.04), there are statistically significant differences. In the answers of students of the first class (2.04), second class (1.80), third class (1.72) and fourth class (1.87) there are no statistically significant differences. There are no statistically significant differences in the answers of students from the urban environment (1.87), from the suburban environment (1.87), and the rural environment (1.77 (Table 13).

**Table 13. Answers of students about diet by gender, class and environment from which they come**

Da li ste nekada držali dijetu?				
		Mean	KW(H)	KW(p)
Gender	male	1.62	10.436	0.001
	female	2.04		
Class	1. class	2.04	3.713	0.294
	2. class	1.80		
	3. class	1.84		
	4. class	1.72		
Environment	urban	1.87	0.771	0.680
	suburban	1.87		
	rural	1.77		

By analyzing students' responses to the effect of diets on health, there are no statistically significant differences between male students (2.54) and female students (2.55). In the answers of students of the first class (2.56), second class (2.61), third class (2.42) and fourth class (2.58) there are no statistically significant differences. In the answers of students from the urban environment (2.53), there are no statistically significant differences from the suburban environment (2.48) and the rural environment (2.67) (Table 14).

**Table 14. Answers of students about diet by gender, class and environment from which they come**

Do you think the diet affects health?				
		Mean	KW(H)	KW(p)
Gender	male	2.54	0.004	0.949
	female	2.55		
Class	1. class	2.56	4.467	0.215
	2. class	2.61		
	3. class	2.42		
	4. class	2.58		
Environment	urban	2.53	4.916	0.086
	suburban	2.48		
	rural	2.67		

By analyzing the student's answer to the question of whether proper diet can alleviate or prevent some diseases, such as diabetes, cholesterol, and others, there are statistically significant differences between male students (4.29) and female students (3.95), namely male students. Conscious that healthy foods can avoid certain diseases. There are statistically significant differences in the answers of the students of the first class (4.46), the second class (4.10), the third class (3.77) and the fourth class (4.12). In the answers of students from the urban environment (4.10), from the suburban environment (4.05), and the rural environment (4.20) there are no statistically significant differences (Table 15).

**Table 15. Answers of students about diet by gender, class and environment from which they come**

Do you think that proper nutrition can alleviate or prevent some diseases such as: diabetes, cholesterol, and others?				
		Mean	KW(H)	KW(p)
Gender	male	4.29	6.985	0.008
	female	3.95		
Class	1. class	4.46	11.686	0.009
	2. class	4.10		
	3. class	3.77		
	4. class	4.12		
Environment	urban	4.10	0.396	0.821
	suburban	4.05		
	rural	4.20		

By analyzing students' responses to regular breakfast, there are statistically significant differences between male (4.10) and female students (3.80), meaning that male students are more aware that healthy food can avoid certain diseases. There are statistically significant differences in the answers of the students of the first class (4.46), the second class (4.10), the third class (3.77) and the fourth class (4.12). In the answers of students from the urban environment (4.10), from the suburban environment (4.05), and the rural environment (4.20) there are no statistically significant differences (Table 16).

**Table 16. Answers of students about diet by gender, class and environment from which they come**

Do you have regular breakfast?				
		Mean	KW(H)	KW(p)
Gender	male	3.99	6.771	<b>0.009</b>
	female	3.63		
Class	1. class	3.74	0.163	0.983
	2. class	3.82		
	3. class	3.80		
	4. class	3.81		
Environment	urban	3.93	3.064	0.216
	suburban	3.82		
	rural	3.60		

The second part of the study was to examine the risk of diabetes type 2, using a standardized questionnaire, which students voluntarily filled out. A total of 111 students, 48 (43.2%) male, and 63 (56.7%) females completed the online questionnaire and there were no statistically significant differences in the ratio of male and female respondents in the sample to the risk of diabetes type 2. The risk results are in degree: low have 79.2% of students, 14.5% are in an elevated degree, 2.1% of students have a moderate risk and 4.2% are at high risk for type 2 diabetes, while there are no students at very high-risk degree. In low-risk female students are 76.2% of students, 15.9% are easily raised, 3.2% of students have a moderate risk, and 4.7% have a high risk of type 2 diabetes, while there are no students at very high risk (Table 17).

**Table 17. The results of examining the student's risk of developing type 2 diabetes by gender**

Gender	Percentage	Risk	KW(H)	KW(p)
male (48) (43.2%)	79.2	Low	2.027	0.155
	14.5	Easy elevated		
	2.1	Moderate		
	4.2	High		
	0.0	Very high		
female (63) (56.7%)	76.2	Low		
	15.9	Easy elevated		
	3.2	Moderate		
	4.7	High		
	0.0	Very high		

Measured values of BMI greater than 30 are found in 6.2% of male students and 7.9% female students, values between 25 and 30 are 14.6% of male students and 22.2% female, and with less than 25, the vast majority is 79.2% male students and 69.9% female students. Measured values of the volume of waist greater than 102 are found in 6.2% of male students, values between 94 and 102 are found in 14.6% of students, and with less than 94, the vast majority are 79.2% of students. Measured values of the volume of waist greater than 88 are found in 7.9% female students, values between 80 and 88 are found in 7.9% female students, and with a smaller than 80, the vast majority are 79.4% of students. There are no statistically significant differences in BMI values and measured values of waist circumference for male and female students (Table 18).

**Table 18. Percentage of students according to BMI and waist size by gender**

	BMI (%)	Values		Waist size (%)	Values	
male	6.2	> 30	3	6.2	> 102	4
	14.6	25 - 30	1	14.6	94 - 102	3
	79.2	< 25	0	79.2	< 94	0
female	7.9	> 30	3	7.9	> 88	4
	22.2	25 - 30	1	12.7	80 - 88	3
	69.9	< 25	0	79.4	< 80	0
	KW(H)	KW(p)		KW(H)	KW(p)	
	0.318	0.573		0.000	0.983	

The percentage of students who used antihypertensive drugs was 4.2% for males, 3.2% for females, and those who did not use antihypertensive drugs in male was 95.8% and for females 96.8%. The percentage of students in whom elevated sugar is measured is in the male ratio of 4.2%, in the female half 4.8%, and those who have not measured the elevated sugar in the male is 95.8%, the female is 95.2%. There are no statistically significant differences in the percentage of students using antihypertensive drugs, nor in the percentage of students in whom elevated sugar is measured, depending on males and females (Table 19).

**Table 19. Percentage of students who use antihypertensive drugs and students who measured the value of sugar by sex**

	Antihypertensive (%)	Values		Sugar (%)	Values	
		Da	Ne		Da	Ne
male	4.2	Da	2	4.2	Da	5
	95.8	Ne	0	95.8	Ne	0
female	3.2	Da	2	4.8	Da	5
	96.8	Ne	0	95.2	Ne	0
	KW(H)	KW(p)		KW(H)	KW(p)	
	0.022	0.881		0.076	0.782	

The greatest impact of hereditary risk factors for diabetes mellitus type 2 in male students from the immediate family is 16.7%, and female students 7.9%. The impact of hereditary factors from members of the wider family in male students is 18.8%, and female students 12.7%. Without the influence of hereditary factors, 64.5% of male students and 79.4% of female students is probability (Table 20).

**Table 20. Percentage of students with inherited risks of type 2 diabetes by gender**

	Hereditary factors (%)	Points		KW(H)	KW(p)
		Yes	No		
male	16.7	Yes (close family)	5	3.173	0.075
	18.8	Yes (whole family)	3		
	64.5	No	0		
female	7.9	Yes (close family)	5		
	12.7	Yes (whole family)	3		
	79.4	No	0		



## **CONCLUSION**

Analyzing the eating habits of adolescents, it can be concluded that they do not differ too much, depending on half of the students. (15) Fewer gender differences exist in the habits of certain foods. From the previous analysis, it can be concluded that male students consume more meat by about 7.5% compared to female students. Also, female students by 8.3% more hold the child than male students. Male pupils by 7.2% more often have breakfast than female students. Observed in the center from which they come, fish are mostly consumed by students from the suburban environment by 8% more than in urban and rural areas. Fruits and vegetables are about 2.5% more consumed by students from the suburban environment than from urban and rural areas. The largest percentage of 10% of rural students consumes food at home, compared to students in urban and suburban environments. While differences in attitudes about the impact of proper nutrition on the emergence of chronic non-communicable diseases differ in both the sex and the meanings from which they come. (16), (17) Our assumed assumption is not sustainable, and we accept the alternative hypothesis of the first hypothesis H1.

General habits in the adolescent diet are not the best because they consume: cakes and sweets 80%, energy and carbonated drinks 76.8%, bread and pastry bread 71.6% (Figure 1). The results of the standardized questionnaire show that 4.2% of male students and 4.7% of female students at high risk for type 2 diabetes. (18) At moderate risk, 2.1% are male and 3.2% female students. In an increased risk, 14.5% of male students and 15.9% of female students (Table 15).

Taking into account eating habits and current results of risk assessment for diabetes in students aged 14 to 18, preventive action is necessary, (19) in order to reduce the risk and mitigate as much as possible (14). We can confirm the implied assumption that the risk of developing type 2 diabetes in both males and females is lower than 15% and that the H2 hypothesis can be accepted.

It is necessary to suggest to students who are at a high and moderate risk of doing the OGTT test in order to eliminate or confirm the above-mentioned concerns about diabetes. (20), (21) All students should be introduced to the consequences of improper diet and diseases that can arise as their consequence.

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