Abstract

Adolescence represents life period in which experimentation is part of growing up, acquainting oneself, others and the environment. This period is also extremely important for adopting healthy living habits, including nutrition. The aim of this study is to gain insights into possible differences in dietary habits of adolescents in the urban and rural areas and also to compare the habits and knowledge in nutrition of children in fifth and sixth grade in relation to the children in seventh and eighth grade of elementary school.

The research was conducted in 2018 through surveys in two primary schools: Ludbreg (town) and Veliki Bukovec (rural area) with the approval of the school director and ethics committee and included 293 fifth, sixth, seventh and eighth grade students (from eleven to fourteen years). 144 of them attend the 5th and 6th grade and 149 attend the 7th and 8th grade of the Ludbreg Elementary School and the Veliki Bukovec Elementary School. For result analysis computerized program for descriptive statistics was used.

Obtained results are showing that 55% (93) of students in the Ludbreg elementary school have breakfast at home while in the elementary school V. Bukovec 56% (70) of children do not have breakfast at home, although in both schools the largest number of children consider breakfast as the most important meal in the day. In both schools, the largest number of respondents 38% (112) consumed only three meals a day of which 34% (49) of 5th and 6th grade students and 42% (63) in the 7th and 8th grade. Also, the results show that 56% (164) of the students consider breakfast as the most important meal in the day still it is not consumed daily by 47% (67) of children in 5th and 6th grade and 46% (60) children of 7th and 8th grade. Although 48% (72) of children, especially in higher grades, consider food served in school as regular/healthy there is clear decrease in consumption of food in school.

The survey shows that students are willing to learn more about proper nutrition, which gives us the obligation to introduce some form of continuous nutrition education.

Key words: Adolescent nutrition, School menus, Adolescence, Education.

1. Introduction

The main feature of the nutrition is that it represents one of the existential need of every human being. It begins with the intake of food in the body and continues in the digestive tract by digestion process where it turns into energy [1]. The human body for its needs draws nutrients from food, namely: proteins, fat, carbohydrates, vitamins, minerals and oligoelements. Water is also included in food because of its universal meaning for life [2, 3]. Pyramid of nutrition represents final display of proper nutrition. It is designed to divide the six main groups of food into four levels and to display the proper nutrition schedule according to its importance. It would be most ideal to have 5 meals per day - three larger and two smaller ones. Meals should not be “skipped” and should be matched with everyday activities. The optimum time between the meals would be three to four hours, thus the meals are evenly distributed throughout the day. Nutrition of students should be based on a healthy nutrition pyramid. Children grow quickly, therefore they need large amounts of energy and nutrients for their body. It is important to consume
a variety of foods, but it is also necessary to be moderate in consumption. One of the most important things for children is to start their day with breakfast, as it has been proven that breakfast has a positive impact on the children’s learning and memory, which is later seen in the demonstrated results from the conducted research [4, 5].

Adolescence is a period between the onset of puberty and adulthood, which begins around 11 - 13 year and lasts until 18 - 20 year of age. It is often considered emotionally very intense and often stressful [5]. Adolescence is a period of high nutritional risk followed by increased needs in energy, proteins, calcium and iron. However, during this period there are irregular habits in nutrition which may lead to various nutritional problems. This period requires a higher energy intake as well as protein intake because it is accompanied by rapid growth and development. In adolescence, young people often experience eating disorders or an improper attitude towards food like inadequate consumption of vegetables, fruits, and dairy products, too many fast foods and snacks, and insufficient regular meals at irregular intervals. The most significant disorder that occurs is obesity, which is more and more common in children in the adolescent age. A decade ago, statistical data showed that 10.5% of children in Croatia had an increased body mass, and 3.8% of them were obese. The latest data from HZJZ show that 26.4% of children in school age are overweight while 11.2% are overweight. Croatia is in the worst, 5th spot, in Europe by the number of children with overweight body mass [6, 7, 8, and 9].

The aim of this study was to discover the eating habits of adolescents from urban and rural areas, and to compare the attitude toward nutrition of children in the fifth and eighth grades.

2. Materials and Methods

2.1 Materials

The research was conducted on 23/04/2018 in two primary schools in order to reveal eating habits among adolescents in the city and rural area with comparison of attitude towards nutrition of children in the 5th and 6th grade in relation to the 7th and 8th grade. The primary school Ludbreg represents the city, while the primary school Veliki Bukovec represents the rural environment in Croatia. Out of a total of 293 respondents participating in the survey, 144 examinees attend the 5th and 6th grades of primary school Ludbreg and primary school Veliki Bukovec and 149 of them attend the 7th and 8th grade of the mentioned schools.

The results were obtained by conducting a survey on nutrition habits based on an anonymous questionnaire consisting of 13 questions. Obtained results were solely used for the purposes of undergraduate work and the anonymity and privacy of all respondents who participated in this research were respected. The research was conducted with the approval of school principals and the ethics committee of the institution.

2.2 Methods

The survey was conducted in the morning hours during the courses, with the help of a thought-out questionnaire based on 13 questions, of which two general questions (1st and 2nd question) were related to gender and class of respondents, while the remaining 11 questions were related to children’s eating habits. In the 3rd question it was important to find out how many meals per day they had with school meals. Then, in the 4th and 5th questions, we wanted to find out whether they consider their current nutrition to be related to health and whether they consider their nutrition as healthy. One of the more important questions was the 6th question: “Would you like to learn more about healthy nutrition in school?” in which we wanted to discover students desire to learn new information about proper nutrition. The 8th, 9th and 10th question concerned of whether students were offered with meals at school and which of the offered meals (breakfast, lunch and dinner) were considered the most important meal in the day. For the end of the survey, the last two questions related to the quantitative satisfaction of the meals they receive at schools, and do they consider meals they consume at school is healthy.

A descriptive statistical method was used to process the results.

3. Results and Discussion

Obtained results were divided into two parts, in which the first part refers to the 5th and 6th grades, and the second part of the 7th and 8th grade.

3.1 Results of 5th and 6th grades of primary school Ludbreg and primary school Veliki Bukovec

Number of students, gender and grades division by the school are given in the Figures 1 and 2.

From the Figure 1 can be seen that out of a total of 144 students attending 5th and 6th grades of primary school Ludbreg and primary school Veliki Bukovec 53% (76) are male and 47% (68) are female. Of these, primary school Ludbreg attends 30% (43) boys and 26% (38) girls, and primary School Bukovec attends 23% (33) boys and 21% (30) girls. When speaking about grades division, from all 144 students, 48% (69) attended the 5th grade and 52% (75) attended the 6th grade. Of these, the 5th grade of primary school
Ludbreg is attended by 25% (36), while the 6th grade is 31% (45). 5th grade of primary school Veliki Bukovec attends 23% (33) and 6th grade is 21% (30) (Figure 2).

Students in both schools were asked about their standard nutrition per day. Answers are shown in Figure 3.

Students who participated in the conducted survey have approximately 5 or more meals per day out of school. Of the 144 students who participated in the research 15% (23) had only 2 meals per day, 34% (49) had 3 meals per day, 37% (52) had 4 meals per day, 11% (15) had up to 5 meals per day, and only 3% (5) have more than 5 per day.

In the primary school Ludbreg 8% (11) students have only 2 meals per day, 20% (29) have up to 3 meals per day, 22% (32) have up to 4 meals per day, and only 4% (6) have 5 meals per day, and only 2% (3) students have more than 5 meals per day.

In primary School Bukovec 8% (12) students have only 2 meals per day, 14% (20) have 3 meals per day, 14% (20) have up to 4 meals per day, 6% (9) have 5 meals per day, and only 2% (2) students have more than 5 meals per day.

We were interested how they are looking at nutrition and general health and what do they think about their everyday nutrition (Figures 4 and 5).

Figure 4 shows how many students of the primary school Ludbreg and the primary school Veliki Bukovec think that the nutrition is linked to general health. 99% (143) of students think that the nutrition is linked to health, and only 1% (1) that it is not. Of this, 56% (80) of students at the primary school Ludbreg think that nutrition is related to general health, while 1% (1) of students considers it is not. In primary school Veliki Bukovec all 43% (63) of students believe that the nutrition is related to general health.

Figure 5 shows the number of students who consider their nutrition as healthy and the number of those who consider it unhealthy to. 61% (88) of students believe that their nutrition is healthy, and 39% of them (56) have the impression that it is not. In primary school Ludbreg 38% (54) of students think that their nutrition
is healthy, while 19% (27) consider their nutrition as unhealthy. In the primary school Veliki Bukovec 24% (34) of students believe that their nutrition is healthy while 20% (29) believe that their nutrition is unhealthy.

Results about their education in nutrition are displayed in Figures 6 and 7.

From the 144 students attending primary school Ludbreg and primary school Veliki Bukovec 67% of the students (97) think that they are sufficiently educated about healthy nutrition for their age, while 33% (47) consider that they are not sufficiently educated. In primary school Ludbreg 40% (58) of students believe that they are sufficiently educated and 16% (23) of them consider that they are not sufficiently educated about healthy nutrition for their age. In primary school Veliki Bukovec 27% (39) of the students consider that they are sufficiently educated, and 17% of them (24) consider that they are not sufficiently educated about healthy nutrition for their age.

Figure 7 shows the difference between students of the 5th and 6th grades and their desire for better education about healthy nutrition. 69% of them (100) want better education, while 31% (24) consider it unnecessary. In the primary school Ludbreg 40% (57) of students have an interest in learning about a healthy nutrition, and 17% of them (24) do not. In the primary school Veliki Bukovec 30% (43) of students want more information on healthy nutrition, and 14% (20) think that there is no need for it.

Answers about that where they are consuming their main meal and whether they are consuming dairy meals at school are presented in Figures 8 and 9.

It was found that 87% (125) of children in both schools consumed the main meal at school, and 13% (19) did not. 52% (75) of students consume the main meal during classes, and 4% (6) do not. In primary school Bukovec, 9% (13) do not consume the main meal, while the majority of 35% (50) students are included in the main meal during the course.

Apart from the main meal in schools where studies were conducted, students have the possibility to consume dairy meal (breakfast) in the primary school Ludbreg and the Figure shows that 94% (136) of respondents do not use this option, and only 6% (8) consumes a dairy meal. In primary school Ludbreg only 6% (8) students consume a dairy meal, while the other 51% (73) students do not use this option. None of the respondents in primary school Big Bukovec consume a dairy meal because they do not have the offer.

It is usual opinion that breakfast is the most important meal in the day, and that it should be consumed at home. The answers from respondents about that are given in Figures 10 and 11.
Figure 10 refers to examinees that do not consume a dairy breakfast at school, and the study showed that 53% (77) of respondents consumed breakfast at home, while 47% (67) did not. In the primary school Ludbreg 34% (49) of students consumed breakfast while 22% (32) did not. Since primary school Veliki Bukovec does not provide a dairy breakfast, everyone should have breakfast at home. However, research show that high number of students do not consume breakfast - 56% (35) and only and 44% (22) of students have their breakfast at home.

Of the 100% (144) examinees who participated in the research half of them, or more precisely 54% (78), consider breakfast as the most important meal in a day. 44% (63) of the respondents consider lunch as the most important meal of the day, while only 2% (3) consider dinner as the most important meal.

In primary school Ludbreg 29% (42) of students consider breakfast as the most important meal of the day, 26% (37) of them consider lunch as the most important meal in the day, and only 1% (2) the student consider dinner as most important meal of the day. In primary school Veliki Bukovec a large number of students consider breakfast as the most important meal of the day 25% (36). 18% of them (26) consider lunch the most important meal of the day while only 1% (1) student considers dinner as the most important meal of the day.

Food in schools often is taught to be not so delicious and healthy, and that the quantity is not sufficient enough for young people. Respondents’ answers are shown in Figures 12 and 13.

Figure 12 shows that 67% (96) of examinees consider school nutrition as healthy, and 33% (48) of them think it is not. In primary school Ludbreg 34% (49) of students believe that their school nutrition is healthy, while 22% (32) think it is not. In primary school Veliki Bukovec the majority of students believe that their school nutrition is healthy 33% (47), while 11% (16) think it is not.

The last Figure 13, shows the satisfaction of 144 students and students we examined regarding quantity of main meal in the school. 38% of them (55) are satisfied with the quantity of main meal, while the vast majority, more precisely, 62% (89) are not satisfied with quantity of main meal.

In primary school Ludbreg 40% (58) of students consider their main meal as insufficient, and 16% (23) consider that quantity of main meal is sufficient. In primary school Bukovec 22% (31) of students believe that quantity of main meal is sufficient, while 22% (32) think it is not.
3.2 Results of 7th and 8th grades of primary school Ludbreg and primary school Veliki Bukovec

Gender, number of students, and grades division by the school are given in the Figures 14 and 15.

Of the 149 students attending the 7th and 8th grade of primary school Ludbreg and primary school Veliki Bukovec, 54% (80) are male and 46% (69) female. Of these, primary school Ludbreg attends 31% (46) boys and 28% (42) girls, while primary school Bukovac attends 23% (34) boys and 18% (27) girls.

Out of a total of 149 students attending the 7th and 8th grade of primary school Ludbreg and primary school Veliki Bukovec, 52% (77) attend 7th grade and 48% (72) attend 8th grade. Of these, 31% (46) of the primary school Ludbreg attend 7th grade, while 28% (42) attend 8th grade. 21% (31) of students of primary school Veliki Bukovec attend 7th grade and 21% (30) attend 8th grade.

Answers on the question related to number of meals per day are given in Table 16.

Students who participated in the conducted research have approximately 5 or more meals out of school. The survey showed that out of the 149 respondents who participated, 19% (28) had only 2 meals per day, 42% (63) had 3 meals per day, 28% (42) had 4 meals per day, 7% (10) had 5 meals per day and only 4% (6) had more than 5 meals a day.

In the primary school Ludbreg 10% (15) had only 2 meals per day, 24% (36) had up to 3 meals per day, 16% (24) had up to 4 meals per day, 5% (8) had up to 5 meals per day, while only 3% (5) students had more than 5 meals per day.

In primary school Veliki Bukovec 9% (13) had only 2 meals per day, 18% (27) had up to 3 meals per day, 12% (18) had up to 4 meals per day, 2% (2) students had up to 5 meals per day and only 1% (1) had more than 5 meals per day.

Students from 7th and 8th grade from the same schools had a same question regarding nutrition and general health link, and about everyday nutrition as their counterparts in 5th and 6th grade. The answers are displayed in Figures 17 and 18.

Figure 17 shows how many students of the 7th and 8th grades of the primary school Ludbreg and the primary school Veliki Bukovec think nutrition is related to general health. 99% (148) think that nutrition is health-related, while only 1% (1) think it is not.

59% of students (87) believe that nutrition is related to general health, only one student believes that nutrition is not related to general health. In the primary school Veliki Bukovec, all 40% (61) of students believe that nutrition is related to general health.
Figure 18 shows the number of students who think that their nutrition is healthy and the number of those who consider it unhealthy. 56% (82) of students believe that their nutrition is healthy while 44% of them (67) think that it is unhealthy. 32% (47) of students attending primary school Ludbreg consider their nutrition as healthy, while 28% (41) think that it is not. In primary school Veliki Bukovec 23% (35) of students believe that their nutrition is healthy while 17% (26) think that it is not.

Answers on questions about students’ knowledge about healthy nutrition and their willingness to learn about it are given in Figures 19 and 20.

Out of the total of 149 students attending the 7th and 8th grades of the primary school Ludbreg and primary school Veliki Bukovec, 65% (97) of students think that they are sufficiently educated about proper nutrition for their age, while a small proportion of 35% (52) finds that they are not sufficiently educated (Figure 19). In primary school Ludbreg 38% (56) of students believe that they are sufficiently educated and 21% (32) think that they are not. In primary school Veliki Bukovec, 28% (41) of students believe that they are sufficiently educated and 13% (20) that they are not.

Figure 20 shows the difference between students of the 7th and 8th grades and their desire for better education about healthy nutrition in school. The difference between those who would like to be better educated and those who do not have the need for better education is very small, but prevail among those who do not want additional education. Thus, 49% (74) have a need for education, while 51% of them (75) have no need for additional education regarding healthy nutrition in school. In primary school Ludbreg 22% (33) of students have an interest in learning about a healthy nutrition and the majority of them, 37% (55), have no desire for any better education. In primary school Veliki Bukovec 28% (41) of students want more education about healthy nutrition and 13% (20) think that there is no need for it.

Also, students’ were asked about do they have main meal in school, and if so, do they have a dairy meal Answers are displayed in Figures 21 and 22.
In the survey conducted on 149 students of the 7th and 8th grades of primary school Ludbreg and primary school Veliki Bukovec, it was found that 73% (109) children consumed the main meal at school and 27% (40) did not. In primary school Ludbreg, 45% (67) of students consume the main course in school and 14% (21) do not. In primary school Veliki Bukovec 8% (42) students consume the main meal, while 13% (19) are not included in the main meal in school.

Students of the 7th and 8th grades of primary school Ludbreg have the possibility to consume the dairy meal in school, while the students of primary school Veliki Bukovec do not have this possibility. Research has shown that most students do not use this option, so only 13% (19) students consume dairy meal in school while 87% (130) do not use this option.

In primary school Ludbreg only 13% (19) students consume dairy meal while the other 46% (69) students do not use this option.

Related to previous question is the question about do the students have breakfast at home, and which meal do they consider as the most important? Answers are shown in Figures 23 and 24.

Respondents were asked whether they consumed a meal before the classes, so in Figure no. 10 the difference in the number of respondents who consume breakfast at home is presented. The research showed that 54% (70) of the examinees consumed breakfast, and 46% of them (60) did not. In primary school Ludbreg 34% of the examinees (44) surveyed have breakfast at home, while 19% (25) do not. At the primary school Veliki Bukovec, 20% (26) of examinees have breakfast at home, and 27% of them (35) do not.

When asked which of the three main meals they consider as the most important meal in the day, 58% (86) examinees said that breakfast is the most important meal in a day, 40% (60) of the examinees consider lunch as the most important meal of the day, while only 2% (3) consider dinner as the most important meal. In the primary school Ludbreg, 28% (42) of students consider breakfast as the most important, 30% (45) of students consider lunch as the most important meal in the day, and only 1% (1) the student consider it to be dinner. In primary school Veliki Bukovec, a large number of students consider breakfast as the most important, 30% (44) decided, 10% of them (15) consider lunch as the most important while only 1% (2) students consider dinner the most important.

Last questions were connected with students’ opinions about food and its healthiness. Answers are shown in Figures 25 and 26.

As one of the more important questions of the research we asked the examinees whether they think that the nutrition they have at school is healthy. Figure no. 12...
shows that a greater number of examinees who feel that their nutrition at school is not healthy. 48% (72) of the examinees think that school nutrition is healthy and correct, and 52% (77) of them think it is not. In primary school Ludbreg 29% (43) of examinees think that their school nutrition is healthy, while a greater number of them, 30% (45) of examinees find it not. In the primary school Veliki Bukovec, the majority of students believe that the school's nutrition is healthy and correct, of which 19% (29), while 21% (32) believe it is not.

As a last question of the research we asked whether the examinees feel that the amount of meal they received was sufficient. The Figure shown shows the satisfaction of 149 students and students we have tested. Only 16% (24) of respondents are satisfied with the amount served at the main meal, while the vast majority of them 84% (125) are more dissatisfied and the main meal receive, considering it to be insufficient. In primary school Ludbreg, the majority of students consider the received meal to be too small and so the vast majority of 54 (80) students stated that their quantity as insufficient, while only 5% (8) consider that the amount is sufficient. In primary school Veliki Bukovec University, the results showed similar answers. Thus, 30% (45) of students believe that the main portion of the main meal is insufficient, and 11% (16) consider that sufficient quantities are available.

4. Conclusions

- Analyzing the results obtained from the survey conducted, it is evident that, regardless of age and sex, and also in the class attending the respondents, there are different attitudes towards both school nutrition and the healthy nutrition. Compared to both primary schools we got some worrying results. Obtained results show that in both schools, the largest number of respondents consume three meals a day, and five or more meals a day, which they should consume daily, in primary school Ludbreg has only 13% (22) of 169 students who participated in the research. In primary school Veliki Bukovec is slightly more than half of the students who participated in the research. In primary school Ludbreg the majority of students consider the received meal to be insufficient, while only 5% (8) consider that the main meal is insufficient. In primary school Veliki Bukovec University, the results showed similar answers. Thus, 30% (45) of students believe that the main portion of the main meal is insufficient, and 11% (16) consider that sufficient quantities are available.

- Given the need for additional education in schools, we have offered a question in the survey “Do I want / wanted to learn more about proper/healthy diet?” and positive results were obtained. More than half of students in both schools want to learn more about healthy nutrition. In the primary school Ludbreg we can say that most students 55% (93) have breakfast at home, while in primary school Veliki Bukovec most of the students 56% (70) do not have breakfast at home. Although some children are having breakfast at home, according to the results, this is an inadequate and worrying number because 50% (84) students in primary school Ludbreg stated that they considered breakfast the most important meal in the day, and that same reasoning was also given by the students of primary school Veliki Bukovec 65% (80). Although these two schools vary by number of students and their place of residence, most of them match.

- In both schools, in urban and rural areas, students share the same views and opinions. Although there are thoughts that children in rural areas have better eating habits because of easier food availability and domestic breeding, this survey showed the opposite. Starting from the beginning of schooling, initial knowledge of a healthy nutrition can be created, thus achieving positive results in reducing the number of obese children. School education is very important for prevention and treatment.

5. References