

INFORMATICS SURVEY OF UNIVERSITY STUDENTS ABOUT THE ROLE OF RISK FACTORS FOR THE EMERGENCE OF CHRONICAL DISEASES

Melita Sajko^{1*}, Natalija Uršulin Trstenjak¹, Davor Levanić¹, Jurica Veronek¹

¹University North, 104 Brigade 3, 42000 Varaždin, Croatia

*e-mail: melita.sajko@unin.hr

Abstract

Cardiovascular diseases are the leading causes of death. Extra risk for getting sick is in a bad everyday diet, bad lifestyle habits and the lack of physical activity. Even the younger population is not saved from the harmful impacts on their health.

For the needs of this research, a survey was put together about: eating habits, lifestyles and physical activity. Students of University North in Varaždin participated in the survey which was available as a Google docs form. Working hypothesis was that students are not aware of their bad habits and their consequences. Total number of examined students was 134 in the age from 18 to 33. Collected data was processed with the method of descriptive statistics.

46% of the examinees eat breakfast every day, and the daily intake of fluids is by 50% of them less than 2 L. By most of them intake of fast food, red meat, salt and bakery products is increased, and the intake of fish, fruit and vegetables is decreased. Most of them have their last meal after 6 pm. A bit more than a half of the examinees are non-smokers, but more than a half are daily exposed to passive smoking. 60% of the examinees don't do any physical activity, but they would if they had a chance. They are concerned about the impact that the lack of physical activity has on their health.

Results are confirming the hypothesis. Long unbalanced diet and bad habits most often bring to a disorder that, unless the eating habits and lifestyle are changed, are leading to different diseases among which are cardiovascular diseases. Also the lack of physical activity is in modern conditions of living the reality and an irrefutable fact. The perception of physical non-activity is a good starting point for the intervention in the population.

Key words: *Students, Chronical diseases, Risk factors, Informatic survey.*

1. Introduction

Diseases of the heart and blood vessels are among the most common diseases in the developed countries - they affect more than 50% of patients. According to statistics, in the Republic of Croatia these diseases belong to the most common causes of death. Cardiovascular diseases comprise 40 - 50% of discharge diagnoses treated at internist departments in the Republic of Croatia [1]. The presence of various risk factors has an impact on the mortality in CVD, particularly high blood pressure, cholesterol levels, smoking, physical inactivity, stress and diet [2]. In addition, heart diseases are in the very centre of public health interest since they have become the leading cause of mortality, lost days due to disability, hospital discharge and expenses, while they are on the second place by the lost years of life by the age of 75 [3].

In order to avoid the impact of risk factors which contribute to the development of cardiovascular diseases it is necessary to avoid bad habits even at the youngest age, and it is also essential to learn about healthy lifestyles at the young age. Nowadays, young people are more susceptible to the influence of risk factors due to the changes in lifestyles dominated by irregular, fast food, the ever present habits like smoking or alcohol consumption, as well as the sedentary lifestyle and lack of physical activity. An international research on health-related behaviour of students conducted in 2013/2014 shows that secondary school students are prone to poor eating habits which are getting worse with increasing age. There is an improvement in consumption of tobacco products and alcohol compared to previous researches, however, the research has shown that physical activity decreases with increasing age, although Croatia is still among the 10 countries with the highest level of students' physical activity [4]. As for the university student population, a study was conducted in the USA on a sample of over 4,000 young people.

The results were that these people's knowledge about risk factors is very low, but it is slightly higher among those with already present risk factors, although in the 10-year period of the study, there was no decrease in risk factors among these people. [5]. *Berenson et al.*, also state that the number of risk factors for cardiovascular diseases in young adults is increasing [6]. The results of the Croatian Adult Health Survey, which was conducted in 2003 and the second round in 2008, on a sample of over 9,000 respondents, have shown that 15.9% of the adult population have reported having unhealthy eating habits and almost 60% of the Croatian adult population have an increased body weight and more than 40% are centrally obese according to the criteria set by the World Health Organization (WHO) [7]. Also, the data obtained from the Croatian Adult Health Survey indicate that 30.5% of Croatian population was considered physically inactive, depending on the region [8]. Average prevalence of alcohol consumption in the Republic of Croatia was 12.30% for men and 0.7% for women, and there are more than one million smokers in the country of only about four million residents [9, 10]. This paper will show habits of the students and their attitudes related to diet, lifestyle and physical activity.

2. Materials and Methods

For the purposes of the research, we have developed an original questionnaire which included 43 questions: 6 questions referred to general information on the respondents, 16 questions were about eating habits, 11 questions were about smoking and alcohol consumption, whereas 10 questions referred to physical activity.

The survey set the closed questions with the answers given to the respondents, and based on the respondents' height and weight, a BMI was calculated

according to the formula kg/m^2 . The survey was available to the respondents in December 2015 and January 2016 in a Google docs form, while the link to the form was distributed to the respondents by students' representatives via social networks used by the University North students.

Participation in the research was anonymous and voluntary. The research included 134 male and female students of the University North, all study courses and all years of study were covered. Methods of descriptive statistics were used in data processing, while the results were presented in tables and charts.

3. Results and Discussion

The study included more female students, while the largest number of respondents belongs to the age group of 18 - 22 years of age and most of them live with their parents, while the equal number lives in the city and in the countryside. In study courses and years of studying, the research involved 67% of students on health-related study, while 33% of students are at some other, non-health-related studies. Most students, or 61%, are in their first year of study, and the lowest number, 13%, are in their third year of study (Tables 1 and 2).

Since the main purpose of the research is to determine the presence of risk factors for CVD in the sample of student population, the examined students were asked to enter their weight in kg and height in cm, which were then used to calculate the Body Mass Index (BMI) according to the formula kg/m^2 . The largest number of respondents, or 71% have a BMI within the framework of adequate body weight, however, 19% of respondents belong to the overweight group while 5% of respondents show malnutrition. These data are shown in Figure 1.

Table 1. Survey results: first sets of questions relating to gender, age, place of residence and the community in which they live

GENDER		AGE				PLACE OF RESIDENCE		COMMUNITY IN WHICH THEY LIVE		
M	F	18-22	23-27	28-32	33 and above	Urban settlem.	Rural settlem.	Single	With parents	With a partner
18%	82%	71%	13%	7%	49%	51%	49%	16%	67%	17%

Table 2. Survey results: set of questions relating to course and year of study

Study course		Year of study		
Health-related course	Other courses	1st	2nd	3rd
67%	33%	61%	26%	13%

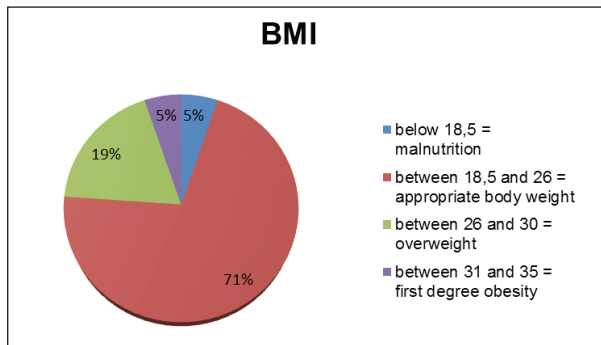


Figure 1. BMI of respondents

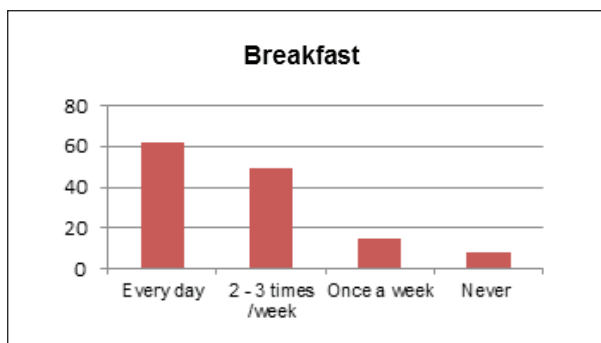


Figure 2. Illustration of answers to questions about breakfast

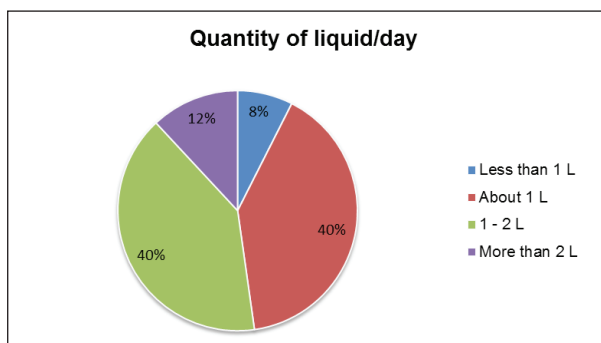


Figure 3. The quantity of liquid intake a day

One of the bad eating habits is certainly the avoidance of having breakfast which is said to be the most important meal of the day. When asked how often they have breakfast per week, 46% of respondents answered they do it every day, 37% of them have breakfast two or three times a week, 11% have breakfast once a week, while 6% of respondents do not eat breakfast (Figure 2).

Recommendations for intake of fluids in the body are 8 glasses of fluids including liquid food intake. It amounts to 1600 mL in 24 hours. Of course it is not unimportant what type of liquid it is, therefore it is recommended to drink water and non-carbonated and unsweetened beverages, whereas alcohol, carbonated drinks and caffeine should be avoided. Table 3 shows that the largest number of respondents, or 46% consume mostly water during the day, 30% consume hot drinks, coffee or tea while a small number of respondents consume non-carbonated commercial juices, soft drinks, natural fruit juices and alcoholic beverages.

Figure 3 shows that the same number of respondents, or 40% drink 1 L or between 1 and 2 L of liquid a day, which is not a bad result. However, there is a worrying amount of 8% of respondents who drink less than 1 L of liquid a day.

Questions 12, 14 and 15 (Table 4) referred to the intake of different types of food during the week. Thus, most of the respondents eat red meat 2 - 3 times a week, 28% once a week, 13% less than once a week, 10% of respondents never eat red meat, while 4% of examinees eat red meat on a daily basis. A good information is that 50% of respondents eat fast food less than once a week, 26% of them eat that kind of food once a week, 13% eat it 2 - 3 times a week, 9% do not eat such food at all, while only 1% eat fast food every day. However, bad information is that 50% of respondents eat fish less than once a week, 31% eat fish once a week, 16% never eat fish at all, whereas 3% eat fish 2 - 3 times a week.

Table 3. Illustration of answers about types of liquid consumed

TYPES OF BEVERAGES CONSUMED DAILY							
Water	Hot drinks – coffee, tea	Carbonated beverages	Non-carbonated commercial juices	Energy drinks	Natural fruit juices	Alcoholic beverages	Others
46%	30%	7%	6%	0%	7%	3%	1%

Table 4. Illustration of answers about eating red meat, fast food and fish

Questions 12, 14 and 15	Every day	2 - 3 times/ week	Once a week	Less than once a week	Never
Red meat	4%	44%	28%	13%	10%
Fast food	1%	13%	26%	50%	9%
Fish	0%	3%	31%	50%	16%

When we talk about consumption of baked goods, vegetables and fruits, the largest number of respondents, or 46%, consume baked products with every meal, however, 25% of respondents consume baked goods with each meal, and 21% with at least two meals. When we know that they are the largest source of salt in our diet, it is not good information. The largest number of respondents consume vegetables with only one meal, or 46% of them, 26% of respondents with two meals, 8% with every meal and 5% of respondents do not eat vegetables. In most cases, respondents consume fresh fruits with one meal, as much as 70%, 16% with two meals, 3% in each meal, but 11% of respondents do not consume fruit. Data are shown in Table 5.

Given that salty food is certainly one of the risk factors for the occurrence of CVD, respondents were asked about adding salt to foods at the table. Figure 4 shows the responses. Even 62% of respondents add salt to food when it is not salty enough, 29% never add salt to their food, and 9% always add salt before tasting food.

Dinner after 6 pm is a risk factor for the occurrence of obesity. It is worrying that 53% of respondents have dinner every day after 6 pm, 31% do it 2 - 3 times a week, 8% once a week, and 8% do not have dinner after 6 pm or they don't have dinner at all. Data is visible in Figure 5.

The reasons for such a diet data are presented in Table 6. The majority of respondents replied that such a diet is most accessible, or 32% of them, 26% of respondents chose the response 'the least time-consuming', 20% of respondents consider it most economically favourable, 11% of respondents did not matter what kind of impact it has on health, it is important that it is delicious, and only 8% think that such a diet contributes to their health.

Given that the majority are young respondents who live with their parents, and spend a lot of time at the university, of course that the first criterion for selection of meals is their availability and a short time to prepare, and the second is economic acceptability.

Two questions were about the attitudes on whether such a diet contributes to their health and whether they are concerned about the impact that diet has to have on health. The largest number of respondents, a total of 59% agreed that their diet contributes to their health. However, 20% of respondents have a neutral opinion about their diet. Similarly, 64% of respondents are concerned about the impact that diet could have on their health, and 27% also have a neutral stance on the impact of nutrition on health, while 9% think that their diet does not have a detrimental effect on their health which is in agreement with 8% of respondents who believe that their food contributes to their health. The answers to these questions can be found in Table 7.

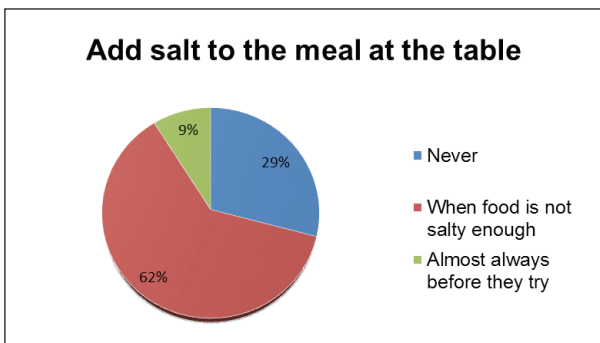


Figure 4. Adding salt to foods at the table

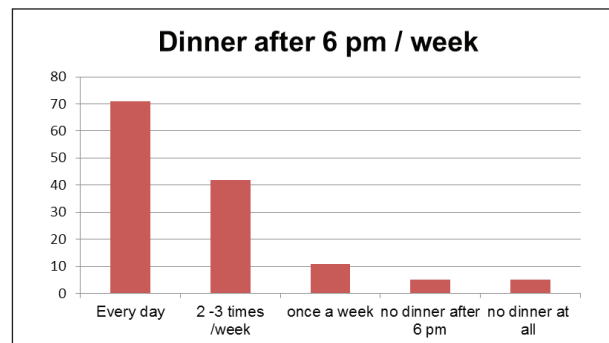


Figure 5. Frequency of having dinner after 6 pm

Table 5. Illustration of answers about daily intake of bread, vegetables and fruit

Questions 16, 17 and 18	With each meal	With two meals	With one meal	Never
Baked products	25%	21%	46%	8%
Vegetables	8%	26%	61%	5%
Fresh fruit	3%	16%	70%	11%

Table 6. Reasons for a choice of diet

Reasons for such a diet					
The most accessible	Economically favourable	The least time-consuming	Contributes to health	It is delicious and its impact on health is not important for me	Others
32%	20%	26%	8%	11%	3%

Table 7. Attitude on the influence of diet on health

Question/Answer	I totally disagree	I disagree	I neither agree nor disagree	I agree	I totally agree
Do you believe that the way and type of diet contributes to your health?	8%	13%	20%	31%	28%
Are you worried about the consequences of nutrition on your health?	4%	5%	27%	51%	13%

After questions about nutrition, respondents were asked about smoking habits and alcohol abuse. The first and second question refers to the habit of smoking tobacco products and the amount of cigarettes smoked during the day. The encouraging fact is that 61% of respondents do not smoke, 16% have been smoking for 2 - 5 years, 9% 5 - 10 years, 5% for more than 10 years and 7% light up when they go out, while only 2% are 'young' smokers who smoke less than 1 year (Figure 6).

In Figure 7, we can see the distribution of respondents according to the number of cigarettes smoked in a day, therefore of those who smoke, 60% of them smoke less than 10 cigarettes a day, 32% 10 to 12 cigarettes, and 9% more than 20 cigarettes.

The next question related to respondents' family members smoking, so 48% said that family members

smoke, 42% said family members are not smokers, and 10% say that they occasionally light up (Figure 8).

When asked whether they smoke in their own house, as many as 71% of respondents stated that they did not, 25% of them smoke in their own house, and 4% do so sometimes.

Passive smoking increases the risk of atherosclerosis, which consequently leads to diseases of coronary blood vessels, myocardial infarction, sudden cardiac death, aortic aneurysm, stroke, peripheral vascular diseases and others. [11]. Respondents were asked to what extent they are exposed to second-hand smoke and 50% of them answered that they are exposed to it every day, 15% are exposed to it 2 - 3 times a week, and 24% are exposed in social situations, that is, when they go out with friends and 4% say they are not exposed because they do not go to such places (Figure 9).

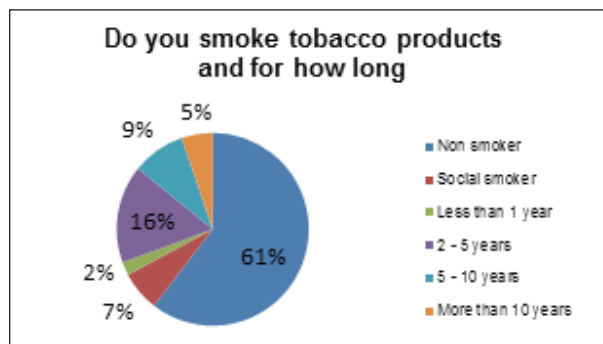


Figure 6. Frequency and period of tobacco products consumption

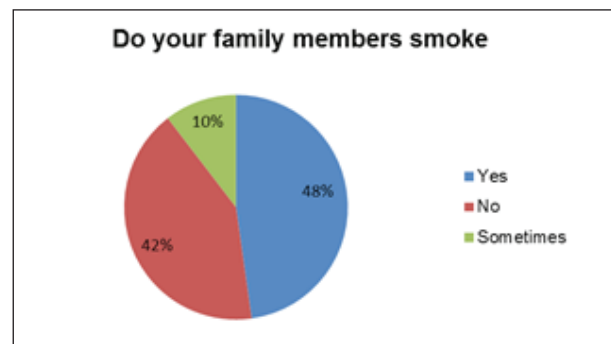


Figure 8. Do your parents or other family members smoke?

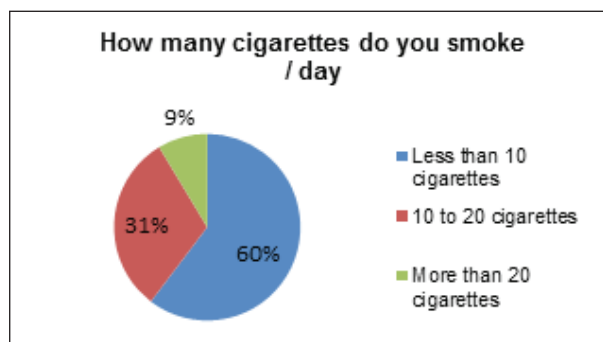


Figure 7. The quantity of smoked cigarettes a day

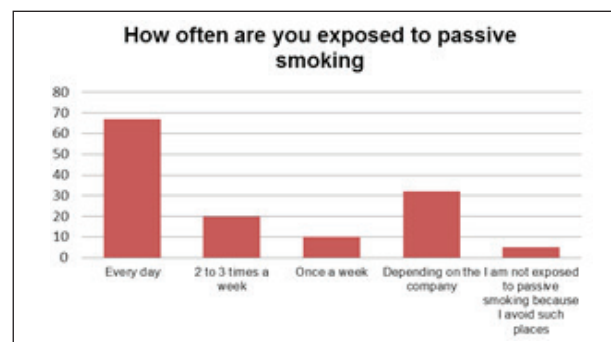


Figure 9. Exposure of respondents to passive smoking

Attitude to smoking and its impact on the incidence of CVD showed that a total of 84% of respondents agreed with the statement that smoking affects the occurrence of cardiovascular diseases, and 87% of respondents believe that smoking is not only harmful for smokers but also for the environment. Thus, they are aware of the effects of passive smoking (Figure 10).

When asked how much they are worried about the consequences that smoking can have on their health 80% of respondents expressed concern, 11% are neutral, while 9% is not worried (Figure 11).

When asked about the consumption of alcoholic beverages 62% of respondents said they consumed alcohol in social situations, 16% say that they do not consume alcohol, 14% of them consumed once a week, 7% 2 - 3 times a week. The largest number of respondents, or 46% consume mainly wine, 37% beer, 7% spirits and 10% liquor in combination with energy drinks which is very popular combination among young people, especially adolescents.

Concerns about the impact that consumption of alcoholic beverages have on their health is present in a total of 61% of respondents, even 21% has no opinion about it, while 18% are not worried about the impact of alcohol on their health as seen in Figure 12. Interestingly, respondents were less concerned about the effects of alcohol on their health than the effects of the consumption of tobacco products.

The next group of questions related to physical activity. As in previous questions, we first examined the habits of students, followed by attitudes about physical activity. When asked about how they spend their typical day whether at work or at home if they do not work, the majority of respondents, 42% said that half the time they are sitting, half standing, while 24% of respondents' answer that they mostly sit is in favour of sedentary lifestyle. 16% of respondents said that they do light physical work, 10% mostly walk and 7% said they do hard physical work. The distribution of answers is visible in Figure 13.

When asked how much they walk a day without interruption, the answers are visible in Figure 14. The largest number of respondents walk about half an hour, or 63%, 29% of respondents walk one to two hours, and 8% walk more than two hours, which shows a lack of physical activity even when it comes to the cheapest and most accessible activity.

Another welcome activity is cycling. The disadvantage is that it requires learning skills and financial cost for the bike, but it is certainly a useful activity. Among our respondents who are a younger generation, it is a surprising fact that 53% do not even ride a bike, 30% of respondents ride a bike for half an hour a week, 12% of respondents ride a bike 1 - 2 hours a week, while 5% of respondents ride a bike more than two hours per week (Figure 15).

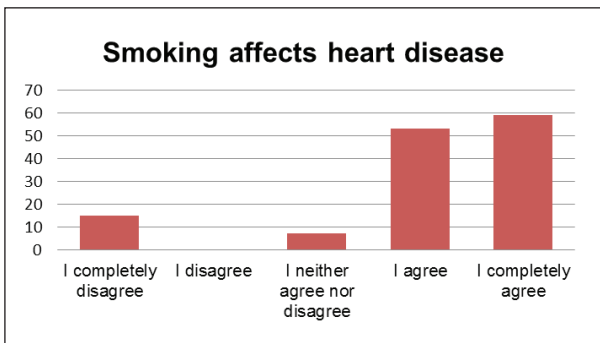


Figure 10. Does smoking have influence on occurrence of heart diseases?

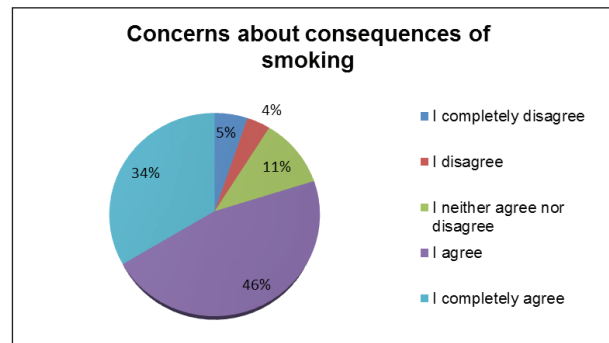


Figure 11. Concerns about the consequences smoking could have on health

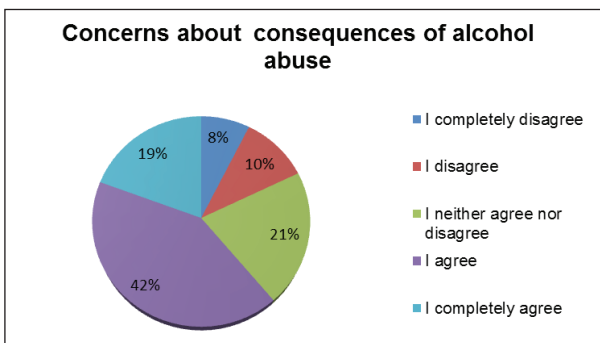


Figure 12. Concerns about influence of alcohol on health

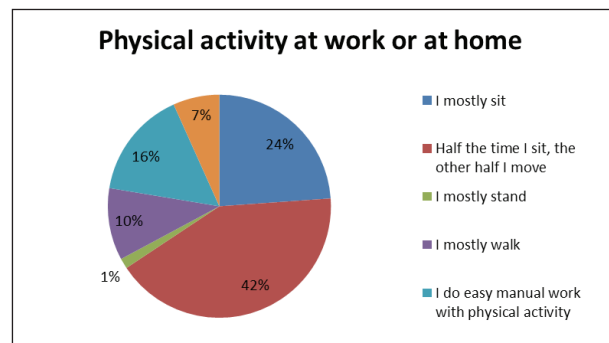


Figure 13. Type of physical activity respondents do at work or at home

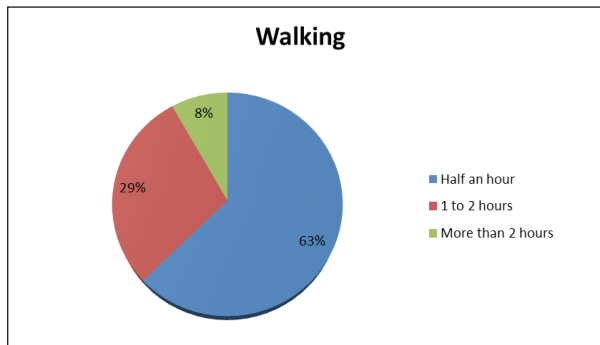


Figure 14. How much do you walk a day without interruption?

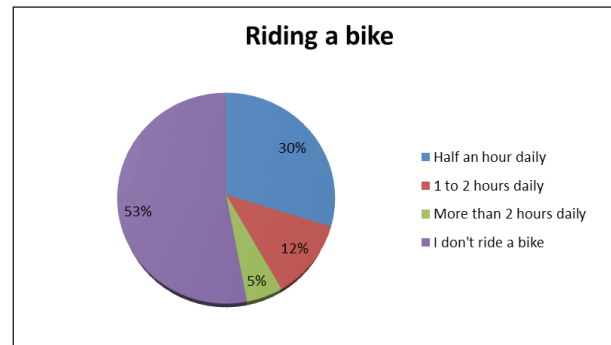


Figure 15. How much do you ride a bike daily if the weather is favourable?

It is worrying that 44% of respondents said they never do any physical activity, 55% of them are engaged in recreational physical activity, while only 1% of them are professionally engaged in physical activity. From the respondents who are engaged in physical activity, 38% do it less than once a week which is certainly not enough, 29% do it 2-3 times a week, 22% once a week, and 11% do physical activity daily.

Respondents who are not engaged in physical activity named various reasons: 53% stated that they do not have time, 14% said no one encourages them, 10% that the activities are not available, 9% that it is too expensive, 6% stated that they can spend their time more usefully, 7% stated some other reasons, and 1% of respondents indicated that it was dangerous. Responses are presented in Figure 16.

However, if all the conditions were met and if they had the opportunity to engage in physical activity, 50% of respondents would occasionally engage in physical activity, 45% of them would always do it, and 5% would never engage in physical activity. When we examined the attitudes on physical activity we gained the answers which are shown in Table 8.

Even 89% of respondents agree that physical activity contributes to the quality of life, 5% have no opinion on the matter while 6% do not agree at all (Figure 17).

Only 18% of respondents believe they are physically active enough so as to make this into a positive effect on their health, 27% have no opinion about it, whereas 55% of respondents believe that they are not active enough for their health. In Figure 18 we can see the answers to the question on concerns about inactivity.

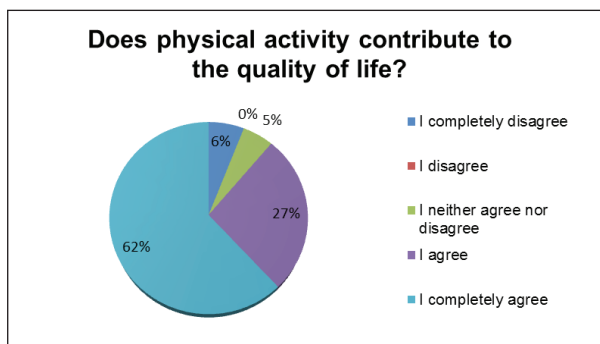


Figure 16. Reasons for physical inactivity

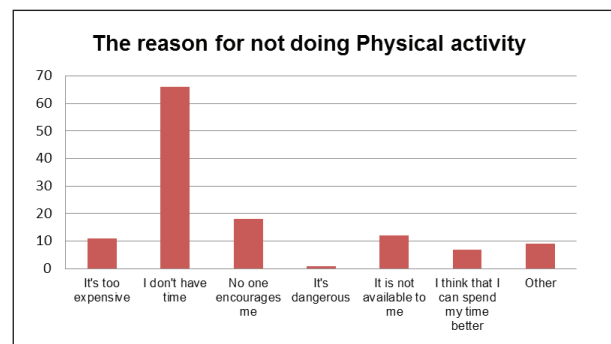


Figure 17. Does physical activity have effect on the quality of life?

Table 8. Respondents' attitudes on the impact physical activity has on health

Claim/Answer	I completely disagree	I disagree	I neither agree nor disagree	I agree	I completely agree
Physical activity improves the quality of life	6%	0%	5%	27%	62%
I do enough physical activity for my own health	20%	35%	27%	13%	5%
I am worried about the consequences physical inactivity could have on my health	4%	3%	16%	46%	31%

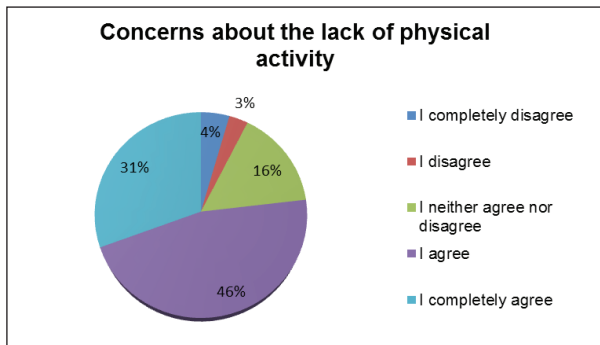


Figure 18. I am concerned about the effects physical inactivity could have on my health

Even 77% of respondents expressed concern about the lack of physical activity, 16% were neutral, and 7% are not worried about the impact of the lack of activity.

4. Conclusions

- Considering the age of the respondents (younger population) and in most cases worse eating habits, it would be necessary to already begin with changes and start implementing healthy eating habits. Long-term unbalanced diet usually leads first to the disorder (high fat and sugar), which, if the eating habits and lifestyle do not change, lead to the occurrence of various diseases, including cardiovascular diseases.

- Also, bad habits such as smoking tobacco products, which is still largely present among younger population, although Croatia is carrying out the action of smoking ban in some restaurants, punishing the sale of tobacco products to persons under 18 years of age, etc., contributes to an earlier occurrence of atherosclerosis and therefore a higher risk for the occurrence of CVD. Interestingly, the respondents in the survey expressed concern about what impact smoking has on their health, but to a lesser extent they are concerned about what effect will the consumption of alcoholic beverages have on their health and do not see much of a problem in the use of alcohol.

- The lack of physical activity in the modern conditions of life today is a reality and an irrefutable fact. Perception of the present or lacking physical activity is a good starting point for intervention in the population.

- To achieve the desired outcomes, we need more years of comprehensive social and professional activities of various social sectors in cooperation with scientific institutions and organizations in the field of health, ecology, urban planning, public and personal transportation and sports and physical activity. In order to successfully influence the life habits, it is necessary to act from an early age, therefore education on proper nutrition and healthy lifestyles should begin in kindergarten and continue throughout the school to adulthood.

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