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RESEARCH ARTICLE

## The Physical Activity and Dietary Habits of Nursing Students

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ABSTRACT

**Objective:** The purpose of this study was to evaluate the physical activity and dietary habits of nursing students.

**Methods:** A cross-sectional study was conducted; anonymous questionnaire and descriptive statistical methods were used.

**Results:** One hundred and one student were interviewed, 80 women and 21 men. Although 96% of students consider physical activity important, but they are not physically active. Fast food and sugary carbonated drinks are frequently consumed by 52% of students. Alcoholic beverages are never consumed by 27% of respondents, 27% of the surveyed students smoke daily and 23% of respondents eat sweets daily. Fruits and vegetables are consumed daily by 53%. Breakfast is consumed regularly by 54 students (53%).

**Conclusions:** Nursing students are well acquainted with the importance of obesity for public health, but students' dietary and lifestyle habits are not proportionate to their knowledge about the causes and ways of obesity prevention.

**Keywords:** eating behavior, obesity, prevention, physical inactivity, prevention, treatment.

## Introduction

Obesity has reached epidemic proportions worldwide in recent decades<sup>1,2</sup>. There is no doubt that increasing childhood obesity also contributes to higher incidence in adulthood, making childhood obesity not only a pediatric problem. Prevention beginning in kindergarten age can significantly reduce the incidence of obesity-related diseases and complications in adulthood, the development of chronic noncommunicable diseases, higher sick leave, morbidity, and mortality, and thus the financial burden not only on the health care system but on society as a whole<sup>3,4,5</sup>. According to all indicators, the number of obese children and adolescents has tripled in the last thirty years and reaches about twenty percent of the total number of children in developed countries<sup>5</sup>. According to European Commission analyzes, more than 22 million children are overweight and the number is increasing by 400,000 every year, which is very worrying<sup>2,6</sup>. It has also been found that about 40% of overweight children also gain weight in adolescence and 75-80% of obese adolescents become obese adults<sup>7,8</sup>. The magnitude of the problem is also evident from data published in the World Obesity Atlas 2022, which shows the situation by WHO region in 2020 and the trend to 2030<sup>5</sup>. Data from the European Obesity Monitoring Initiative in Children, Croatia from 2015/2016 and 2018/2019 show that in Croatia 35% of children aged 8 to 8.9 years are overweight and obese, and the Republic of Croatia is among the five European countries with this problem<sup>9</sup>. Overall, 31% of girls and 38.7% of boys in the Republic of Croatia are overweight and obese<sup>10</sup>. Also, in terms of Croatian regions, the percentage of overweight and obese girls is highest in the continental region with 35.6%, while most boys live in the Adriatic region with 42.2%, which is somewhat surprising considering that this is an area where the Mediterranean diet traditionally predominates<sup>10,11</sup>. Behavioral risk factors, including dietary habits, smoking, alcohol consumption, and physical inactivity, are blamed for 44% of all deaths in Croatia in 2019, which is higher than the EU average (39%). More than one-fifth (22%) of all deaths are attributed to dietary risks (including inadequate consumption of fruits and vegetables and excessive sugar and salt consumption), and this proportion is significantly higher than the EU average of 17%. Tobacco use (direct consumption and passive exposure to smoke) is the second behavioral risk factor contributing to mortality and the cause of one-fifth of deaths. However, physical inactivity appears to be the most important risk factor<sup>6,7,12,13</sup>. It was found that 56.1% of children spend two or more hours per day on weekdays in front of TV or with electronic devices, while this

percentage increases to 87.4% on weekends. One in two children, 51.5%, spend only three or fewer hours per week in organized physical activity. Although the problem of obesity and overweight is ubiquitous in Croatia, it is lowest in big cities with 32.0%. It is highest in rural areas at 38.9%, which shows the importance of targeting interventions to rural areas that are far from the central health and school facilities where prevention programs are most often implemented. Of particular concern is the fact that childhood obesity is completely misjudged by parents. Of the 35.0% of children who are classified as overweight or obese, only 14.0% of parents believe their child is overweight or obese. The conclusion of all these studies underscores the need for much greater efforts to maintain health and calls on national policy makers to be as comprehensive and multisectoral as possible, focusing on maintaining health from the earliest possible age<sup>10</sup>. As the number of obese people increases worldwide, it is critical to strengthen obesity prevention programs. These include interventions in the broader community, promotion of healthy eating in kindergartens and schools, parental education, and obesity awareness<sup>12-16</sup>. In the prevention and treatment team, well-trained nurses should play an even more important role alongside physicians, nutritionists, psychologists, kinesiologists, and other health professionals in helping children, young parents, and educators acquire knowledge and skills and adopt healthy eating and lifestyle habits. As part of the obesity prevention program, a nurse can provide these training sessions organized by kindergartens and schools and encourage children to adopt and maintain healthy eating habits. The nurse also plays a very important role in educating pregnant women and mothers and fathers to develop healthy eating habits from an early age. She educates pregnant and breastfeeding women about the importance of breastfeeding and proper maternal nutrition. In all of this, it is especially important to improve the skills of nurses so that they can participate in obesity prevention programs, both health studies and lifelong learning programs.

## Objectives

The primary objective of this study was to examine nursing students' physical activity and dietary habits. The second objective was to determine if students' knowledge of causes and consequences had an impact on their dietary habits and physical activity.

## Subject and Methods

A cross-sectional study was conducted on a recall sample of students from all undergraduate nursing

programs at the Faculty of Medicine, Juraj Dobrila University of Pula, in September 2021. For the purposes of the study, a separate questionnaire was prepared and an anonymous interview was conducted, and the students gave their consent to the processing and publication of the data the results and permission of the faculty where this study was part of the author's dissertation. The questionnaire consisted of forty-five questions, the first five of which were related to sociodemographic data and the remaining forty examined students' knowledge and attitudes about obesity, the causes and consequences of the development of childhood obesity, and students' eating habits and physical activity. The questions were open-ended and closed-ended. For the closed-ended questions, respondents had the option of rounding up one of the offered answers; for the open-ended questions, respondents could write down their answer. Measurement of anthropometric parameters (age, height, and body mass) was performed independently by the students. The survey was analyzed using descriptive statistics methods in Microsoft Excel 2010.

## Results

One hundred and one respondents participated in the study, 80 of whom were women and 21 of whom were men. Fifty-six of the respondents had graduated from medical school (55%), and 34 of the respondents (33%) had a high school diploma. The majority of respondents (60%) felt that neither health professionals nor educators were sufficiently familiar with the problem of childhood obesity, and only 15% respondents felt that they were. 81% of respondents answered that parents are not sufficiently familiar with the problem of childhood obesity. Therefore, 98% of respondents think that parents need additional training to become more familiar with the problem of childhood obesity and to work on prevention, but also 87% think that it is necessary to train educators and 76% of health professionals. Almost all respondents (95%) think that health education is necessary in kindergartens and schools, which means that the majority of respondents think that parents and educators are the most important people from whom children could learn the most about the harms of obesity. Average body mass index of our subjects was 26.7. 96% of students consider physical activity very important for health, but they are not physically active enough (only 48%). Fast food and sugary carbonated beverages are frequently consumed by 52% of students. Alcoholic beverages are never consumed by only 27% of respondents, several times a month by 62%, and 2-3 times a week by 10%. 27% of the surveyed students smoke daily. 28% of respondents eat sweets more than once a

week and 23% eat sweets daily. Fish and seafood are never eaten by 14%, several times a month by 73% and 2-3 times a week by 13% of respondents. Fruits and vegetables are eaten daily by 54 people (53%). Breakfast is consumed regularly by 54 people (53%). Regarding the impact of the pandemic COVID -19 on obesity, 70% believe that the pandemic has led to weight gain in children and adults. 94% of respondents report that their ability to exercise has decreased and they are no longer able to play sports and engage in physical activity.

## Discussion

Obesity is undoubtedly one of the biggest public health problems in the world today. As in most European countries, a trend of increasing obesity has been observed in the Republic of Croatia, due to poor dietary habits and an increasingly sedentary lifestyle. It is of concern that all recent studies show Croatia to be among the bottom performers in the EU in preventable and treatable mortality and successful control of cardiovascular disease<sup>6</sup>. In 2019, more than one-fifth (22%) of Croatian adults reported smoking daily, and this proportion is higher than the EU average of 20%. Eating habits in Croatia could be improved in several ways, including reducing salt and fat intake and increasing fruit and vegetable consumption. Health professionals are of great importance in the implementation of obesity prevention programs, as they advise people of all ages, especially parents and children, about the importance of a healthy lifestyle, but also in the implementation of prevention activities. This is also the main reason for this study, which involved students from the Faculty of Medicine in Pula as a versatile target group of young people, future parents, but also future active participants in the implementation of the program to prevent disease and improve health. The results were compared with other studies conducted among students of Croatian medical secondary schools. From the results it can be seen that the average body mass index of our subjects was 26.7. It can be concluded that the students of this study also already belong to the group of overweight people, and the study also shows that the students are well acquainted with the facts about obesity, which is not surprising, since they are nursing students, most of whom (55%) also graduated from medical secondary school. Thus, the nursing students in this study are well aware that obesity is a major public health problem that poses a significant threat to the health of society, and they also believe that education should be provided not only to children but also to their parents, teachers, and medical personnel. Of concern is that despite this knowledge, students' eating habits are unhealthy and they do not get enough exercise. Similar

conclusions have been reached by other studies on the dietary habits of European and Croatian adolescents, with those who are also being trained for health professions being of particular interest<sup>16-23</sup>. An essential component of healthy lifestyle guidelines and obesity prevention is appropriate dietary and physical activity management<sup>22,23</sup>. Survey data show that only 48% of respondents engage in regular physical activity. Compared with the Split Health School results, where 43% of respondents are physically active throughout the year, this is more, but not enough<sup>18</sup>. According to a 2019 European Health Survey, only 22.7% of respondents exercise more than 150 minutes per week<sup>21</sup>. The results of the survey of graduates of the Medical School Rijeka<sup>17</sup> showed mostly not healthy enough dietary habits among graduates, with deficits in the consumption of fruits and vegetables and fish, and suggest that attention to changes in eating habits during school years, on skipping meals and late dinners, and on educating high school students about the harmfulness of alcoholic beverages and tobacco products, as continuing education and outreach programs about proper nutrition and its health effects have a preventive effect on the health of the entire population. Unhealthy eating habits in Croatian schools is a major problem. Confirmation of these findings and guidelines can also be found in this paper. Nevertheless, eating habits, regular physical activity, abstaining from alcoholic beverages and smoking tobacco do not yet go hand in hand with the acquired knowledge. Therefore, additional commitment from all societal stakeholders is needed to curb the obesity pandemic by promoting healthy lifestyles, healthier eating habits, and regular physical activity, and prevention should begin as early as possible given the risks that childhood obesity poses to growing up and health in later adulthood.

Comparing these results with similar studies from Europe and around the world, it appears that students of health studies have a higher knowledge of proper nutrition and the importance of physical activity, but that this is not related to their lifestyle, i.e. healthier eating habits and more frequent physical activity, so that the risk of overweight and obesity was not lower among them compared to the general student population<sup>24</sup>. As the Mediterranean diet is no longer as prevalent in seaside regions in Croatia as it was in the past, research from Spain shows that the diet of students cannot be labelled as Mediterranean and that the quality of the diet was very poor and it is necessary to foster changes toward a healthier diet pattern according to cultural context in this population for preventing cardiovascular diseases,

type 2 diabetes and insulin resistance<sup>25</sup>. However, it is encouraging that research from the University of Rijeka, which compared the dietary habits of 2018. and 2023., shows certain shifts towards a diet that is more in line with the characteristics of the Mediterranean diet<sup>26,27</sup>. Therefore, it is necessary to promote healthy eating and physical activity more, as this can lead to the adoption of healthier lifestyle habits and the removal of obstacles that stand in the way, and students are interested in such programmes<sup>28</sup>. To be successful, it is necessary to identify the factors that have the greatest impact on young people's lifestyles. For example, a survey of students in Hawaii found that individual knowledge and parental support were cited as positive influences in promoting healthy eating, while factors such as the cost of living and the availability of food at university were strong barriers even for motivated students<sup>29</sup>. A qualitative study of students' experiences and perceptions of diet self-management in China identified potential areas for intervention, such as improving students' self-regulation and self-discipline skills (individual level), encouraging role model behaviour from family members (family level), extending school canteen opening hours (school level) and restricting advertising of unhealthy eating (social level)<sup>30</sup>. And a study of American students showed that the most common barriers to healthy eating were lack of time, unhealthy snacks, the convenience of high-calorie foods, stress, high prices for healthy foods and easy access to unhealthy foods. Conversely, better food knowledge and education, meal planning, involvement in food preparation and physical activity were the drivers of healthy behaviour<sup>31</sup>. Better eating habits and more physical activity among the youngest are the key to a healthier and better life for young people and a longer life for adults<sup>32,33,34</sup>. Public health policy must provide clear guidelines for the prevention of obesity in adulthood by promoting healthy lifestyles from birth, childhood and adolescence, through healthy eating habits and regular physical activity throughout life.<sup>35</sup> Nursing students and registered nurses with a college degree can certainly be an important target group in the development of strategies and implementation of action plans for obesity prevention.

## Conclusion

In recent decades, obesity has increased substantially in all parts of the world. It is caused by a fast lifestyle, high caloric intake, and a sedentary lifestyle. Obesity occurs at a young age, and if a parent is obese, the child is more likely to become obese as well. The entire society needs to be made aware of the importance of preventing obesity at a young age, eating a balanced diet, and being

physically active throughout life. Obesity prevention should start in early childhood in the family and through educational programs in kindergartens and later in school so that children have the best conditions for growth and development. Health professionals play an important role in obesity prevention programs and in promoting healthy eating habits and lifestyles. This study shows that the nursing students surveyed are aware of obesity, its causes, and prevention methods, but that they themselves have not yet fully transitioned to healthy eating habits and appropriate physical activity. Since these are students who have chosen the health profession as a life path, the importance of a healthy lifestyle is even greater, as their work will focus on disease prevention and health promotion.

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### **Ethical Approval**

There is no ethical issue in our research and the research conducted is of minimal risk and was conducted in accordance with the usual standards of good academic practice. All participants was informed about research goals and methods.

### **Conflict of Interest**

Authors have no conflict of interest to declare.

### **Authors Contributions**

All authors have contribution to the conception and design of the work, MŠ conducted research, BM i MŠ analyzed and interpreted data, ŽJ wrote initial and final draft of article. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.



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