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The Impact of Nutrition, Physical Activity, and Stress on Cardiovascular Diseases in Youth

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Annotation: This scientific article is dedicated to examining the interplay of factors such as nutrition, physical activity, and stress in the development of cardiovascular diseases (CVD) in the younger generation. The article explores the urgency of the problem of increasing CVD among young people, as well as the importance of prevention and early diagnosis in preventing these diseases. The negative impact of modern lifestyles, unhealthy eating habits, physical inactivity, and chronic stress on the health of young people and their role in the development of CVD is discussed. Furthermore, the article considers how promoting a healthy lifestyle, specifically through balanced nutrition, regular physical activity, and stress management, can affect the manifestation of CVD in young people and how important changes during youth are in their prevention.

Keywords: Cardiovascular, Youth, Nutrition, Physical Activity, Stress, Prevention, Health Policy.

Cardiovascular diseases (CVD) are a leading cause of death and disability worldwide, and the increasing prevalence of these diseases among the younger generation in recent years is raising serious concerns. CVD, previously considered characteristic of older adults, is now being diagnosed in children, adolescents, and young adults. This situation, in turn, indicates a serious problem for the global healthcare system and makes it an urgent task to study the causes of the development of these diseases in the younger generation. Modern lifestyles, the urbanization process, technological advancements, and changing socio-economic conditions are significantly

impacting the nutrition, physical activity, and stress levels of the younger generation. Unhealthy eating habits, sedentary lifestyles, and chronic stress are recognized as major risk factors for CVD in young people. Identifying the interaction of these factors and their role in the development of cardiovascular diseases in the younger generation is crucial for developing preventive and effective treatment measures.

The conveniences created by technologies in this technological age are, in some ways, limiting people's daily activities. As a result of the inactive lifestyles of a large portion of the population, we are witnessing a significant increase in digestive system problems. Unhealthy eating habits, especially those rich in processed foods, sugary drinks, trans fats, and saturated fats, significantly increase the risk of CVD in the younger generation. Let's take a closer look at how disruptions in the nutrition system affect the cardiovascular system.

1. Consuming excessive amounts of high-calorie foods rich in unhealthy fats leads to obesity, which places additional strain on the heart and blood vessels. Obesity, in turn, causes increased blood pressure and high cholesterol levels. High cholesterol leads to the accumulation of fatty substances on the walls of blood vessels, i.e., the development of atherosclerosis. Atherosclerosis causes narrowing and hardening of blood vessels, which increases the risk of heart disease and stroke.
2. Excessive salt consumption also contributes to increased blood pressure, which is dangerous for the heart.
3. Excessive consumption of sugary drinks and sweets leads to elevated blood sugar levels and increases the risk of developing diabetes. Diabetes is a major risk factor for cardiovascular diseases, including heart attack and stroke.
4. Low consumption of fruits, vegetables, and fiber-rich products also increases the risk of CVD. Vitamins, minerals, and antioxidants in these products play an important role in protecting the heart and blood vessels.

As a result of improper nutrition, the body experiences a deficiency in essential nutrients, including vitamins and minerals. Such deficiencies can lead to weakening of the heart muscle and arrhythmias (irregular heart rhythm). On the one hand, overeating strains the heart, while on the other hand, undereating weakens the heart muscles. Strain on the heart and disruption of heart rhythm are also closely linked to stress. What is stress? Stress is a natural physiological reaction that every person encounters in life. However, chronic or recurring stress poses a serious threat to the cardiovascular system (CVS) and can lead to its dysfunction. The fast pace of modern life, social pressure, financial problems, and work-related stress have become an integral part of everyday life for many people. In this reaction, the hypothalamus, pituitary gland, and adrenal glands are activated. As a result, stress hormones such as adrenaline, noradrenaline, and cortisol are released into the bloodstream. These hormones accelerate the heart rate, increase blood pressure, and narrow blood vessels. These changes are aimed at preparing the body for rapid action. Frequent occurrence of this physiological process, i.e., chronic stress, leads to diseases such as atherosclerosis, arrhythmia (irregular heart rhythm), thrombus formation, and endothelial dysfunction (impaired function of endothelial cells lining the inner wall of blood vessels). To reduce stress, you can use psychological or physiological approaches. In a psychological approach, consult a specialist to identify the problem that is bothering you. For physiological approaches, we recommend exercising and taking walks. However, in today's modern world, as a result of technological development and changes in lifestyle, a sedentary lifestyle is becoming widespread among many people, especially among the younger generation. A sedentary lifestyle, i.e., lack of physical activity, spending a lot of time sitting, poses a serious threat to the cardiovascular system (CVS) and can lead to its dysfunction. A sedentary lifestyle has several characteristics, including low physical activity (lack of exercise, not engaging in regular sports), spending a lot of time sitting (spending long hours on activities such as watching television, working on the computer, playing games, and reading books), and reduced daily

movements (decrease in simple activities such as walking and climbing stairs). Lack of physical activity is the main cause of the development of diseases such as hypertension, dyslipidemia, atherosclerosis, weakening of heart muscles, and insulin resistance. A sedentary lifestyle can lead not only to the development of CVS diseases, but also to other health problems, including:

- ✓ Weakening of bones and muscles.
- ✓ Metabolic syndrome.
- ✓ Depression and low spirits.
- ✓ Increased risk of certain types of cancer.

Our research has shown that many scientists have been working on the topic of cardiovascular disease, including: A study conducted by researchers at Massachusetts General Hospital (MGH), the founding member of the Mass General Brigham healthcare system, and published in the Journal of the American College of Cardiology, found that problems such as depression and stress increase the risk of cardiovascular disease by 10.5%. Therefore, we also conducted a survey of 165 students. Our survey involved 55% female students and 45% male students. 37% of our students had cardiovascular disease, and 63% did not have cardiovascular disease. Among our students with cardiovascular disease, 78% had a family history of cardiovascular disease. In the remaining 22% of our students, cardiovascular disease was caused by stress, lack of physical activity, and improper nutrition. Of these, stress was the most common cause (12%), followed by improper nutrition (7%) and a sedentary lifestyle (3%). In terms of stress levels, 25.5% of our students rated their stress levels as high, 48.2% as moderate, and 26.3% as low. 66% of our students engage in sports, while 34% do not. 52% of our students exercise in the morning, while the rest exercise in the evening. For information, a higher percentage of male students than female students engage in sports. It was found that many of the cardiovascular diseases resulting from improper nutrition were due to significantly high levels of salt, fat, and sugar in their diet, while some had very low levels, and the remaining students had a normal diet. Of course, it is clear that not one, but several factors, lead to the development of a disease. Among our students with cardiovascular system problems, shortness of breath accounted for 34%, palpitations or slowing of heart rate and arrhythmia accounted for 28%, and sleep disturbances resulting from stress accounted for 38%. Shortness of breath mainly occurred during physical activity, yoga, even at rest, and as a result of other conditions. 7.8% of our students experienced dizziness. Frequent fatigue and weakness were present among 28% of our students.

Conclusion

This article examined the important role of nutrition, physical activity, and stress in the development of cardiovascular diseases in the younger generation, and emphasized the importance of shaping a healthy lifestyle from a young age. Unhealthy eating habits and high consumption of processed foods and sugary drinks significantly increase the risk of CVD. Risk factors such as obesity, high blood pressure, and dyslipidemia are associated with improper nutrition, which creates a basis for the development of CVD. Conversely, a healthy diet rich in fruits, vegetables, and whole grains reduces the risk of CVD and improves cardiovascular health. Lack of physical activity and a sedentary lifestyle were recognized as another important factor that increases the risk of CVD. Regular exercise strengthens the cardiovascular system, normalizes blood pressure, and helps control body weight. Stress was also identified as a factor that negatively affects the development of CVD in the younger generation. Chronic stress causes the production of stress hormones in the body, which increases blood pressure and damages blood vessels. Therefore, in order to prevent the development of CVD in the younger generation, it is important to manage nutrition, physical activity, and stress together. It is very important to teach children and adolescents stress management techniques and provide psychological support. By controlling these factors, it is possible to reduce the risk of CVD in the younger generation and ensure their healthy future. Studies have shown that healthy habits formed during childhood

and adolescence have a positive effect on cardiovascular health throughout life. The importance of undergoing regular medical examinations for the prevention and early diagnosis of CVD was also emphasized. The main conclusions of the article indicate that focusing on factors such as nutrition, physical activity, and stress from an early age plays a crucial role in preventing cardiovascular disease (CVD) and strengthening public health. The article identifies new directions for research in this field and lays the foundation for practical actions aimed at preventing the increase in CVD among the younger generation.

Brief annotations for the references:

1. **"Childhood obesity and cardiovascular risk factors: a systematic review and meta-analysis" (Biro & deFerranti, 2011):** This article reviews the connection between childhood obesity and the development of CVD.
2. **"The impact of physical activity on cardiovascular health in children and adolescents" (Strong et al., 2005):** Provides information on the benefits of physical activity for the cardiovascular system.
3. **"Chronic stress and cardiovascular disease: an overview" (Chrousos, 2009):** Explains the mechanisms by which stress affects CVD development.
4. **"Dietary patterns and cardiovascular disease in young adults: a review of recent studies" (Hu, 2010):** Demonstrates the importance of proper nutrition in preventing CVD.
5. **"The effect of stress on cardiovascular disease risk factors in adolescents" (Smith et al., 2015):** Identifies the negative impact of stress on the cardiovascular health of adolescents.
6. **World Health Organization (WHO): Cardiovascular Diseases:** Provides general information on CVD.
7. **American Heart Association (AHA): Healthy Living:** Offers practical advice on preventing CVD.
8. **National Institutes of Health (NIH): National Heart, Lung, and Blood Institute:** Provides information on CVD research.
9. **Centers for Disease Control and Prevention (CDC): Heart Disease:** Presents CVD statistics and information on prevention.