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The prevalence of cardiovascular risk factors related to lifestyle in medical students

Występowanie czynników ryzyka sercowo-naczyniowego zależnych od stylu życia u studentów kierunków medycznych

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Abstract

Introduction. Knowledge about the importance of a healthy lifestyle in the prevention of cardiovascular diseases should be an integral part of the medical education of future physicians and other healthcare professionals. The aim of the study was to assess the presence of selected cardiovascular risk factors in comparison to cardioprotective factors in the group of students of the Medical University of Warsaw.

Material and methods. The study was conducted using a lifestyle questionnaire based on the questionnaire developed at the Loma Linda University with the participation of the American College of Lifestyle Medicine. It covered 280 students of medicine and physiotherapy.

Results. Although 81% of the respondents have a normal body mass index (with an average of 21.24 for women and 23.49 km/m^2 for men), 77% of the surveyed population does not eat the recommended 5 portions of vegetables and fruits a day. Forty-four percent of physiotherapy students and 32% of medical students do not attain the recommended minimum of 30 minutes a day of moderate or vigorous physical activity. Seventy-six out of 212, i.e. almost 36% of students, declare using nicotine in the last year.

Conclusions. Medical students are not free from lifestyle-related cardiovascular risk factors. The percentage of people using nicotine is high and further studies are needed to assess what factors contribute to the lack of adherence to healthy lifestyle recommendations among this group of respondents.

Key words: lifestyle medicine; cardiovascular risk, medical students

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Introduction

Cardiovascular diseases (CVD) are the leading cause of death in Europe according to EUROSTAT. Prevention of CVD should therefore be one of the fundamental topics included in the clinical studies at medical universities. Currently, it is believed that the main cardiovascular risk modifiers are factors constituting the pillars of lifestyle medicine — a balanced diet, regular physical activity, stress management, avoiding substance abuse, and sleep hygiene. Thus, they should be considered a core of modern prevention [1, 2].

Cardiovascular risk factors are classically divided into non-modifiable, which are age, gender, ethnicity or genetic predispositions, and modifiable, severity of which can be changed by appropriate lifestyle interventions and/or pharmacotherapy [3, 4]. This group includes, among others, hypertension, dyslipidemias, overweight or obesity. The NATPOL and WOBASZ studies show that the modifiable factors are the most common cardiovascular risk factors in the Polish population [3, 5].

On the other hand, cardioprotective lifestyle factors include, among others, a balanced Mediterranean diet abundant in vegetables and polyunsaturated fatty acids, regular, moderate-intensity physical activity, no use of tobacco products, and sufficient, uninterrupted sleep [4, 6].

Aim of the study

The aim of the study was to determine the presence of selected cardiovascular risk factors in comparison to cardioprotective factors in the group of students of the Medical University of Warsaw (MUW). Another aim was to assess whether the specific profile of professional interests translates into active prevention of CVD through diet, physical activity and smoking habits (Table 1).

Material and methods

The data was obtained from an anonymously completed survey based on a questionnaire developed by Loma Linda University in collaboration with the American College of Lifestyle Medicine. The study group consisted of 280 3rd and 4th year students who in 2019 and 2020 attended clinical classes at the 3rd Department of Internal Diseases and Cardiology at the Międzylesie Specialist Hospital in Warsaw. Due to irregularities in filling in the sheets (lacking information, omitting questions), 68 questionnaires were excluded from the analysis. Ultimately, the study analyses included results obtained from 212 students — 128 from the medical faculty (medical students further referred to as MS) and 84 from people studying physiotherapy (further referred to as PHS — physiotherapy students). Sixty-nine percent of the surveyed group were women, and 31% were

Table 1. Distribution of the studied subpopulations — division by gender and faculty

	Medical students (MS)	Physiotherapy students (PHS)	Total
Women	81	65	146
Men	47	19	66
Total	128	84	212

men (Table 1). Statistical evaluation was performed using Statistica software.

Results

Weight and BMI

Eighty-one percent of students declared body weight and height corresponding to the body mass index (BMI) in the range of 19–25 kg/m^2, which is within the normal limits. The BMI of the remaining group (19.33%) was beyond normal. Both overweight (BMI 25–30 kg/m^2) and obesity (BMI > 30 kg/m^2) more often affected men. Only 4 respondents out of 212 reported results indicating obesity. The average BMI in women was 21.24 kg/m^2 and the average BMI of the surveyed men was 23.49 kg/m^2. The average MS BMI was comparable to the average BMI in the PHS group (21.78 and 22.19 kg/m^2, respectively).

Dietary habits

Seventy-seven percent of surveyed students admitted that they did not consume the recommended 5 portions of vegetables and fruit per day (1 portion is the amount that can fit in a hand, excluding fruit juices). Only 3% of students declared consuming more than 5 portions a day, and this group included only women. Twenty-eight percent of respondents reported that they eat less than 2 portions during an average day. This group included 36% of all men and 24% of all women. Forty-nine percent of students declared average consumption of 2–3 servings per day. MS slightly more often than PHS included in their daily diet 4 or more servings of vegetables and fruit (25% and 20%, respectively). However, these differences were not statistically significant (p = 0.08).

The consumption of sweetened beverages, fast-food or salty and sweet snacks at least several times within two weeks before completing the questionnaire was declared by 85% of the respondents — 92% of men and 82% of women, and a comparable percentage of MS and PHS (86% and 85%). Eight percent of all students reported that they ate these types of food almost every day. Thirty-one out of 212 students declared that they did not reach for the above-mentioned products. This group included 8% of all interviewed men and 18% of women.

Physical activity

Fifty-six percent of PHS and 68% of MS spent more than 30 minutes a day on moderate or vigorous physical activity. Moderately intense physical activity was defined as an activity sufficient to lightly sweat. Thirty-four percent of the MS population exercised 30–49 minutes a day. The same percentage of respondents chose training sessions lasting over 50 minutes. PHS most often undertook training lasting 10–29 minutes (38% of respondents). Over 47% of PHS exercised regularly for a minimum of 30 minutes (in this subpopulation almost 30% exercised for more than 50 minutes a day). In both groups, students least often decided to train for less than 10 minutes (10% of MS, 6% of PHS).

Fifty-seven percent of students declared engaging in physical activity at least 3–4 times a week, 41% of whom trained exactly 3–4 times a week. This group included 51% of all MS and over 67% of PHS as well as 41% of all women and 39% of men. The remaining 17% of respondents exercised at least 5 times a week, and 70% of this subpopulation were women. Twelve percent of respondents exercised less than once a week (a comparable percentage of women and men — approx. 12%). Students of both faculties most often chose their frequency of training to be 3–4 times a week.

Nicotine use

Thirty-six percent of the respondents declared using nicotine within the last year. This percentage was similar among students of both faculties. The use of nicotine was declared by 35% of women and 38% of men. The average number of cigarettes smoked daily was 2.7. Among MS, this value was slightly lower than in PHS (2.4 vs. 3.3 cigarettes a day). A difference between women who smoked an average of 2 cigarettes a day and men who smoked 4 cigarettes a day was noted. On a scale of 0 to 5, students rated their anxiety level regarding nicotine consumption as 1.

Motivation to change

When asked about the most important area of life requiring a change of habits, all subpopulations, regardless of their gender and faculty, most often chose physical activity. Twenty-six percent of respondents declared that they are most motivated to improve in this field, and 149 out of 212 (70%) considered physical activity as one of the three priorities necessary to improve their health and lifestyle. Changing dietary habits was one of the three priorities in 61% of students. Almost 19% of students reported the need to improve their diet and physical activity at the same time. Only 9% of students considered weight reduction to be their primary goal, but 34% put it in the top three priorities. The least frequently chosen area (1% of students) in terms of motivation to change habits was the use of addictive substances (nicotine, alcohol and drugs, collectively).

Discussion

The conducted analysis indicates a significant presence of lifestyle-related disease risk factors among MS and PHS. Despite their medical background, a large percentage of students smoking (36%), engaging in physical activity less than once a week (12%) and consuming insufficient amounts of vegetables and fruit every day (77%) can be observed. It should be borne in mind that the respondents may have coexisting non-modifiable risk factors for CVD, the detection of which exceeded the questionnaire used in the study. At this point, it is necessary to consider what factors contribute to the non-compliance with the recommendations in the student population, despite the declared motivation to change.

Nicotine use

The Kantar report (October 2019) on attitudes towards smoking constructed for the Chief Sanitary Inspectorate in Poland showed that 21% of respondents admit to habitual, everyday smoking. [7] In the WOBASZ I study (2003–2005), the percentage of respondents declaring nicotine usage was 31%, whereas in the WOBASZ II study (2013–2014) that percentage decreased to 25% [3]. The NATPOL 2011 study indicated the percentage of smokers was 29% in the 18–39 age group [5]. In a 2020 survey conducted by NIZP-PZH, in the 18–29 age group, everyday smoking was declared by 17.8% of men and 10.6 % of women, usage of e-cigarettes was declared by 13.3% of men and 11.9% of women [8]. Thus, the comparison shows that there is a greater problem of smoking among surveyed students than in the general population of Poland. In Warsaw, the percentage of smoking among medical university students was higher than in other cities. In a 2012 study conducted on medical students from Wrocław, the percentage of cigarette smokers was 21%, which is close to the population average [9]. Comparable results were obtained in studies on several groups of medical students from Łódź and Poznań [10, 11]. However, it should be noted that in the present study, it was impossible to separate the population of students smoking every day during the last year from those who smoked occasionally, relying on the questions regarding the use of tobacco products in the used questionnaire (Table 2). Therefore, this aspect requires clarification in subsequent studies.

Obesity and nutrition

The NATPOL study indicated BMI in the 18–39 years subgroup to be respectively: 25.8 kg/m^2 in men and 23.4 kg/m^2 in women. The results in the population of Poles aged 18–79 showed that the prevalence of obesity in men was 24% and 19.7% in women. The WOBASZ I and II studies in the 20–74 age group reported the obesity percentage to be 22% and 26%, respectively [3, 5]. The percentage of

Table 2. Assessment of selected health-related behaviors in the group of respondents

No.	Assessed habits	Multiple choice	N1	%N1	N2	%N2	N1+N2	%N1+N2
1.	During the last two weeks, how often did you eat fast food, sweet drinks (e.g. sweetened carbonated drinks, juice, sweetened isotonic drinks) or packaged snacks (e.g. chips, cookies, candies, crackers)?	Never	26	17,8	5	7,6	31	14,6
		Several times	92	63	42	63,6	134	63,2
		More than 7 times	17	11,7	13	19,7	30	14,2
		Almost everyday	11	7,5	6	9,1	17	8
2.	During an average day, how many portions of fruit and vegetables do you eat? (1 serving fits in the hand and does not include fruit juices)	< 2 portions	35	24	24	36,4	59	27,9
		2–3 portions	72	49,3	32	48,5	104	49
		4–5 portions	32	21,9	10	15,1	42	19,8
		> 5 portions	7	4,8	0	0	7	3,3
3.	During the past two weeks, how often have you engaged in moderate or vigorous physical activity (e.g. brisk walking or being active enough to lightly sweat)?	< 1 time a week	18	12,3	8	12,1	26	12,3
		1–2 times a week	43	29,5	22	33,3	65	30,7
		3–4 times a week	60	41,1	26	39,5	86	40,5
		≥ 5 times a week	25	17,1	10	15,1	35	16,5
4.	During an average training session, how many minutes do you spend on moderate or vigorous physical activity? (e.g. brisk walking or activity sufficient to make you lightly sweat)?	< 10 min	12	8,2	6	9,1	18	8,5
		10–29 min	45	30,8	15	22,7	60	28,3
		30–49 min	45	21,2	20	30,3	65	30,7
		≥ 50 min	44	30,1	25	37,9	69	32,5
5.	During the last year, have you consumed nicotine? (cigarettes, electronic cigarettes, innovative tobacco products, cigars)	Yes	51	35	25	37,9	76	35,8
		No	95	65	41	62,1	136	64,2

N1 — number of responding women; %N1 — percentage of all the responding women; N2 — number of responding men; %N2 — percentage of all the responding men; N1+N2 — number of all the respondents; %N1+N2 — percentage of all the respondents

obese people among the surveyed students was 2% and it concerned only men. It was therefore significantly less than in the general population. In the 2020 NIZP-PZH survey, the values were lower, indicating prevalence of obesity at 10% (12.3% of men and 7.8% of women) [8]. Regarding the 20–44 age group, obesity concerned 4.6% of women and 9.2% of men [8]. Studies conducted on student groups from large Polish cities confirm this tendency. A study of students from Poznań reported that men's average BMI was significantly higher than the average BMI of the surveyed women (23.41 vs. 20.52 kg/m^2) [12]. A similar correlation was observed in the Warsaw group. In a study conducted among pharmacy students of the Medical University of Wrocław, 28% of men and 7% of women were overweight, and obesity concerned 15% and 10% of respective genders [13]. Sixty-two percent of women and 75% of men in this group reported that they did not eat enough vegetables and fruit every day. These values were also similar to the results of the MUW student population.

Physical activity

In the WOBASZ I and II study, rare engagement in physical activity was declared by 52% and 55% of respondents, whereas frequent physical activity (more often than 3 times a week) was declared in the NATPOL study by 44%

[3, 5]. According to "Health status of the Polish population and its determinants Report 2020" more than 67.2% of Polish people do not take up regular recreational physical activity. Moreover, during the coronavirus disease 2019 (COVID-19) pandemic (spring–autumn 2020), 34.3% of Poles reduced their physical activity and only 17.5% of the respondents increased their physical activity. In the age group of 20–44, reduced activity was declared by 38.6% men and 33% women, while an increase in physical activity — by 24.7% men and 26.6% women [8]. Considering these results, 57% of students who declared being active at least three times a week can be considered a progress. However, it should be noted that slightly more than 12% of the respondents were not physically active even once a week. In the study by Ślusarska et al. [9] that analyzed cardiovascular risk in medical students from Wrocław, 75% of respondents described their level of physical activity as medium, 22% as high, and only 6% as low. Compared to these values, the results from MUW were significantly worse; however, in the abovementioned study, the definitions (e.g. exercise duration and frequency) of each level of activity were not determined by the researchers, thus obtained data relied only on students' perception and therefore may be inconclusive. Nevertheless, such a large fraction of students of MUW who do not engage in the

recommended or even minimal physical activity should lead to intensifying the promotion of physical activity as a fundament of a healthy lifestyle.

Further actions

The results of this study indicate a necessity to include practical approach to the subject of lifestyle-related disease prevention in the compulsory curriculum at all faculties of medical universities. New light on the role of lifestyle medicine in medical education could be shed if one conducted a study comparing the awareness and prevalence of cardiovascular risk factors in students who completed a course of lifestyle medicine with a control group selected from other students of the same faculty who did not participate in such classes. An additional advantage of prioritizing prevention and putting emphasis on teaching lifestyle medicine is that the knowledge or skills acquired during these classes would contribute to increasing the students' motivation and sense of effectiveness when changing their own habits, which could then translate into personalizing the type of intervention to meet the needs of individual patients during clinical work in the future [14–16].

Study limitations

There are several limitations to this study. The group of respondents is relatively small and uneven considering the distribution of subpopulations. Moreover, a factor that should be taken into consideration when interpreting the results is the lack of objective methods to verify the accuracy of the information provided. Better quality of evidence would be ensured by complementing the questionnaire with precise anthropometric measurements of the respondents as well as basic laboratory tests. Another limit of the analysis is the lack of data on the actual awareness of the role of lifestyle in preventive cardiology in the group of students. Knowledge in this field should be verified by adding appropriate questions to the questionnaire.

Conclusions

The study indicates a significant prevalence of modifiable, lifestyle-related risk factors for CVD among students of MUW. Students only partially identify unfavorable habits and report their motivation to change them. The vastest group declared the need to improve on their physical activity or diet which corresponds well with the results obtained from respected sections of the questionnaire. Despite high prevalence of smoking, only a small percentage of students considered reducing nicotine usage to be their health priority. The knowledge of primary prevention and the role of lifestyle medicine in controlling the risk of lifestyle-related diseases requires verification and subsequent analysis. Identifying the causes that lead to suboptimal lifestyle decisions is necessary to design effective interventions and requires further research.

Conflict of interests

The authors declare no conflict of interest.

Streszczenie

Wstęp. Wiedza na temat zdrowego stylu życia w prewencji chorób układu sercowo-naczyniowego powinna być istotnym elementem zdobywania wykształcenia na kierunkach medycznych. Celem pracy było określenie występowania wybranych czynników ryzyka sercowo-naczyniowego zależnych od stylu życia oraz czynników kardioprotekcyjnych w grupie studentów Warszawskiego Uniwersytetu Medycznego.

Materiał i metody. Badanie przeprowadzono za pomocą ankiety, będącej polskim odpowiednikiem kwestionariusza opracowanego na uniwersytecie Loma Linda z udziałem *American College of Lifestyle Medicine*. Objęto nim 280 studentów kierunków lekarskiego i fizjoterapii.

Wyniki. W badanej populacji 77% osób nie spożywa 5 porcji warzyw i owoców dziennie. U 81% respondentów wskaźnik masy ciała jest prawidłowy (przy średniej wynoszącej 21,24 u kobiet i 23,49 km/m^2 u mężczyzn). Spośród przebadanych osoby aktywne fizycznie co najmniej 3 razy w tygodniu to 51% studentów kierunku lekarskiego i ponad 60% studentów fizjoterapii. Prawie 36% studentów, tj. 76 spośród 212, deklaruje używanie nikotyny w ostatnim roku.

Wnioski. Mimo wysokiej świadomości zagrożeń studenci kierunków medycznych nie są wolni od czynników ryzyka sercowo-naczyniowego. Odsetek osób używających nikotynę jest wysoki i konieczne są dalsze badania służące ocenie, jakie czynniki wpływają na brak przestrzegania zaleceń zdrowego stylu życia w tej grupie badanych.

Słowa kluczowe: medycyna stylu życia, ryzyko sercowo-naczyniowe, studenci medycyny

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