Original Article

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Health-related behaviors and knowledge of university students regarding physical activity and dietary habits

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Abstract: Background: Promoting a healthy lifestyle can improve health and reduce the need for medical care. The aim of this study was to analyse health-related behaviours and knowledge of healthy lifestyles in relation to physical activity and diet among university students. Methods: The cross-sectional study included 300 university students (173 females; 127 males). The research tool was a questionnaire consisting of three sections. Respondents completed the questionnaires using the Computer-Assisted Web Interview (CAWI) method, where the data set is collected using a script provided on a website. The one-way analysis of variance (ANOVA), and Pearson chi-square test were used to analyse the results. Results: There were statistically significant dependencies between the field of study and the level of general knowledge about physical activity and nutrition ($p<0.001$). Conclusions: A high level of knowledge about healthy lifestyle with a focus on physical activity and dietary habits was presented in the highest percentage by students of physiotherapy, and the lowest by students of pedagogy, which is a non-medical field not related to health care. The university should provide an interdisciplinary team to support physical activity and dietary habits to increase awareness among university students, especially in non-medical fields.

Keywords: Lifestyle habits, Physical activity, Diet

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INTRODUCTION

An analysis of the development of the concept of health over the centuries shows that people have always tried to maintain their health and, in the event of illness, to restore it as quickly as possible. As far back as ancient China, health and disease were seen as the result of the body's equilibrium, influenced by a number of external and internal factors, including physical activity. Even the philosophers of Greece and Rome, who were primarily concerned with the love of the mind, regarded health as an indicator of the level of cultural development. Among them, Plutarch emphasised the role of physical activity and work. The work of Paracelsus, who lived in the late 15th and early 16th centuries, led to the doctrine that health must be sought because it is not a gift of life [1,2]. In 1974, Marc Lalonde's report ushered in a new era in the perception of public health, proposing a broader understanding of health as a state of being that could not be achieved for the majority of the population simply by concentrating resources on developing infrastructure and medical services. The starting point for La Londe's concept of health zones was a definition that assumed that health was the result of factors related to genetic inheritance, environment, lifestyle and medical care. Therefore, the health status of the population is influenced by factors grouped into the areas of biology and genetics (16% of influence), behaviour and lifestyle (53% of influence), environment (economic, social, cultural and physical factors: 21% of influence) and organisation of medical care/health services: 10% of influence [3,4].

The promotion of healthy lifestyles has the potential to improve health outcomes and reduce the need for health care [5-9]. According to Kasperczyk [10], personal determinants and individual choices play an important role in maintaining health. Lifestyle is understood as the nature of a person's daily behaviour and activities. They have an impact on various components of daily life, such as diet, hygiene, stimulants, physical activity, study and work, sleep, psychosomatic renewal, sex, family and social life. Kasperczyk [4] distinguished the two most important components from the point of view of health and longevity: Diet, which meets the basic biological needs of the body, and physical activity, i.e. exercise, which is considered the most important factor in improving the body's regulatory autosystems. According to Yun et al [11], it is important to maintain a balance between energy intake and energy expenditure, as an imbalance can lead to obesity. Physical activity is also an important determinant of weight status, and a combination of low physical activity and poor dietary habits increases the risk of overweight and obesity [12,13]. Inappropriate health-related behaviours and physical inactivity are a risk factor for noncommunicable diseases, but also increase susceptibility to stress, worsen mental health and impair social relationships. People who are physically inactive have problems with memory and concentration. They also experience fatigue and low mood, which can lead to depression.

Molanorouzi et al [14] pointed out that physical inactivity is the fourth leading risk factor for global mortality. It is estimated to cause 6% of deaths worldwide. An estimated 30% of the global burden of ischaemic heart disease, 27% of diabetes, and 21% of breast and colorectal cancer are attributable to physical inactivity. Nikitara et al. [6], based on updated data from Eurobarometer 2017, indicated that about one third (36%) of the adult population in 28 European countries is physically inactive. Drygas et al. [8] and Mikuľáková et al. [9] showed that at least 50% of adult Poles and Slovaks have an insufficient level of regular physical activity. This places Poland and Slovakia at the bottom of surveys comparing individual European Union countries. For many young people, starting to study means beginning an autonomous life and thus gradually gaining independence from the family environment. This favours the formation of new, not always correct behavioural patterns, which can lead to a deterioration of the graduates' health in the following decades of their lives. These facts were the direct reason for the subject of this work, which aimed to analyse the health-related behaviour and knowledge of a healthy lifestyle in terms of physical activity and nutrition among university students.

The hypothesis that the level of knowledge about a healthy lifestyle depends on the field of study was tested. Compared to students in non-medical fields such as physical education and pedagogy, physiotherapy students had a higher level of knowledge about physical activity and nutrition.

MATERIAL AND METHODS

Participants

The cross-sectional study included 300 university students, including 173 females (58% of the group) and 127 males (42% of the group), thus complying with the principle of purposive selection, with an assumed therapeutic effect size of Cohen's d of 0.75, a probability level of 5% and a statistical power of 80%. Respondents were divided into three groups of 100, taking into account the field of study. The sociodemographic and anthropometric findings are summarised in Table 1.

Table 1. Characteristics of study population.

Variable		Physiotherapy (n=100)	Physical education (n=100)	Pedagogy (n=100)	Statistics
Age [years], $\bar{x}$ ±SD (Median)		19.90±0.78 (20.00)	19.73±0.75 (20.00)	19.79±0.66 (20.00)	F=1.38 p=0.252
Sex	Women	63 (63.0)	49 (49.0)	61 (61.0)	$\chi^2(2)$=4.69 p=0.096
	Men	37 (37.0)	51 (51.0)	39 (39.0)	
Year of study, n (%)	1st	27 (27.0)	45 (45.0)	34 (34.0)	$\chi^2(4)$=34.35 p<0.001*
	2nd	29 (29.0)	37 (37.0)	53 (53.0)	
	3rd	44 (44.0)	18 (18.0)	13 (13.0)	
Body mass (kg), $\bar{x}$ ±SD (Median)		66.15±12.38 (65.00)	67.31±12.88 (67.50)	68.07±10.06 (69.50)	F=0.67 p=0.514
Body height (cm), $\bar{x}$ ±SD (Median)		172.58±10.96 (170.00)	175.67±14.88 (175.00)	173.80±10.06 (174.00)	F=2.63 p=0.074
BMI	$\bar{x}$ ±SD (Median)	22.10±2.78 (21.78)	21.47±2.15 (21.12)	22.50±2.49 (22.20)	F=4.09 p=0.018*
	Post hoc	Tukey's Honestly Significant Difference test			
	Physiotherapy	-	0.206	0.486	η^2=0.04
	Physical education	0.206	-	0.012*	
	Pedagogy	0.486	0.012*	-	
Body build, n (%)	Underweight	7 (7.0)	4 (4.0)	2 (2.0)	$\chi^2(6)$=8.32 p=0.215
	Normal weight	80 (80.0)	90 (90.0)	84 (84.0)	
	Overweight	10 (10.0)	6 (6.0)	12 (12.0)	
	Obesity	3 (3.0)	0 (0.0)	2 (2.0)	
Living environment, n (%)	Urban	57 (57.0)	59 (59.0)	51 (51.0)	$\chi^2(2)$=1.40 p=0.495
	Rural	43 (43.0)	41 (41.0)	49 (49.0)	

n: number of subjects; %: percent of subjects; χ^2: value of the Chi-square test statistic; $\bar{x}$: arithmetic mean value; SD: standard deviation; F: value of one-way ANOVA test statistic; η^2: eta-squared for the ANOVA test; p: statistical significance, * statistically significant p<0.05

Procedures

The research method used was direct probing. The research instrument was a questionnaire consisting of three sections. The first section included questions on socio-demographic data such as age, sex, year of study, faculty of the participants. The first section included questions on socio demographic data such as age, sex, year of study, faculty of the participants. The second part was a questionnaire on physical activity and dietary habits. A self-administered questionnaire was developed to collect information on the physical activity and dietary habits of the students. The questionnaire included short questions about the physical activity of the young adults, in particular about preferred forms of physical activity, motives for engaging in physical activity, frequency of physical activity, as well as about factors contributing to a healthy lifestyle and sources of knowledge about a balanced diet. The third section included a knowledge test consisting of 12 questions on physical activity and nutrition. For each correct answer, the respondent could score 1 point, out of a total of 12 points. Getting no more than 50% of the possible points indicated a low level of knowledge, getting no less than 50% and no more than 75% of the points indicated an average level of knowledge, while getting at least 75% of the correct answers indicated a high level of knowledge. Respondents completed the questionnaires using the Computer-Assisted Web Interview (CAWI) method, where the data set is collected using a script provided on a website.

In addition, body weight (using OMRON BF 500635 medical scale, manufactured by Omron Ltd., Japan) and height (using GPM anthropometer, manufactured by Vitako Ltd., Switzerland) were measured, and Body Mass Index (BMI) was calculated from the obtained data.

Ethics

The research was approved by the Ethics Committee of the University of Presov in Presov (No. ECUP062024PO). The procedures followed were in accordance with the Helsinki Declaration of 1975, as revised in 2013. Each participant was informed of the aim of the study, the key principles, their right to withdraw from the study protocol at any stage, and gave written informed consent.

Statistical Analysis

The Shapiro-Wilk test was used to check the normality of the variables. The results of this test were less than the critical value, and the p-values were lower than the adopted significance level, like 0.05, which indicated that all variables had a non-normal distribution. Comparisons between groups were made using one-way analysis of variance (ANOVA). For post-hoc analyses, the Tukey's Honestly Significant Difference test was used. The Pearson chi-square test was used to assess the relationship between demographic variables and a specific study group. The level of statistical significance was set at $p<0.05$. Analyses were performed using the Statistica application, version 13.3 PL (StatSoft Inc., Tulsa, OK, USA; StatSoft, Krakow, Poland).

RESULTS

The data in Table 2 indicate that students of physiotherapy and physical education mentioned regular physical activity among the factors contributing to a healthy lifestyle more often than students of pedagogy ($\chi^2(2)=38.06$; $p<0.001$), in turn, physical education students more often than others associated a healthy lifestyle with rational rest ($\chi^2(2)=19.91$; $p<0.001$). Among the preferred forms of physical activity, physical education students more often than others indicated swimming ($\chi^2(2)=6.39$; $p=0.041$), riding on bicycle ($\chi^2(2)=6.33$; $p=0.042$) and horse riding ($\chi^2(2)=21.86$; $p<0.001$). Physiotherapy and physical education students chose other forms of activity more often than those studying pedagogy ($\chi^2(2)=7.41$; $p=0.025$). It was dancing, gym, boxing, martial

arts, home gymnastics, climbing and roller skating. The desire to improve psychophysical health was a more frequent motive for undertaking physical activity for students of physical education and pedagogy than for physiotherapy ($\chi^2(2)=13.89$; $p=0.001$). For physiotherapy and pedagogy students, the desire to relieve stress was more common than for physical education students ($\chi^2(2)=12.05$; $p=0.002$). For physiotherapy students, the desire to maintain a slim figure ($\chi^2(2)=16.59$; $p<0.001$) and improve well-being ($\chi^2(2)=6.61$; $p=0.037$) was more common than for others. The frequency of physical activity among physical education students was higher than in the case of others ($\chi^2(10)=21.08$; $p=0.021$). Physiotherapy students were most likely to care about proper nutrition, followed by physical education students, and least often by pedagogy students ($\chi^2(4)=34.23$; $p<0.001$). There was a statistically significant difference in answers to the question about the sources of knowledge about balanced diet ($\chi^2(8)=27.08$; $p=0.001$). Students of physical education most often indicated their friends, students of physiotherapy the Internet and other (scientific journals), and students of pedagogy more often than others declared lack of interest in this issue.

Table 3 contains the results of the knowledge test regarding physical activity and healthy nutrition. Statistically significant dependences were found between the field of study and the frequency of correct answers to the question about the structure of the Healthy Eating Pyramid ($\chi^2(2)=14.45$ $p=0.001$). The answer that, in addition to proper nutrition, at least 30 minutes of physical activity a day is recommended, was most often given by physiotherapy students (99% of the group), and least often by pedagogy students (72% of the group). There were statistically significant dependencies between the field of study and the frequency of giving correct answers to the question about the impact of regular physical activity on reducing the genetic predisposition to obesity ($\chi^2(2)=26.54$ $p<0.001$). Correct answers were most often given by physiotherapy students (95% of the group), and the lowest percentage of correct answers was given by pedagogy students (69% of the group). There were statistically significant dependencies between the field of study and the frequency of correct answers to the question about general development exercises in obesity prevention programs ($\chi^2(2)=8.57$ $p=0.014$). Correct, affirmative answers were most often given by students of physiotherapy (93% of group), and least often by students of pedagogy (80% of the group). Statistically significant dependencies were found between the field of study and the frequency of giving correct answers to the question about the number of kcal needed to burn in order to lose 1 kg of body weight ($\chi^2(4)=18.14$ $p=0.001$). The correct range, between 7000 and 7500 kcal, was most often indicated by physiotherapy students (93% of the group), and least often by pedagogy students (74% of the group). There were statistically significant dependencies between the field of study and the frequency of giving correct answers about forms of physical activity in obesity prevention ($\chi^2(2)=45.95$ $p<0.001$). Physiotherapy students indicated planned activity much more often (77% of the group) than respondents from other groups. There were statistically significant dependencies between the field of study and the frequency of giving correct answers regarding morning exercise ($\chi^2(2)=13.18$ $p=0.001$). Physiotherapy students gave correct answers (that the metabolism is quite energized and stimulates the body to burn calories faster) more often (90% of the group) than respondents from other groups. There were statistically significant dependencies between the field of study and the frequency of giving correct answers about the types of exercises aimed at obtaining a shapely, slim figure without excessively developed muscles ($\chi^2(4)=15.08$ $p=0.005$). Cardio and strength exercises were correctly indicated by the highest percentage of physiotherapy students (94% of group), and the lowest percentage of students of pedagogy (81% of the group).

Table 2. Opinions and behavior of university students regarding healthy lifestyle in the aspect of physical activity and nutrition.

Variable	Physiotherapy (n=100)	Physical education (n=100)	Pedagogy (n=100)	Statistics
Factors contributing to a healthy lifestyle, n (%)				
Systematic physical activity	72 (72.0)	83 (83.0)	43 (43.0)	$\chi^2(2)=38.06$; p<0.001*
Lack of stress	52 (52.0)	55 (55.0)	55 (55.0)	$\chi^2(2)=0.24$; p=0.886
Proper nutrition	57 (57.0)	58 (58.0)	71 (71.0)	$\chi^2(2)=5.18$; p=0.075
Rational rest	49 (49.0)	75 (75.0)	47 (47.0)	$\chi^2(2)=19.91$; p<0.001*
Other	13 (13.0)	13 (13.0)	8 (8.0)	$\chi^2(2)=3.71$; p=0.447
Preferred forms of physical activity, n (%)				
Fitness	22 (22.0)	29 (29.0)	29 (29.0)	$\chi^2(2)=1.67$; p=0.433
Walking	45 (45.0)	37 (37.0)	45 (45.0)	$\chi^2(2)=1.74$; p=0.417
Swimming	21 (21.0)	36 (36.0)	24 (24.0)	$\chi^2(2)=6.39$; p=0.041*
Riding on bicycle	30 (30.0)	47 (47.0)	36 (36.0)	$\chi^2(2)=6.33$; p=0.042*
Running	36 (36.0)	33 (33.0)	30 (30.0)	$\chi^2(2)=0.81$; p=0.665
Horse riding	5 (5.0)	24 (24.0)	9 (9.0)	$\chi^2(2)=21.86$; p<0.001*
Team games	10 (10.0)	15 (15.0)	14 (14.0)	$\chi^2(2)=5.13$; p=0.527
Other	16 (16.0)	5 (5.0)	8 (8.0)	$\chi^2(2)=7.41$; p=0.025*
Motives for taking up physical activity, n (%)				
Improving psychophysical health	19 (19.0)	41 (41.0)	40 (40.0)	$\chi^2(2)=13.89$; p=0.001*
Relieving stress	25 (25.0)	7 (7.0)	20 (20.0)	$\chi^2(2)=12.05$; p=0.002*
Slim figure	32 (32.0)	16 (16.0)	10 (10.0)	$\chi^2(2)=16.59$; p<0.001*
Desire to improve well-being	31 (31.0)	19 (19.0)	17 (17.0)	$\chi^2(2)=6.61$; p=0.037*
Assessment of one's own physical abilities	18 (18.0)	15 (15.0)	7 (7.0)	$\chi^2(2)=5.59$; p=0.061
Frequency of physical activity, n (%)				
3 times a week	35 (35.0)	60 (60.0)	35 (35.0)	$\chi^2(10)=21.08$; p=0.021*
2 times a week	30 (30.0)	23 (23.0)	21 (21.0)	
1 time a week	15 (15.0)	14 (14.0)	20 (20.0)	
Once every two weeks	5 (5.0)	1 (1.0)	4 (4.0)	
Once a month	3 (3.0)	0 (1.0)	3 (3.0)	
Less than once a month	12 (12.0)	2 (2.0)	7 (7.0)	
Taking care of healthy eating, n (%)				
Definitely yes	57 (57.0)	34 (34.0)	24 (24.0)	$\chi^2(4)=34.23$; p<0.001*
I guess so	31 (31.0)	28 (28.0)	31 (31.0)	
No	12 (12.0)	38 (38.0)	45 (45.0)	
Sources of knowledge about balanced diet, n (%)				
Parents	12 (12.0)	10 (10.0)	11 (11.0)	$\chi^2(8)=27.08$; p=0.001*
Friends	32 (32.0)	61 (61.0)	41 (41.0)	
TV	14 (14.0)	12 (12.0)	14 (14.0)	
Internet	17 (17.0)	7 (7.0)	13 (13.0)	
Other	20 (20.0)	5 (5.0)	7 (7.0)	
Not interested in this issue	5 (5.0)	5 (5.0)	14 (14.0)	

n: number of subjects; %: percent of subjects; χ^2: value of the Chi-square test statistic; p: statistical significance, * statistically significant p<0.05

Table 3. Results of the knowledge test on physical activity and nutrition depending on the field of study.

Variable	Physiotherapy	Physical education	Pedagogy	Statistics
Does the Healthy Eating Pyramid recommend spending at least 30 minutes a day on selected physical activity, e.g. walking?, n (%)				
Yes	99 (99.0)	87 (87.0)	72 (72.0)	$\chi^2(2)=14.45$ p=0.001*
No	1 (1.0)	13 (13.0)	28 (28.0)	
Can regular physical activity reduce the genetic predisposition to obesity?, n (%)				
Yes	95 (95.0)	85 (85.0)	69 (69.0)	$\chi^2(2)=26.54$ p<0.001*
No	5 (5.0)	15 (15.0)	31 (31.0)	
Should general fitness exercises be included in programs aimed at preventing obesity?, n (%)				
Yes	93 (93.0)	90 (90.0)	80 (80.0)	$\chi^2(2)=8.57$ p=0.014*
No	7 (7.0)	10 (10.0)	20 (20.0)	
Enter the number of calories you need to burn to lose 1 kg of body weight, n (%)				
Less than 1000 kcal	2 (2.0)	1 (1.0)	9 (9.0)	$\chi^2(4)=18.14$ p=0.001*
2000-3000 kcal	5 (7.0)	12 (12.0)	17 (17.0)	
7000-7500 kcal	93 (93.0)	87 (87.0)	74 (74.0)	
Provide the proper form of physical activity to prevent obesity, n (%)				
Planned activity	77 (77.0)	35 (35.0)	36 (36.0)	$\chi^2(2)=45.95$ p<0.001*
Everyday activity	23 (23.0)	65 (65.0)	64 (64.0)	
Factors that make it advisable to exercise in the morning, n (%)				
The metabolism is poorly energized and stimulates the body to slowly burn kcal	10 (10.0)	28 (28.0)	29 (29.0)	$\chi^2(2)=13.18$ p=0.001*
The metabolism is quite energized and stimulates the body to faster burn kcal	90 (90.0)	72 (72.0)	71 (71.0)	
What types of exercises will you use to achieve the effect of a shapely, slim figure without excessively developed muscles, n (%)				
Cardio exercises only	4 (4.0)	5 (5.0)	17 (17.0)	$\chi^2(4)=15.08$ p=0.005*
Strength exercises only	2 (2.0)	5 (5.0)	2 (2.0)	
Cardio and strength exercises	94 (94.0)	90 (90.0)	81 (81.0)	
In order to prevent overweight and obesity (especially for people who do not control the calorie content of their meals), can be recommended a daily exercise of 45-60 minutes?, n (%)				
Yes	94 (94.0)	83 (83.0)	85 (85.0)	$\chi^2(2)=6.21$ p=0.045*
No	6 (6.0)	17 (17.0)	15 (15.0)	
What is the minimum intensity of exercise necessary to cause significant adaptive changes in the circulatory and respiratory systems in a healthy adult?, n (%)				
10-20% max HR	80 (80.0)	84 (84.0)	72 (72.0)	$\chi^2(4)=8.41$ p=0.078
55-65% max HR	12 (12.0)	11 (11.0)	22 (22.0)	
80-90% max HR	8 (8.0)	5 (5.0)	6 (6.0)	
Does physical activity increase energy expenditure and resting metabolic rate?, n (%)				
Yes	95 (95.0)	92 (92.0)	92 (92.0)	$\chi^2(2)=0.92$ p=0.631
No	5 (5.0)	8 (8.0)	8 (8.0)	
How many calories can you burn during an hour's walk at a moderate pace?, n (%)				
About 12 kcal	4 (4.0)	4 (4.0)	2 (2.0)	$\chi^2(6)=16.72$ p=0.010*
About 50 kcal	4 (4.0)	8 (8.0)	9 (9.0)	
About 120 kcal	90 (90.0)	87 (87.0)	78 (78.0)	
About 500 kcal	2 (2.0)	1 (1.0)	11 (11.0)	
How many calories can you burn while cycling for an hour at a speed of 10 km/h?, n (%)				
About 30 kcal	1 (1.0)	2 (2.0)	4 (4.0)	$\chi^2(4)=45.61$ p<0.001*
About 130 kcal	9 (9.0)	49 (49.0)	43 (43.0)	
About 300 kcal	90 (90.0)	49 (49.0)	53 (53.0)	

n: number of subjects; %: percent of subjects; χ^2: value of the Chi-square test statistic; p: statistical significance, * statistically significant p<0.05

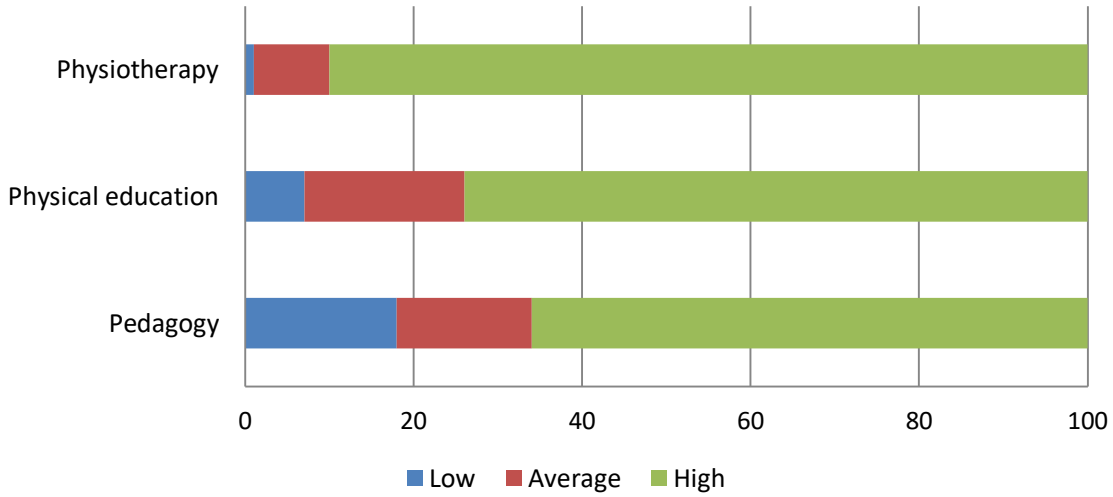

Figure 1. Frequency of giving correct answers in the knowledge test about physical activity and nutrition depending on the field of study ($\chi^2(4)=24.64$; $p<0.001$).

There were statistically significant dependencies between the field of study and the frequency of providing correct answers regarding the recommendations of daily exercise to prevent overweight and obesity ($\chi^2(2)=6.21$ $p=0.045$). Physiotherapy students correctly indicated 45-60 minutes more often (94% of the group) compared to the other groups. A small percentage of students, regardless of their field of study, gave correct answers to the range of minimum exercise intensities required to induce significant adaptive changes in the circulatory and respiratory systems in a healthy adult ($\chi^2(4)=8.41$ $p=0.078$). The majority of respondents, regardless of the group, gave the correct answer, confirming the impact of physical activity on increasing energy expenditure and increasing resting metabolic rate ($\chi^2(2)=0.92$ $p=0.631$). There were statistically significant dependencies between the field of study and the frequency of giving correct answers regarding the number of kcal burned during an hour's walk at a moderate pace ($\chi^2(6)=16.72$ $p=0.010$). The correct value (approximately 120 kcal) was given by the highest percentage of physiotherapy students (90% of the group) and the lowest percentage of pedagogy students (78% of the group). Statistically significant dependencies were found between the field of study and the frequency of giving correct answers regarding the number of kcal burned during an hour of cycling at a speed of 10km/h ($\chi^2(4)=45.61$ $p<0.001$). Physiotherapy students indicated the correct value (approximately 300 kcal) more often (90% of the group) than respondents from other groups.

Figure 1 shows the relationship between the field of study and the level of general knowledge about physical activity and nutrition ($\chi^2(4)=24.64$ $p<0.001$). The highest level of knowledge was most frequently demonstrated by physiotherapy students (90% of the group), and the lowest by education students (66% of the group).

DISCUSSION

Our research indicated that students of physiotherapy and physical education were more likely than students of pedagogy to mention systematic physical activity among the factors contributing to a healthy lifestyle, while students of physical education were more likely than others to associate a healthy lifestyle with rational rest. These data indicate that students of physical education and physiotherapy have more established knowledge of health promotion than students of pedagogy. Kasperczyk [4] also found good knowledge of this issue among physiotherapy students of the University of Physical Education in Krakow. Respondents considered diet and physical activity to be equally

important components of lifestyle. In the study by Jankowska et al. [15], students of physiotherapy and law at the University of Białystok considered physical activity, a healthy and varied diet, adequate amount of sleep and preventive medical examinations as the main determinants of health-promoting behavior and a healthy lifestyle. However, a smaller percentage of them included controlling body weight and avoiding addictions as health-promoting behaviors.

In our material, physical education students indicated swimming, cycling and horse riding among their preferred forms of physical activity more often than others. Physiotherapy and physical education students were more likely than pedagogy students to choose other forms of physical activity, including dancing, gymnastics, boxing, martial arts, home gymnastics, climbing and roller skating. This suggests that physiotherapy students had the most diverse preferences in terms of physical activity. Kumala and Krzak [16] came to similar conclusions in their study of students at universities in Wroclaw and Legnica, Poland. Students of tourism, recreation and pedagogy preferred cycling more than students of physical education, who were more willing to participate in team sports than others. Research by Puszczałowska-Lizis et al [17] showed that the majority of physiotherapy, nursing, administration and European studies students, regardless of their field of study, preferred team games, various forms of fitness and running and walking. On the other hand, Doyle et al [18] showed that the preferred physical activities of students at a university in the United Arab Emirates were team games, swimming and walking, while men preferred weight training, football and jogging, and women aerobics, cycling, walking, squash and yoga. Molanorouzi et al [14] showed that Malaysian students preferred team sports, racquet sports, bowling and running.

The desire to improve psychophysical health was more often cited as a motive for exercising among physical education students than among physiotherapy students. For physiotherapy students, the desire to maintain a slim figure and improve wellbeing was more common than for others. The need to relieve stress was more common among students of physical therapy and pedagogy than among students of physical education. Townsend et al [19] found that major/programme was a factor in differentiating motivation for exercise and physical activity among college students in Chicago. The authors recommended that university administrators and coordinators develop student physical activity programmes to reduce these differences. Blake et al [20], on the basis of research in UK medical schools, concluded that the benefits of physical activity for nursing and medical students were in relation to health. Medical students also identified it with stress reduction. In contrast, improving self-esteem was the main motive for physical activity among students in south-eastern Utah in the study by Gao et al [21]. In previous research, Puszczałowska-Lizis et al [17] showed that the main motive for physical activity among physiotherapy students was the need to reduce stress, while among the European studies students it was the desire to improve their well-being. On the other hand, Roberts et al [22] found that the main factors motivating students at British universities to engage in physical activity were the elimination of stress and the desire to lead a healthy lifestyle. Antony et al [23] concluded that the motivators for physical activity among students at the King Fahd University of Petroleum & Minerals in Saudi Arabia were the desire to be fit, to maintain an appropriate body weight and to be concerned about body appearance. Molanorouzi et al [14] found gender differences in motivation for physical activity among Malaysian university students. For females, the main motivation was to improve their appearance and to feel fit, whereas males wanted to compete.

The results of this research showed that declared physical activity significantly differentiated the frequency of physical activity, which was higher for physical education students than for others. These declarations may distort the picture of inter-individual variation in the frequency of declared physical activity, due to the large number of physical activities in the physical education curriculum. Masaryková et al [24] came to similar conclusions as a result of a survey of students from three different universities in Slovakia. Students with a sports profile reported a higher frequency of physical activity than

students with other study profiles. On the other hand, the frequency of physical activity among nursing and midwifery students was lower than among physiotherapy students, as shown by Radosz et al [25]. According to the authors, the physiotherapy programme contributes more to popularising health-promoting behaviour.

Our study suggests that physiotherapy students were most concerned about healthy eating, followed by physical education students, while pedagogy students were least concerned. Sources of knowledge about healthy eating differed between respondents. Physical education students most often cited their friends, physiotherapy students cited the Internet and scientific journals, and pedagogy students more often than others cited a lack of interest in this topic. Kutty et al [26] also found that medical students from the Sungai Long campus of Tunku Abdul Rahman University, Malaysia, were more likely to eat breakfast than non-medical students.

Our research indicated that a high level of knowledge was most often demonstrated by physiotherapy students, and least often by education students. This suggests that students of physical therapy - a medical field that is related to health care - are a group of people who already have an established level of knowledge about health-related behaviours. Similar conclusions were reached by Belogianni et al [27] after having investigated the nutritional knowledge of university students in the UK. Median knowledge scores were higher for students in the health professions than for students in non-health professions. However, there was no significant difference within each group in the number of students with 'good' or 'poor' knowledge of nutrition. Yun et al [11], after surveying students from seven faculties at the University of Brunei Darussalam, found that most students were aware of the food pyramid and balanced diet concept. However, despite good nutritional knowledge, most had poor eating habits. The authors recommend encouraging universities to establish a multidisciplinary team specialising in promoting health, including nutrition and physical activity programmes, to help raise awareness among students.

The results of our research and analysis of the available literature indicate that the university should provide an interdisciplinary team to support physical activity and nutritional habits to raise awareness among university students, especially in non-medical fields. Educational programmes to promote healthy lifestyles among students, especially in non-health related fields, should be presented as part of the curriculum to increase the involvement of young people in active time. Promoting healthy behaviour should include practical solutions and appropriate knowledge on how to care for one's own psychophysical condition and how to follow a rational diet. Developing appropriate health-promoting habits among university students can make a significant contribution to the health of future generations, given that studies are the last stage before entering adult life, starting a family and taking on professional responsibilities.

Limitations and further research

The scope of this cross-sectional study was limited to three areas of study, which may be a limitation of the research. Future research could be planned in the form of a controlled experiment, extended to other areas of study. Such an approach will allow a more detailed understanding of the cause and effect relationships in relation to health-related behaviour and knowledge about healthy lifestyles, focusing on physical activity and dietary habits. Longitudinal follow-up studies are also recommended to assess the effectiveness and sustainability of the effects of the educational programmes implemented.

Secondly, regarding the chi-square test calculations, in several cases the condition of the minimum number of expected observations was not met, which should be considered as a limitation of the study. Therefore, in the future, consideration should be given to increasing the number of observations (e.g. by collecting more data) so that the expected number of observations exceeds 5. Increasing the sample size will improve the quality of the chi-square test results and also increase its statistical power.

Thirdly, we limited the analysis to between-group comparisons and dependencies, and did not include regression analysis, which could indicate important predictors of health knowledge and behaviour, which can also be considered a limitation of the study. Therefore, future research should consider analysing interactions between variables, e.g. the effect of gender and field of study on healthy lifestyle knowledge. The use of multivariate analysis methods will allow a better understanding of the mechanisms behind the observed differences.

CONCLUSION

The highest level of knowledge about healthy lifestyle with a focus on physical activity and dietary habits was shown by physiotherapy students and the lowest by pedagogy students, which is a non-medical field not related to health care. The university should provide an interdisciplinary team to support physical activity and dietary habits to increase awareness among university students, especially in non-medical fields.

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