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HEALTHY BEHAVIOR PATTERNS AMONG PHYSICAL EDUCATION STUDENTS

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Abstract

Research indicates that university students fail to exhibit satisfactory levels of health-oriented behaviors regarding their diets, physical activity, preventive practices, alcohol and drug use, coping with stress, personal relationships and mental health. This study examines the differences in health behaviors between genders and BA majors. A cross-sectional study was conducted on a sample of 220 second-year undergraduate students, aged between 19 and 41 (M = 21.98, SD = 2.89), divided into three groups according to their BA majors: Physical Education (PE, n = 88, 40.00%), Technical Engineering (TE, n = 67, 30.46%), and Social Sciences (SS, n = 65, 29.55%). The majority of the subjects were males (n = 147, 66.82%). A paper-and-pencil self-report questionnaire, the Health Behavior Inventory (HBI), which includes four subscales: healthy habits nutrition (HHN), preventive behavior (PB), positive adjustments (PA), and healthy practices (HP) was used for this purpose. The results of the Student's t-test indicates that female university students scored higher than males in the total HBI ($p < .001$), as well as in the HHN ($p < .01$) and HP ($p < .05$) subscales, with a small to medium effect size. However, the two-way ANOVA did not show significant differences between the genders and particular BA majors. Health prevention programs at universities and campuses should be focused on increasing healthy behaviors, particularly in male undergraduate students and those studying Physical Education, expected to model (healthy) lifestyles as future health educators.

Key words: *healthy behavior, healthy habits, physical activity, university students, physical education*

Introduction

Upon graduation, physical education (PE) graduates will model and teach healthy behavior in schools and during sports training sessions [1]. As future PE teachers and coaches, PE students should demonstrate excellent healthy lifestyles, including high levels of physical activity, healthy nutrition, preventive behavior, as well as habits related to maintaining social and mental health. According to Gochman [2], healthy behavior (HB) is "personal attributes such as beliefs, expectations, motives, values, perceptions, and other cognitive elements; personality characteristics, including affective and emotional states and traits; and overt behavior patterns, actions, and habits that relate to health maintenance, to health restoration and health improvement." World Health Organization [3] suggests that an unhealthy lifestyle may lead to obesity and chronic diseases.

Research showed that health-oriented behaviors do not differ significantly between PE teachers and the general population [4, 5]. Moreover, PE students do not present a healthier lifestyle than their counterparts from other BA majors [5-12]. However, some studies indicate that the levels of health-related behavior is slightly higher among PE students compared to those observed in other BA majors [13, 14]. In general, university students reported low levels of healthy behavior, such as poor dietary habits, sleep difficulties, sedentary behavior, high level of stress, poor mental and physical health [15-21]. In contrast, university and college students demonstrate a wide range of unhealthy habits, including excessive smoking, alcohol drinking, and illicit substance use [22-24]. There are disparities with regard to the gender and healthy behavior. Some studies found that male and female university students do not differ significantly in this respect [18, 25],

whereas others showed significant disproportions, with higher scores in women than among men [14, 26].

Objective

The present study examines PE university students' healthy behavior compared to that recorded in other BA majors, such as social sciences (SS) and technical engineering (TE). Previous studies showed that PE students do not differ in health-related behavior from the general population. However, PE students, as future educators in a healthy lifestyle, should -exhibit the best patterns of healthy behaviors and set an example for future generations. This study will examine various health-related behavior dimensions investigated among university students, including a healthy diet, preventive behavior, positive psychological adjustments, and healthy practices. Because the previous study revealed an ambiguous association of health-related behavior with the BA major and the gender, this issue will be examined in the present project.

Materials and Methods

Participants

The study included 220 second-year students at a large technical university in the south of Poland. The ages ranged from 19 to 41 (M = 21.98, SD = 2.89). Male students predominated (n = 147, 66.82% of the total sample) and the total sample was divided into three groups, depending on the BA major: Physical Education (PE, n = 88, 40.00%), Technical Engineering (TE, n = 67, 30.46%), and Social Sciences (SS, n = 65, 29.55%).

Measure

The Health Behavior Inventory (HBI) was developed by Juczyński [27] as a self-reported questionnaire. The HBI includes 25 statements regarding various dimensions of health-related behaviors. The participants were asked to assess how frequently they performed healthy behavior on the five-point Likert-like scale (1 = *hardly ever*, 2 = *rarely*, 3 = *from time to time*, 4 = *often*, and 5 = *most often*). The scores of the particular items of the HBI are summarized, ranging from 24 to 120 (higher scores mean a healthier behavior). The total HBI comprises four subscales: Healthy Habits Nutrition (HHN; type of foods, well-balanced diet), Preventive Behavior (PB; health recommendations, health, and disease information), Positive Adjustments (PA; psychological factors, such as avoiding too strong emotions, stress, anxiety, and depressive situations), and Healthy Practices (HP; sleep habits, recreation, and physical activity). The questionnaire's reliability in the Polish version was satisfactory for the total HBI (Cronbach's α =.85) and acceptable for subscales, with Cronbach's α ranging between .60 and .65 [27]. In the present study, the internal consistency was also satisfactory for the total HBI (Cronbach's α =.85) but lower for the HHN, PB, PA, and the HP subscales (with Cronbach's alphas of .77, .68, .64, and .57, respectively).

Procedure

This cross-sectional study was performed during classes on the university premises, with the consent of the lecturers. Student volunteers completed anonymous paper-and-pencil HBI questionnaires. This study was conducted following ethical standards and Declaration Helsinki and informed consent was obtained from all the participants.

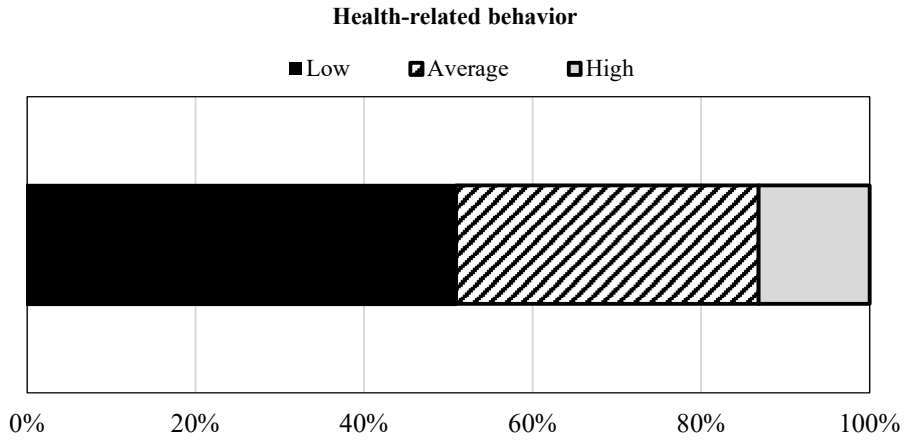
Statistical analysis

The internal consistency of the HBI scales and subscales was calculated using Cronbach's α reliability coefficient. Descriptive statistical analyses were conducted regarding the mean, the median, a 95% confidence interval, the standard deviation, the standard error, and Kolmogorov-Smirnov d statistic. The student's t-test assessed gender differences. A series of two-way ANOVA tests were performed to examine differences in the particular HBI scales between genders (Women, Men) and academic disciplines (PE, TE, and SS). The Cohen's d coefficient and partial eta-square were calculated to obtain the effect size for the student's t-test and ANOVA tests. All statistical analyses were conducted using the STATISTICA 13.1 software.

Results

The total HBI scores were converted to sten scores to examine how many students presented low (1-4 sten scores), average (5-6 sten scores), and high (7-10 sten scores) outcomes. As shown in Figure 1, approximately 51% (n = 112) of the sample showed a low level of health-related behavior, almost 36% (n = 79) had average scores, and only 13% (n = 29) reported high levels of healthy behavior.

Figure 1. Distribution of the total Health Behavior Inventory scores within three categories: low, average, and high outcomes.



Descriptive statistics for the HBI scales, including the range, the mean (M), a 95% confidence interval (CI), the standard deviation (SD), the standard error (SE), the median, and Kolmogorov-Smirnov d (K-S d) statistic for examining the normality distribution of the data, are shown in Table 1. Because the data distribution in all scales of the HBI was consistent with the assumption of a normal distribution, the parametric test was considered to examine differences between groups of students representing particular majors.

Table 1. Descriptive statistics (N = 220)

Scales of the HBI	Range	*M*	95% *CI*	*SD*	*SE*	Median	K-S *d*
Healthy Habits Nutrition	1-5	2.90	[2.80, 3.00]	0.75	0.05	2.92	0.07
Preventive Behavior	1-5	2.74	[2.63, 2.84]	0.79	0.05	2.77	0.07
Positive Adjustments	1-5	3.39	[3.31, 3.48]	0.64	0.04	3.33	0.06
Healthy Practices	1-5	3.10	[3.01, 3.19]	0.69	0.05	3.08	0.09
Health Behavior Inventory	33-115	73.36	[71.57, 75.16]	13.51	0.91	73.00	0.07

Gender differences were examined using the student's t-test for independent groups (Table 2). Women's scores were statistically more significant than men's in the HHN ($p < .01$), the HP ($p < .05$), and the total HBI ($p < .001$). The effect size was small for the HP (Cohen's d = .30), while the HHN and total HBI were medium (Cohen's d = .46). However, when both factors, the gender and the major, were included in the two-way ANOVA model, none of the variables showed significant differences. Also, the effect size was trivial, so we can conclude that neither the gender nor the major determine healthy behavior patterns among university students.

Table 2. Gender differences in healthy behavior

	Women (n=72)		Men (n=147)				
Scales of the HBI	***M***	***SD***	***M***	***SD***	***t*(217)**	***p***	***d***
Healthy Habits Nutrition	3.13	0.76	2.79	0.72	3.18	.002	.46
Preventive Behavior	2.94	0.82	2.65	0.75	2.57	.011	.37
Positive Adjustments	3.50	0.62	3.35	0.65	1.59	.113	.24
Healthy Practices	3.24	0.69	3.04	0.66	2.11	.036	.30
Health Behavior Inventory	77.68	14.38	71.44	12.44	3.31	.001	.46

Table 3. Gender and academic departments in healthy behavior data

	Women		Men					
Variable	***M***	***SD***	***M***	***SD***	**Effect**	***F***	***df***	η_p^2
Total HBI								
PE	76.75	12.81	73.65	12.37	G	1.75	1, 213	.01
TE	73.50	3.54	69.20	10.87	M	0.35	2, 213	.00
SS	78.68	16.01	72.33	15.38	M x G	0.27	2, 213	.00
HHN								
PE	18.13	4.58	17.13	4.39	G	0.13	1, 213	.00
TE	14.00	1.00	16.32	4.16	M	1.75	2, 213	.02
SS	19.53	4.53	16.93	4.62	M x G	1.36	2, 213	.01
PB								
PE	18.03	4.62	17.04	5.09	G	0.72	1, 213	.00
TE	18.00	1.41	15.68	3.64	M	1.08	2, 213	.01
SS	18.68	5.14	15.85	4.75	M x G	0.25	2, 213	.00
PA								
PE	21.31	3.44	20.56	3.63	G	0.71	1, 213	.00
TE	21.00	2.83	19.65	3.91	M	0.32	2, 213	.00
SS	20.68	4.01	20.22	4.34	M x G	0.06	2, 213	.00
HP								
PE	3.21	0.62	18.71	3.46	G	1.61	1, 213	.01
TE	3.42	0.35	17.43	4.26	M	0.12	2, 213	.00
SS	3.25	0.77	19.11	4.09	M x G	0.38	2, 213	.00

Note. HBI = Health Behavior Inventory; HHN = Healthy Habits Nutrition; PB = Preventive Behavior; PA = Positive Adjustments; HP = Healthy Practices; G = Gender; M = BA major. PE = sample of Physical Education; TE = sample of Technical Engineering; SS = sample of Social Sciences.

Discussion

The study examined health-oriented behavior in university students, with a focus on two variables: the gender, and the BA majors. This study has shown that the vast majority of university students presented low or average health-related behavior levels. Higher scores constitute a mere 13% of the total sample. The present result is consistent with a large body of scientific literature which notes similar trends [16-21]. Particular dimensions of a healthy behavior are interrelated [28-31]. The period of emerging adulthood is challenging for young

people. University students often need to combine work and study. They live independently away from the family, experiencing breakups in romantic relationships, and difficulty coping with the demands of academic requirements. The student's life is linked with high levels of stress and excessive substance use as a coping strategy [22-24]. The analysis based on the student's t-test showed certain gender differences, which seems consistent with previous research [14, 26]. However, a more advanced statistical method, namely a two-way ANOVA test, did not confirm significant differences between female and male students or between PE, TE, and SS majors. We can conclude that some other factors than the gender and the BA major may determine the lifestyles of university students with regard to health. The present result is consistent with some other studies that failed to find gender differences in the HB [18, 25]. This analysis also confirms alarming observations that PE students do not exhibit expected higher levels of healthy behaviors [6-12]. This trend is maintained at a later age and, as a result, PE teachers are not seen as perfect models of healthy lifestyles [4, 5]. The prevention and intervention programs conducted at universities should focus on developing such strategies that will effectively support undergraduates in their early adult life. One area, i.e. healthy dietary habits, could be supported through easily accessible health-food groceries and eateries on campuses. Alcohol and substance use should be prohibited on campuses. Also, more places (e.g., sports fields, gyms, sports halls) and the opportunity to engage in physical activity (e.g. sports training, a large range of physical exercises outside of classes at the university) should be freely available in university cities. Psychologists and psychiatrists' support for student communities should be provided by universities, and support groups (such as AA, DDA, etc.) should be accessible on the campus and/or online. The curriculum of healthy education at universities should be improved significantly to teach how to successfully implement a healthy lifestyle routine into a student’s busy life. It seems particularly important to support PE pre-teachers to raise the awareness and provide assistance in maintaining a healthy lifestyle. Intervention programs should be tailored to the needs of young adults who spend most their time at university campuses.

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