Healthy Life Style Behaviors of University Students of School of Physical Education and Sports in Terms of Body Mass Index and Other Variables

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Abstract   The aim of this study is to determine Healthy Lifestyle Behaviors of students in the Schools of Physical Education and Sport (SPES) utilizing Body Mass Index (BMI) and other various variables.   The study is composed of 1695 students studying in SPES, in 14 different universities across Turkey. It is made up of 1067 male and 624 female students. Data collected, is from both anonymous personal information and a Healthy Lifestyle Behaviors Scale – I survey. SPSS 21 was used and analysis obtained is 95% reliant. Examining the difference in status between Healthy Lifestyle Behaviors scores and the BMI group were done according to the Kruskal-Wallis H test, examining the relationship between each BMI group with 6 subscales was done with the Spearman Correlation test. The highest average score of the subscale is Self-Fulfillment (37.25 ± 6.02), while the lowest score of subscale was exercise (13.45 ± 3.06). SPES students with low BMI's were found to have a higher score in the Self- Fulfillment subscale. Recreation Department students scored higher in 4 of the 6 subscales, whereas the 4th grade students scored higher in 5 of the 6 subscales. It has been observed that as the family income and education level increases, there is an increase in the awareness of the Healthy Lifestyle Behaviors applied. The findings of the literature have revealed that there is a serious lack of exercise and proper nutrition, and the results for the SPES students observed in this regard were no different. This research supports the need for well-rounded encouragement and support as it pertains to healthy living. Also the students with low BMI's showed higher scores in the subscale of Self-Fulfillment. The students majoring in Recreation received higher scores on several subscales.

Keywords   Physical Education, Sport, Healthy Life Style, BMI

1. Introduction

Health has been one of the concepts that have been heavily focused on since the beginning of humanity. Health can be considered as a continuum which covers different levels between healthy status at an optimum level and death [1]. According to the World Health Organization, health is more than the status of not having a disease or disability but a status of being well in terms of mental, physical and social aspects. Being healthy, according to the same organization, is defined as "being aware of breathing, being able to meet the needs, being able to change the environment or handle the environment" [2].

There are several factors involved in health and illness. Health is influenced by poor eating habits, not exercising enough, excessive stress, personal traits, behaviors and attitudes [3,4]. Unhealthy habits seen in adulthood are said to be strongly associated with an unhealthy life style in adolescence [5,6]. However, the fact that the foundation of diseases seen in society is based on the childhood and teenage periods is ignored most of the time [7].

When the development process of medicine and healthcare services are considered, we see that trying to heal the ones who are ill comes first and then ways to prevent diseases are addressed later [8]. Healthy life style behaviors aim not only to prevent a disease or illness but also to bring a person's general health to a better level. Immobility and a lack of healthy habits are the main reasons health problems occur today. It is stated that healthy life style behaviors can reduce diseases and death on one hand and research conducted on large portions of society show that an immobile life style causes several chronic diseases on the other [9.10.11.12]. The healthy life style scale developed within this context includes physical activity, self-fulfillment, health responsibility, nutrition, support among people and stress management components [13]. Health responsibility is a person being actively responsible for his personal health. Physical activity is defined as doing exercises at every level regularly. Nutrition is defined as an individual's choice and management of his meals and the value of his food. Moral development focuses on the development of inner resources. Interpersonal relationships are the relationships with others

and require use of communication. Stress management is to determine and activate an individual's physiological and psychological resources to reduce and control intensity [14].

Considering the fact that the foundation of many diseases and illnesses is based on childhood and teenage period and how important this issue is, this research is anticipated to raise awareness in students of School of Physical Education and Sports (SPES), improving and contributing to the development of current behaviors related to health. When research on healthy lifestyle behaviors in Turkey is examined, it is seen that very few studies are conducted generally in university students (with the exception of nursing students). This research aims to examine healthy life style behaviors of SPES students in terms of Body-Mass Index (BMI) and other health variables.

2. Material and Method

This study is a descriptive study using valid survey. The sample of this study consists of SPES students (n=1870) from 14 different universities in Turkey chosen randomly. Contributions from universities to this study are listed in a descending order; Adnan Menderes University (11,2), Kafkas University (10,8), Ordu University (10,3), Erciyes University (9,9), Dumlupinar University (9,4), Karadeniz Technical University (8,0), Yuzuncu Yil University (7,1), Gazi University (7,0), Cukurova University (5,3), Karabuk University (4,7), Batman University (4,7), Mehmet Akif Ersoy University (4,0), Adiyaman University (3,8), Marmara University (3,8).

1695 surveys out of 1870 that are sent out to be answered are considered acceptable and organized in order to be used in the analysis. 1067 of the surveys taken into analysis were answered by male students while 624 were answered by female students. Some survey takers did not answer some of the questions in the personal information section but completed the scale.

Data Gathering Tools

Personal Information Form: 15 questions were asked in the personal information form related to determination of students' socio-demographic characteristics and BMI.

Healthy Life Style Behaviors Scale: Walker et al.[14], developed the healthy lifestyle behaviors scale to test the Improving Health Model introduced by Pender in 1987 [15]. This scale measures behaviors that improve an individual's health related to healthy lifestyle. The validity and reliability of this scale was conducted by Esin M. N in Turkey [16] and this scale was used in many studies. There are a total of 48 items and 6 sub-scales in the scale. These sub question groups are related to self-fulfillment, health responsibility, exercise, nutrition, interpersonal support and stress management.

Data Analysis

Data gathered by surveys were entered into the SPSS 21.0

packet program and statistical analysis was carried out with a 95% reliability range. Personal information related to frequency and percentage values related to data gathered from the personal information form are presented within the scope of the study. Normality test was conducted to determine the conformity to normal distribution and the analysis showed that the scores were not in conformity with normal distribution. Therefore, kruskal wallish and Man Whitney U tests were used. The level of significance was determined according to p<0.05.

When calculating the BMI, weight (kg)/height (m) formula was used. According to BMI values, people under 18,5 were grouped as underweight, ones that are between 18,5 and 24,99 are normal weight, between 25,00 and 29,99 are overweight and over 30,0 are as obese.

3. Findings

Table 1. Socio-Demographical Information

		N	%
Age	16-17	7	0,4
	18-20	512	30,3
	21-22	651	38,5
	23-24	355	21,0
	25 and older	167	9,9
BMI	Underweight	134	7,9
	Normal	1372	80,9
	Overweight	176	10,4
	Obese	13	0,8
Gender	Female	624	36,9
	Male	1067	63,1
Department	Physical Education and Sports Teacher	585	34,6
	Sports Management	596	35,2
	Coaching Education	367	21,7
	Recreation	144	8,5
Are you a professional athlete?	Yes	834	49,2
	No	860	50,8

Table 2. Normality Test of Dimensions of Healthy Life Style Behavior Scale

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Exercise	,087	1695	,000	,982	1695	,000
Nutrition	,067	1695	,000	,989	1695	,000
Health Responsibility	,046	1695	,000	,993	1695	,000
Interpersonal Support	,066	1695	,000	,960	1695	,000
Self-Fulfillment	,040	1695	,000	,994	1695	,000
Stress Management	,070	1695	,000	,966	1695	,000

Shapiro-Wilk Test that is done for the scales of exercise, nutrition, health responsibility, interpersonal support,

self-fulfillment, stress management score average, showed that the data do not show a normal distribution. Therefore, non-parametric techniques were used in intergroup comparisons.

Table 3. Dimensions of Healthy Life Style Behavior Scale

	N	Minimum	Maximum	Average	ss
Exercise	1695	5,00	33,00	13,45	3,06
Nutrition	1695	6,00	24,00	15,51	3,40
Health Responsibility	1695	10,00	38,00	23,57	5,56
Interpersonal Support	1695	8,00	54,00	20,25	3,82
Self-Fulfillment	1695	15,00	52,00	37,25	6,02
Stress Management	1695	8,00	56,00	18,70	3,67

The survey takers' average score of exercise is $13,45\pm3,06$; average score of nutrition is $15,51\pm3,40$; average score of health responsibility is $23,57\pm5,56$; average score of interpersonal support is $20,25\pm3,82$; average score of self-fulfillment $37,25\pm6,02$ and average score of stress management is $18,70\pm3,67$.

Table 4. Comparison of Groups with Different Body-Mass Index

BMI		N	Mean Rank	X2	P
Exercise	Underweight	134	811,70	1,179	,758
	Normal	1372	848,37		
	Overweight	176	870,08		
	Obese	13	884,31		
Nutrition	Underweight	134	848,12	6,671	,083
	Normal	1372	836,77		
	Overweight	176	937,33		
	Obese	13	822,77		
Health Responsibility	Underweight	134	929,07	6,242	,100
	Normal	1372	836,42		
	Overweight	176	863,86		
	Obese	13	1019,46		
Interpersonal Support	Underweight	134	880,54	2,163	,539
	Normal	1372	839,59		
	Overweight	176	887,00		
	Obese	13	872,58		
Self-Fufilment	Underweight	134	941,87	9,630	,022
	Normal	1372	831,10		
	Overweight	176	911,35		
	Obese	13	806,81		
Stress Management	Underweight	134	906,98	5,171	,160
	Normal	1372	835,25		
	Overweight	176	894,15		
	Obese	13	960,81		

$p< 0,05$

Table 5. Comparison of Scale Scores in Terms of Age Variable

Age		n	Mean Rank	X2	P
Exercise	16-17	7	1196,86	10,121	,038
	18-20	512	881,82		
	21-22	651	812,04		
	23-24	355	839,97		
	25 ≥	167	871,73		
Nutrition	16-17	7	720,29	14,446	,006
	18-20	512	808,60		
	21-22	651	828,16		
	23-24	355	890,07		
	25 ≥	167	946,87		
Health Responsibility	16-17	7	751,71	12,862	,012
	18-20	512	795,57		
	21-22	651	842,77		
	23-24	355	897,09		
	25 ≥	167	913,63		
Interpersonal Support	16-17	7	862,93	7,400	,116
	18-20	512	847,70		
	21-22	651	819,08		
	23-24	355	854,16		
	25 ≥	167	932,72		
Self-Fulfillment	16-17	7	998,21	8,929	,063
	18-20	512	842,66		
	21-22	651	824,15		
	23-24	355	843,56		
	25 ≥	167	945,27		
Stress Management	16-17	7	724,93	9,350	,053
	18-20	512	823,11		
	21-22	651	825,75		
	23-24	355	882,81		
	25 ≥	167	927,04		

$p<0,05$

According to Kruskal Wallis test performed for different age groups, statistically significant difference was found in the exercise, nutrition and health responsibility scale ($p<0,05$).

Table 6. Comparison of Scale Scores in Terms of Gender Variable

Gender		n	Mean Rank	U	P
Exercise	female	624	779,34	291311,000	,000
	male	1067	884,98		
Nutrition	female	624	806,93	308526,500	,012
	male	1067	868,85		
Health Responsibility	female	624	859,71	324350,500	,377
	male	1067	837,98		
Interpersonal Support	female	624	794,12	300528,500	,001
	male	1067	876,34		
Self-Fulfillment	female	624	849,47	330738,500	,823
	male	1067	843,97		
Stress Management	female	624	825,10	319860,000	,177
	male	1067	858,22		

According to the comparison in terms of gender with Mann Whitney test, statistically significant difference was found in exercise, nutrition and interpersonal support scale (p<0,05).

Table 7. Comparison of Scale Scores in Terms of Department Variable

Department		n	Mean Rank	X2	P
Exercise	Physical Education and Sports Teaching	585	837,31	4,729	,193
	Sports Management	596	826,32		
	Coaching Education	367	893,93		
	Recreation	144	846,49		
Nutrition	Physical Education and Sports Teaching	585	831,35	8,236	,041
	Sports Management	596	836,21		
	Coaching Education	367	844,08		
	Recreation	144	956,79		
Health Responsibility	Physical Education and Sports Teaching	585	880,81	8,990	,029
	Sports Management	596	815,74		
	Coaching Education	367	817,09		
	Recreation	144	909,40		
Interpersonal Support	Physical Education and Sports Teaching	585	824,92	9,717	,021
	Sports Management	596	848,51		
	Coaching Education	367	831,95		
	Recreation	144	962,92		
Self-Fulfillment	Physical Education and Sports Teaching	585	819,62	6,661	,084
	Sports Management	596	857,72		
	Coaching Education	367	837,49		
	Recreation	144	932,24		
Stress Management	Physical Education and Sports Teaching	585	852,74	9,760	,021
	Sports Management	596	831,71		
	Coaching Education	367	816,39		
	Recreation	144	959,12		

Statistically significant difference was found in sub-scales of nutrition, health responsibility, interpersonal support and stress management (p<0,05).

Table 8. Comparison of Groups of Professional and Amateur Athletes

Are you a professional athlete?		n	Mean Rank	U	P
Exercise	Yes	834	978,34	249500,00	,000
	No	860	720,62		
Nutrition	Yes	834	894,11	319751,00	,000
	No	860	802,30		
Health Responsibility	Yes	834	894,36	319537,00	,000
	No	860	802,05		
Interpersonal Support	Yes	834	870,90	339101,00	,052
	No	860	824,80		
Self-Fulfillment	Yes	834	894,92	319074,00	,000
	No	860	801,52		
Stres Management	Yes	834	881,06	330635,00	,005
	No	860	814,96		

p<0,05

According to the Mann Whitney U test performed in groups of professional and amateur athletes, significant difference was found in between the groups in terms of exercise, nutrition, health responsibility, self-fulfillment and stress management sub-dimensions (p<0,05). The scores of people who are professionals, are higher than the other group in all sub-dimensions. There is no statistically significant difference in the interpersonal support scale (p>0.05).

4. Discussion

This section presents the comparison and comments of our findings contributing to the related literature findings.

In terms of average Healthy Life Style Behavior Scale subscale scores

When the situation is evaluated, it is seen that the highest score average among the answers provided by students is self-fulfillment (37,25±6,02). This is followed by health responsibility (23,57±5,56), interpersonal support (20,25±3,82), stress management (18,70±3,67), nutrition (15,51±3,40) and exercise (13,45±3,06) consecutively (Table 3).

Similarly to our study, in most studies it is seen that self-fulfillment sub-scale takes the first place and exercise takes the last [17,18,19,20,21,22].

In a study performed in Malatya, the healthy lifestyle behavior scale score averages of physical education teachers are found higher than the results of studies performed in different countries and regions using healthy lifestyle behavior scale [23]. Nevertheless, when studies in this field are considered generally, the fact that the lowest scores are in nutrition and physical activity sub-scales and having the same result in our study was unexpected from SPES students. In a study conducted in medical students by Nacar et al. in 2014, a similar paradox was identified [24]. Although it was assumed that first year medical students do not have much information on healthy living, they scored higher in several sub-scales while senior year medical students who are to be doctors soon scored lower.

In a study conducted among university students in Mexico, the order was as follows: self-fulfillment, interpersonal relationships, nutrition, stress management, health responsibility and physical activity [25]. In a study conducted in nursing students in the United States of America, the highest scores were in interpersonal relations and self-fulfillment sub-dimensions while the lowest score was in health responsibility [26]. The reason that self-fulfillment sub-scale gets the first place is thought to be influenced by societal and personal beliefs while the reason for the exercise sub-scale taking the last place is thought to be a lack of full understanding of sports culture in society, the costs of gyms, living conditions in the society in general and lack of time as a result of this, not having alternative sport fields at the desired level.

When the results are considered in terms of BMI

No statistically significant difference was found in terms of exercise, nutrition, health responsibility, interpersonal support and stress management scales while those with underweight BMIs have the highest mean rank in self-fulfillment scale (Table 4).

When we compared our findings with the literature, we found that underweight and normal BMI groups have generally healthier profiles. A study by Firinci showed that according to BMI, "underweight" students are more emotional in "interpersonal relationships" compared to other students [27]. Additionally, there are studies where no significant difference was determined with different BMI groups and healthy lifestyle behavior total and sub-scale score averages [28]. Also, a study conducted with American adults showed that stressful life, changes related to work and death of a family member or a friend increases BMIs of women especially [29].

These data show the importance of having BMI measures in the "normal" rating and the link to positive health behaviors. In our comprehensive study and with broad participation across several schools and departments, the interesting point was to find a statistically significant difference only in self-fulfillment scale out of six sub-scales as it pertains to BMI.

In terms of Different Age Groups

Interpersonal support, self-fulfillment, stress management were not statistically significantly different while average mean rank of exercise scale of students at the age of 16 and 17 and the sub-scales of nutrition and health responsibility of students that are 25 and older have the highest average mean rank (Table 5).

Literature search showed parallelism with our findings. For instance, a study showed that the scores of sub-scales of health responsibility and nutrition are higher in older ages [30] while another study performed with university students from different majors showed that scores of nutrition and health responsibility sub-scales are higher among older students compared to young students [31]. In another study performed with Firat University Health College this difference was prominent in health responsibility and interpersonal support scores in older ages [32]. A study done in Nursing College in Istanbul, the average scores of students in 22-25 age groups in self-fulfillment, health responsibility and interpersonal support were found to be higher compared to 17-21 age group [33]. Aside from these, there is a study showing that especially health responsibility increases as the age increases [19]. In a study conducted in Mexico, it was found that students in the age group 17-24 have higher score average in physical activity, stress management and interpersonal support sub-scales parallel to our findings compared to students at the age of 25 and older [25]. In another study done in America, it was found that student at an older age have higher scores in scale total score and health responsibility sub-scale [26]. Different from our

findings, there is a study where there is no statistically significant difference in healthy lifestyle behavior scale total [30].

When we evaluate the results, it is seen that individuals who are younger put more importance on physical activity and exercise while individuals who are 25 and older are more responsible with health and their nutrition. In similar studies, it is understood that health responsibility awareness become predominant as the age increases, similar to our findings, and some differences can show changes according to the country, region or areas where the research takes place.

In terms of Gender Variable

Statistically no significant difference was found in between female and male student groups in terms of health responsibility, self-fulfillment and stress management sub-scales while mean rank scores of males in nutrition and interpersonal support sub-scales are higher than female scores (Table 6).

Our results show parallelism with some research results. In a study conducted in high school students in Adana, the scores of males in nutrition and exercise sub-scales were found higher than females [34]. In a study conducted with nursing college students, males received higher scores in exercise sub-scale [33]. In studies performed with university students in Hong Kong and Mexico and studies performed in America with 11-15 year old teens, it was found that males place more importance on exercise than females [25,35,36]. In a study performed with academic personnel in university, the average scores of male academicians in exercise sub-scale were found higher than female academicians [37].

Different than our findings, in a study conducted with 208 physical education teachers, female teachers were found to have higher score average than male teachers in nutrition while no significant difference was found between groups in terms of exercise and interpersonal support sub-scales [23]. Studies performed in African Americans [38] and students in Uludag University Health College [39] showed that female students have higher scores in nutrition and interpersonal support sub-scales and statistically significant difference in between the groups. In a university in Japan, female students showed better results than males in interpersonal support and nutrition sub-scales while males were more prominently represented than females in exercise sub-scale [40].

In terms of Department Variable

When the subject of study is evaluated, students in recreation departments have higher mean rank average in terms of nutrition, health responsibility, interpersonal support and stress management compared to students in other departments (Table 7).

There is research in literature that compares different departments. For instance, in a study done in students from nursing, medical school, computer engineering and statistics departments, a relationship was found between departments and only health responsibility sub-scale. In another study

performed in students of medicine, dentistry, nursing and midwifery, score average of medical students in all sub-scales except physical activity, and in scale total was found significantly lower compared to other departments. Also, another study performed in first year and senior year students from different medical schools in Turkey showed that first year students score significantly higher in several sub-scales while senior year students have lower scores [24]. Another study showed that students in life sciences have higher score average in health responsibility sub-scale compared to students in social sciences while students in healthcare have higher score averages compared to students in social sciences and vocational schools [31].

When our findings are considered, mean rank scores of recreation students in four sub-scales (Nutrition, Health Responsibility, Interpersonal Support and Stress Management) are found to be higher than other departments. This finding is important in terms of being a reference for further studies and the impact of school programs on student health.

In terms of Groups of Professional and Amateur Athletes

When professional athletes are compared with amateur athletes, their mean rank scores are found to be higher in terms of exercise, nutrition, health responsibility, self-fulfillment and stress management sub-scales (Table 8). Additionally, in a study conducted by Bercin (2010), students who are engaged in social activities were found to have higher scores in total score in healthy lifestyle behavior and in all sub-scales except nutrition compared to students who are not engaged in social activities [41]. Another study showed higher scores for students who engage in sports activities than who do not, in terms of all sub-scales except nutrition, and in total score averages in healthy lifestyle behavior. In a study done in middle school students in Isparta [42], students who engage in sports activities regularly are better than students who do not, in terms of personal traits such as being outgoing and open. Also, these students were found to be prominently represented in terms of academic success. It is clear that individuals who engage in sports activities regularly and who are professional athletes get higher scores in almost all healthy lifestyle behavior sub-scales or they have more positive attitudes and habits related to health. Results of some studies have shown this athlete population does not make healthy eating part of their healthy lifestyle [43].

5. Conclusions

This study examined healthy life style behaviors of students of SPES evaluating BMI and other health variables, it was found that the highest score average was achieved in Self-Fulfillment sub-scale (37,25±6,02) while the lowest score average was in exercise (13,45±3,06). SPES students whose BMIs are underweight were found to have higher scores in Self-Fulfillment sub-scale. So there is a negative correlation between BMI and Self-Fulfillment. Students in recreation were found to get higher scores in 4 sub-scales out of 6 while fourth year students have higher scores in 5 sub-scales out of 6. We can say that, when the grade level of students increase, they show more healthy life style behaviours.

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