



## THE EFFECT OF NUTRITION AND SEXUAL HEALTH EDUCATION ON HEALTHY LIFESTYLE BEHAVIORS OF PRESERVICE TEACHER

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### Abstract:

The aim of this study was to investigate the effect of nutrition and sexual health education on healthy lifestyle behaviours of teacher candidates (HLSB). In the research, a quasi-experimental research one-group pretest–posttest design, a quantitative research method, was used. The sample of the study consisted of 60 pre-service teachers studying at the science education department of a public university. The data were gathered by Healthy Lifestyle Behaviours (HLSB) Scale-II. It was determined that the levels of healthy lifestyle behaviours of the participants in both groups were low and close to each other before intervention. According to the results of nutrition education obtained from the research, there was found a significant difference in the average scores of the HLSB scale for the intervention group. They differed significantly by subscales and the overall score of HLSB except for the “Interpersonal Relations” subscale. The effect of given nutrition education on students’ healthy lifestyle behavior levels was found to be 'very high'. According to the results related to sexual health education, healthy lifestyle behavior levels only differed in “Health Responsibility” subscale. In the study, no significant difference was found between the post-test scores of the students in both the nutrition and sexual health education groups. This result is interpreted that nutrition education and sexual education are similarly effective in students' healthy lifestyle behaviors. This result shows that “health education” should be reconsidered in accordance with today's health understanding defined as biopsychosocial. In order for students to develop healthy lifestyle behaviors, both nutrition education and sexual health education should be given.

**Keywords:** nutrition health education, sexual health education, healthy lifestyle behaviours

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## 1. Introduction

Today, the so-called biopsychosocial model has influenced health sciences as well as social sciences (Kaplan, 2016) and has caused the concept of health to be addressed in a holistic approach covering the physiological, psychological and social presence of a person (Baltaş, 2000; Yılmaz, 2016). Health is regarded as something biopsychosocial. In other words, it is considered to be a complete good state of people, which means an enhancement in quality of life and satisfaction. Healthy lifestyle behavior is the control of behaviors against diseases that affect health, regulating daily activities (Gayef, 2019). According to the world health organization, health is defined as a state of healthiness ensuring a person's physical, emotional, intellectual and social integrity and affecting his or her personality development (Özkula, 2019).

People should make some changes in their lifestyles and health behaviors in order to protect themselves from non-contagious diseases. It is also important to prevent the incidence of health problems and to learn about ways of protection (Bilir, 2003). In this context, educating people in subjects such as nutrition and sexual health is really important for prevention of health problems and raising healthy generations.

## 2. Nutrition Education

Nutrition has a vital role in order for people to be physically, mentally, emotionally and socially healthy. People are becoming more conscious today. Prevention of risk factors that constitute diseases, taking measures at an early age, and early diagnosis and intervention are necessary to live a good quality life (Özkula, 2019).

Today, billions of dollars are spent in most countries around the world to fight nutrition and health problems. Many people die at an early age or become incapable of working. Nutrition is the primary human need and forms the basis of the health of not only individuals but also societies (Baysal, 1981). An adequate and balanced diet is one of the most important necessities of healthy life. Health problems increase, and people's efficiencies in life decrease if nutritional elements cannot be obtained in sufficient amounts (Aytekin and Bulduk, 2000).

Behaviors related to health are usually shaped in youth. Students have more responsibilities for their ways of live in this period of physical, psychological, social, sexual and similar development (Metem, Nacar, Tekin, Pehlivan, 2017). For this reason, nutrition education offered to university students can be effective in improving their healthy lifestyles.

## 3. Sexual Health Education

Sexual health does not just refer to reproduction, and prevention and treatment of sexually transmitted diseases; it also refers to a person's living his or her sexual life happily without any pressures or coercions (Özkula, 2019). Sexual problems are the

primary health problem that make people unhappy the most, and one of the problems that concern society the most (Bozdemir, Özcan, 2011). Efforts are not adequately devoted to sexual health problems even though they occupy a significant place among the health problems experienced during adolescence. Health education, however, is effective in protecting sexual health of adolescents. Sexual health is an integral part of health. Sexuality is known to occupy an important place in terms of people's quality of life and health (Gölbaşı, 2003). Sexual health is the basis not only for the overall health and well-being of individuals, couples and families, but also for the social and economic development of societies and countries (WHO, 2006).

According to the world health organization, sexual health is “... not only the absence of diseases, dysfunctions or disabilities, but also sexuality-related physical, emotional, mental and social well-being. In addition to a positive and respectful approach to sexuality and sexual relations, sexual health necessitates the opportunity to have pleasurable and safe sexual experiences away from coercion, discrimination and violence. In order to guarantee and sustain sexual health, sexual rights of all people must be respected, protected and fulfilled” (WHO, 2006).

Sexual health curricula of countries vary depending on their development levels, cultural characteristics, and so forth. A review of the literature shows that different opinions stand out about sexual education. Some argue that sexual education will increase the interest in sexual issues and cause an onset of sexual relationships at an earlier age, while others think the opposite. In schools where sexual education is offered, the goal and content of education is discussed more (Gölbaşı, 2003). However, sexual health education is a lifelong process and its goal is to protect people's sexual health. Studies have shown that sexual education is effective in protecting young people from sexually transmitted diseases, helping them develop healthy sexual behaviors and establish more positive friendship relationships (Gürsoy, Gençalp, 2010).

Understandings advocating to approach the education of people holistically have been on the rise in recent years. One of the main responsibilities of teachers is to teach students knowledge and skills about health. In this context, preservice teachers need to be equipped to teach health education (Öksüz, 2016).

In this study, the effect of nutrition and sexual health education on healthy lifestyle behaviors of preservice teachers was investigated.

#### **4. Material and Methods**

Quantitative research method was used in this research. In the method section of the research, the research design, sample, data collection tool, application and data analysis are stated.

##### **4.1. Research Design**

This study was designed as a pretest-posttest quasi-experimental research study with no control group, in which there were two different implementations (courses), to investigate whether there was a difference in healthy lifestyle behaviors of preservice

science teachers depending on whether they received nutritional education and sexual health education. *“In experimental designs, the main objective is to test the cause-and-effect relationships created between variables. In experimental research, independent variables are manipulated by the researcher, and measurements of participants obtained through the dependent variables in at least two conditions are compared”* (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, and Demirel, 2018). In quasi-experimental research, samples are selected through purposive sampling (Büyüköztürk et al., 2018; Sönmez and Alacapınar, 2016).

#### 4.2. Sample

The sample of the study consisted of preservice teachers who were studying in the science education department of a public university in Istanbul in the 2017-2018 academic year. The demographic characteristics of the students who participated in the study are summarized below in Table 1.

**Table 1:** Demographic characteristics of the sample

Variable	Group	Nutrition Education (n = 37)		Sexual Health Education (n = 22)		Total (n = 59)	
		n	%	n	%	n	%
Gender	Female	34	91.9	17	77.3	51	86.4
	Male	3	8.1	5	22.7	8	13.6

An examination of Table 1 shows that 86.4% of the students who participated in the study were female, and 13.6% were male. The number of students who enrolled in the nutrition education course was 37, and the number of students who enrolled in the sexual health education course was 22.

All of the preservice teachers who participated in the study stated that they had not previously received a course or training on nutrition or sexual health. Moreover, the preservice teachers who formed the experimental group voluntarily chose the nutrition education course and the sexual health education course, which were both elective courses.

#### 4.3. Data collection instruments

In order to measure the levels of perception of healthy lifestyles of the preservice teachers participating in the study, the Healthy Lifestyle Behaviors Scale II was used. The scale was developed by Walker et al. (1987) and its validity and reliability studies in Turkish were carried out by Bahar et al. (2008). The scale consists of 52 items with 4-point Likert-type options. A higher score on the scale means the person's own healthy lifestyle is healthy, and a lower score means it is unhealthy. In this study, mean scores were used instead of total scores to make more practical comparisons. The scale consists of six dimensions. For the purpose of examining the construct validity of the scale, its internal consistency coefficient (Alpha coefficient) was calculated to be 0.92. Alpha coefficients of the dimensions of the scale were calculated to range from 0.64 to 0.79.

The suitability of the Health-Promoting Lifestyle Profile for this study was examined by checking its reliability through item analysis. The alpha model was used for the internal consistency (reliability analysis) of the scale (Kalaycı, 2006; Karagöz, 2016; Özdamar, 2002). Based on the reliability analysis of the Health-Promoting Lifestyle Profile, the overall reliability coefficient (Cronbach's Alpha) of the scale was calculated to be  $\alpha = 0.935$ . The reliability coefficients of sub-dimensions ranged from 0.604 to 0.883. The results show that the Health-Promoting Lifestyle Profile was reliable for this study.

#### 4.4. Implementation Process

The "Health-Promoting Lifestyle Profile II" (HPLP) was administered as a pretest to the preservice teachers participating in the study. Whether the nutrition education group and the sexual health education group were equivalent groups was checked by comparing the HPLP pretest scores. Based on the results of the analysis, the students in the nutrition education group and those in the sexual health education group were in equivalent groups before they received the nutrition and sexual health education. Then, the courses were taught for a semester to the experimental groups in accordance with the curriculum. These courses were taught as elective courses by one of the researchers at the university hosting the research study. The Health-Promoting Lifestyle Profile II was re-administered to both groups as a posttest at the end of the semester.

Table 2 shows the description statistics for the pretest scores of the students who participated in the study.

**Table 2:** Descriptive statistics for pretest scores

Dimension/Scale	Nutrition Education		Sexual Health Education	
	M	SD	M	SD
Health responsibility	2.35	0.62	2.42	0.54
Physical activity	2.02	0.66	2.17	0.64
Nutrition	2.22	0.45	2.30	0.38
Spiritual development	3.03	0.43	3.02	0.50
Interpersonal relations	3.02	0.47	3.08	0.43
Stress management	2.39	0.52	2.51	0.45
HPLP	2.50	0.43	2.63	0.34

According to Table 2, physical activity, nutrition, health responsibility and stress management levels of the students in the nutrition education group were low-to-moderate (sometimes) based on the scale scores. Their interpersonal relations and spiritual development levels were moderate-to-high (regular). The overall mean HPLP score of the students in the nutrition education group was calculated to be  $2.50 \pm 0.43$  (regular). Based on this value, it can be said that the perceptions of healthy lifestyle behaviors of the students in the nutrition education group were low (not very positive).

It was seen that the levels of healthy lifestyle behaviors of the students in the sexual health education group were close/similar to those of the students in the nutrition education group. Their physical activity, nutrition, health responsibility and stress

management levels were low-to-moderate (sometimes). Their interpersonal relations and spiritual development levels were moderate-to-high (regular). The overall mean HPLP score of the students in the sexual health education group was calculated to be  $2.63 \pm 0.34$  (regular).

Based on a review of all results, it can be said that the students' perceptions of healthy lifestyle behaviors in the sexual health education group were also low (not very positive) as in the nutrition education group.

Whether the nutrition education group and the sexual health education group were equivalent groups was checked by comparing the HPLP pretest scores. The results are summarized in Table 3 below.

**Table 3:** Mann-Whitney test (N = 59)

Dimension/Scale	Group	Descriptive Statistics			Mann-Whitney	
		n	Mean Ranks	Sum of Ranks	U	p
Health responsibility	Nutrition group	37	28.54	1056.00	353.00	0.396
	Sexual health group	22	32.45	714.00		
Physical activity	Nutrition group	37	28.81	955.00	252.00	0.115
	Sexual health group	22	34.05	815.00		
Nutrition	Nutrition group	37	28.58	1057.50	354.50	0.408
	Sexual health group	22	32.39	712.50		
Spiritual development	Nutrition group	37	29.86	1105.00	402.00	0.937
	Sexual health group	22	30.23	665.00		
Interpersonal relations	Nutrition group	37	29.12	1077.50	374.50	0.609
	Sexual health group	22	31.48	692.50		
Stress management	Nutrition group	37	28.05	1038.00	335.00	0.257
	Sexual health group	22	33.27	732.00		
Scale	Nutrition group	37	27.24	1008.00	305.00	0.110
	Sexual health group	22	34.64	762.00		

Whether there was a significant difference between the HPLP pretest scores of the students in the nutrition education and sexual health education groups was tested by carrying out a non-parametric Mann-Whitney test because the normality assumption was not met. The result is shown above in Table 3. As seen in the descriptive statistics section of the test, the mean rank scores for the sub-dimensions were rather close to each other. There was no significant difference between the students' scores on any of the sub-dimensions of the scale nor on their overall scores (Nutrition Education Group Mean Rank = 27.24 and Sexual Health Education Group Mean Rank = 34.64) [U = 305.00 and  $p > .05$ ]. In other words, based on the HPLP scores, the students in the nutrition education group and those in the sexual health education group were in equivalent groups before they received the nutrition and sexual health education.

#### 4.5. Data Analysis

Distributions of frequencies (n) and percentages (%) were calculated to summarize the demographic characteristics of the preservice teachers. Arithmetic average and standard

deviation values were calculated in order to summarize the students' Health-Promoting Lifestyle Profile (HPLP) pretest and posttest scores. A non-parametric Mann-Whitney test was carried out to examine whether there was a significant difference between the HPLP pretest and posttest scores of the students in the nutrition education and sexual health education groups. A non-parametric Wilcoxon signed-rank test was carried out to examine whether there was a significant difference between the pretest and posttest scores of the students in the nutrition education and sexual health education groups. A non-parametric McNemar matched-pairs test was carried out to examine whether there were significant differences in the students' healthy living and healthy eating perceptions in the nutrition and sexual health education groups after the education.

## 5. Results

This section presents the analyses carried out to identify the effect of the nutrition and sexual health education offered to the preservice science teachers who participated in the study, on their healthy lifestyle behaviors.

Table 4 shows the descriptive statistics on HPLP posttest scores of the students who received the nutrition education and the sexual health education.

**Table 4:** Descriptive statistics for posttest scores

Dimension/Scale	Nutrition Education		Sexual Health Education	
	M	SD	M	SD
Health responsibility	2.77	0.62	2.67	0.53
Physical activity	2.37	0.76	2.36	0.79
Nutrition	2.53	0.54	2.37	0.48
Spiritual development	3.20	0.39	3.17	0.44
Interpersonal relations	3.07	0.49	3.27	0.51
Stress management	2.65	0.50	2.64	0.50
HPLP Scale	2.76	0.47	2.75	0.40

Table 4 shows the posttest scores of the students in the nutrition education and sexual health education groups on the HPLP scale which was administered after the education. Generally speaking, it is seen that the mean scores of the students in the groups were very close to each other on all sub-dimensions and overall scale after the nutrition and sexual health education. There was a minute difference in favor of the mean scores of the students in the nutrition education group on all dimensions and overall scale, except for the interpersonal relations dimension. A non-parametric Mann-Whitney independent-samples test was carried out to examine whether there were significant differences between the scale scores of the students in the nutrition education and sexual health education groups. The results are summarized in Table 5.

**Table 5:** Mann-Whitney test for comparing the posttest scores (N = 59)

Dimension/Scale	Group	Descriptive Statistics			Mann-Whitney U	
		n	Mean Ranks	Sum of Ranks	U	p
Health responsibility	Nutrition Education	37	30.72	1136.50	380.50	0.677
	Sexual Health Education	22	28.80	633.50		
Physical activity	Nutrition Education	37	30.14	1115.00	402.00	0.937
	Sexual Health Education	22	29.77	655.00		
Nutrition	Nutrition Education	37	32.30	1195.00	322.00	0.181
	Sexual Health Education	22	26.14	575.00		
Spiritual development	Nutrition Education	37	30.23	1118.50	398.50	0.893
	Sexual Health Education	22	29.61	651.50		
Interpersonal relations	Nutrition Education	37	27.41	1014.00	311.00	0.131
	Sexual Health Education	22	34.36	756.00		
Stress management	Nutrition Education	37	29.96	1108.50	405.50	0.981
	Sexual Health Education	22	30.07	661.50		
Scale	Nutrition Education	37	29.78	1102.00	399.00	0.900
	Sexual Health Education	22	30.36	668.00		

As can be seen from Table 5, there was no significant difference among the HPLP posttest scores of the students in the nutrition education and sexual health education groups on any of the dimensions, nor on overall scale ( $p > .05$ ). Health responsibility, physical activity, nutrition and spiritual development scores of the students who received the nutrition education were higher than those of the students who received the sexual health education; and interpersonal relations, stress management and overall scale scores of the students who received the sexual health education were higher than those of the students who received the nutrition education. However, these differences were not significant. A Wilcoxon signed-rank test was carried out to examine whether the education received by the students receiving the nutrition education and the sexual health education had an effect on their healthy lifestyle behavior levels (after the implementation) (whether there was a significant difference between the pre-test and post-test scores). The results are presented below.

**Table 6:** Descriptive statistics for the scores of the students receiving the nutrition education

Dimension/Scale	Pretest		Posttest		Posttest-Pretest Difference
	M	SD	M	SD	
Health responsibility	2.35	0.62	2.77	0.62	0.42
Physical activity	2.02	0.66	2.37	0.76	0.35
Nutrition	2.22	0.45	2.53	0.54	0.31
Spiritual development	3.03	0.43	3.20	0.39	0.17
Interpersonal relations	3.02	0.47	3.07	0.49	0.05
Stress management	2.39	0.52	2.65	0.50	0.26
HPLP Scale	2.50	0.43	2.76	0.47	0.26



The HPLP scores of the students receiving the nutrition education calculated before (without nutrition education) and after the implementation are given above, in Table 6. It is seen, according to the table, that there was an increase in the students' mean scores on all sub-dimensions and overall. A review of the differences between the pretest and posttest reveals that the biggest difference was 0.42 and in the health responsibility dimension, and the smallest mean difference was 0.05 and in the interpersonal relations dimension. A Wilcoxon signed-rank test was carried out to examine whether these differences between the pretest and posttest scores of the students were significant. The results are summarized below, in Table 7.

**Table 7:** Wilcoxon test results of the students receiving the nutrition education (N = 37)

Dimension/Scale	Rank	Descriptive Statistics			Wilcoxon Test		Effect (r)
		n	Mean Ranks	Sum of Ranks	Z	p	
Health responsibility	Negative Ranks	6	7.42	44.50	-4.33	0.000***	0.71
	Positive Ranks	28	19.66	550.50			
	Equal	3					
Physical activity	Negative Ranks	3	10.67	32.00	-3.78	0.000***	0.61
	Positive Ranks	24	14.42	346.00			
	Equal	10					
Nutrition	Negative Ranks	8	8.31	66.50	-3.83	0.000***	0.63
	Positive Ranks	25	19.78	494.50			
	Equal	4					
Spiritual development	Negative Ranks	8	14.81	118.50	-2.74	0.006**	0.45
	Positive Ranks	24	17.06	409.50			
	Equal	5					
Interpersonal relations	Negative Ranks	13	18.19	236.50	-0.52	0.605	-
	Positive Ranks	19	15.34	291.50			
	Equal	5					
Stress management	Negative Ranks	8	11.00	88.00	-3.45	0.001**	0.57
	Positive Ranks	25	18.92	473.00			
	Equal	4					
Scale	Negative Ranks	2	15.50	31.00	-4.84	0.000***	0.80
	Positive Ranks	35	19.20	672.00			
	Equal	0					

Table 7 summarizes the results of comparison of the pretest and posttest scores of the students receiving the nutrition education, based on the Wilcoxon signed-rank test. Accordingly, it is seen that there were significant differences in all sub-dimensions and overall scale before and after the nutrition education, except for the interpersonal relations sub-dimension ( $p > 0.05$ ). In case of difference, the extent to which the nutrition education was effective on the students' healthy lifestyle behavior levels was examined by checking the Pearson's correlation coefficient (r). Pearson's r coefficient ranges from 0 to 1.00. The r value points to a small effect of up to 0.10, a moderate effect up to 0.30, a large/high effect up to 0.50 and a very large/high effect when it is above 0.70 (Morgan et al., 2011, p. 101).

An examination of the results reveals that the healthy lifestyle behavior levels of the students in the nutrition education group increased significantly at the posttest after the implementation of the education (excluding the interpersonal relations dimension). When we examined the effects of the nutrition education on the students' healthy lifestyle behavior levels, we found that the highest effect was on the health responsibility ( $r = 0.71$ , 'very high'), nutrition ( $r = 0.63$ , 'high'), physical activity ( $r = 0.61$ , 'high'), stress management ( $r = 0.57$ , 'high'), and spiritual development ( $r = 0.45$ , 'medium') dimensions. The effect of the nutrition education on the students' overall healthy lifestyle behavior levels (on the basis of the scale) was also found to be 'very high' ( $r = 0.80$ ).

A Wilcoxon signed-rank test was carried out to examine whether the education received by the students receiving the sexual health education had an effect on their healthy lifestyle behavior levels (after the implementation) (whether there was a significant difference between pre-test and post-test scores). The results are presented below.

**Table 8:** Descriptive statistics for the scores of the students receiving the sexual health education (N = 22)

Dimension/Scale	Pretest		Posttest		Posttest-Pretest Difference
	M	SD	M	SD	
Based on mean scores					
Health responsibility	2.42	0.54	2.67	0.53	0.25
Physical activity	2.17	0.64	2.36	0.79	0.19
Nutrition	2.30	0.38	2.37	0.48	0.07
Spiritual development	3.02	0.50	3.17	0.44	0.15
Interpersonal relations	3.08	0.43	3.27	0.51	0.19
Stress management	2.51	0.45	2.64	0.50	0.13
HPLP Scale	2.63	0.34	2.75	0.40	0.12

The HPLP scores of the students receiving the sexual health education calculated before and after the implementation are given above, in Table 8. Accordingly, it is seen that there was an increase in the mean scores of the students in all sub-dimensions and overall. A review of the differences between the pretest and posttest reveals that the biggest difference was 0.25 and in the health responsibility dimension, and the smallest mean difference was 0.07 and in the nutrition dimension. A Wilcoxon signed-rank test was carried out to examine whether these differences between the pretest and posttest scores of the students were significant. The results are summarized below, in Table 9.

**Table 9:** Wilcoxon test results for the pretest and posttest scores of the students receiving the sexual health education (N = 22)

Dimension/Scale	Rank	Descriptive Statistics			Wilcoxon Test		Effect (r)
		n	Mean Ranks	Sum of Ranks	Z	p	
Health responsibility	Negative Ranks	6	8.42	50.50	-2.04	0.041*	0.43
	Positive Ranks	14	11.39	159.50			
	Equal	2					
Physical activity	Negative Ranks	10	10.60	106.00	-1.40	0.162	-
	Positive Ranks	7	6.71	47.00			
	Equal	5					
Nutrition	Negative Ranks	6	11.75	70.50	-0.66	0.510	-
	Positive Ranks	12	8.38	100.50			
	Equal	4					
Spiritual development	Negative Ranks	9	9.06	81.50	-1.48	0.139	-
	Positive Ranks	13	13.19	171.50			
	Equal	0					
Interpersonal relations	Negative Ranks	5	7.80	39.00	-1.78	0.075	-
	Positive Ranks	12	9.50	114.00			
	Equal	5					
Stress management	Negative Ranks	10	9.45	94.50	-1.05	0.293	-
	Positive Ranks	12	13.21	158.50			
	Equal	0					
Scale	Negative Ranks	7	10.36	72.50	-1.75	0.080	-
	Positive Ranks	15	12.03	180.50			
	Equal	0					

Table 9 summarizes the results of comparison of the pretest and posttest scores of the students receiving sexual health education, based on the Wilcoxon signed-rank test. Accordingly, it is seen that there was no significant difference in any of the sub-dimensions nor in the overall scale after the sexual health education compared to the state before the education, except for the health responsibility sub-dimension. Accordingly: an increase was found in the health responsibility scores of the students after the sexual health education at the posttest (a positive rank) ( $Z = -2.04$ ,  $p < 0.05$ ). The students' levels of perception of health responsibility increased/were more positive after the implementation of the sexual health education (mean rank posttest = 11.39) compared to those before the education (mean rank pretest = 8.42). It was found that the effect of the sexual health education on the students' perceptions of health responsibility was 'moderate' ( $r = 0.41$ ).

## 6. Discussion, Conclusion and Suggestions

In this study, where the effect of the nutrition and sexual health education on the preservice teachers' healthy lifestyle behaviors was investigated, a pretest-posttest quasi-experimental research design with no control groups was employed. Before the nutrition

and sexual health education, the students in both groups were found to have low levels of healthy lifestyle behaviors. This result of the present study is similar to the results of other research studies where students' healthy lifestyles were found to be low. Students' scores of healthy lifestyle behaviors were moderate in a study conducted by Ertop, Yılmaz and Erdem, (2012) and in another study conducted by Özyazıcıoğlu, Kılıç, Erdem, Yavuz and Afacan (2011).

According to the results on the nutrition education obtained from the present study, it is seen that there were significant differences in all sub-dimensions and overall scale before and after the nutrition education, except for the interpersonal relations sub-dimension. The students' health responsibility, physical activity, nutrition, spiritual development, stress management and overall healthy lifestyle behavior scores were found to increase after the nutrition education at the posttest. In other words, it is understood that the healthy lifestyle behavior levels of the students in the nutrition education group increased significantly at the posttest after the implementation of the education (excluding the interpersonal relations dimension). The effect of the nutrition education on the overall healthy lifestyle behavior levels of the students was also found to be 'very high.'

According to the results on the sexual health education obtained from the study, it is seen that there were no significant differences in any of the sub-dimensions nor in the overall scale after the sexual health education compared to the state before the education, except for the health responsibility sub-dimension. An increase was found in the health responsibility scores of the students after the sexual health education at the posttest.

The literature review showed that the majority of research using the Health-Promoting Lifestyle Profile was descriptive research on teachers (Tokuç & Berberoğlu, 2007), university students (Ertop, Yılmaz & Erdem, 2012), nursing and elementary education students (Kostak, Kurt, Süt, Akarsu & Ergül, 2014), preservice teachers of physical education and sports teacher education (Ararat & Karagün, 2016), students studying in health-related departments (Metek, Nacar, Tekin & Pehlivan, 2017; Ardiç & Taşkın, 2018; Özbaşaran, Çetinkaya, Güngör, 2004; Özyazıcıoğlu, Kılıç, Erdem, Yavuz, Afacan; 2011; Tedik, Hacıoğlu, 2017), and elementary education teachers (Koçak, Öncel, Zincir & Seviğ, 2017; Özkan, 2018). It has been pointed out that most of the research on sexual education is descriptive and has been carried out on students studying in the health department, and that there is a limited number of experimental studies (Koçak, Duman, 2019). Studies have shown that university students do not know enough about sexually transmitted diseases (Siyez, Siyez, 2009; Kaymak et al., 2006; Set, Dağdeviren, Aktürk, 2006).

In a study conducted by Tambağ and Turan (2012), it was stated that the Public Health Nursing course positively affected healthy lifestyle behaviors of students. The effect of health education on students' eating habits and healthy lifestyle behaviors was examined in another study carried out by Özenoğlu, Solo and Uzdil (2018), and the health education was indicated to contribute positively to the acquisition of healthy lifestyle

behaviors. In similar studies carried out by Mertoğlu (2019), Altun (2008) and Yıldırım, Aydın, Hayırsever and Ankaralı (2016), the effect of nutrition education on healthy lifestyles of preservice teachers was researched. However, there have been no studies in the literature to investigate the effect of two different courses – nutrition education and sexual health education – on healthy lifestyles. This study differs from other studies conducted in the literature in terms of the fact that it investigated how nutrition education and sexual health education both affected healthy lifestyles.

Based on the results of the analyses, there was no significant difference between the posttest scores of the students in the nutrition education and sexual health education groups. That is, these courses did not lead to any differences in the HPLP scores of the students. In other words, it can be said that the nutrition education and the sexual education were similarly effective in the healthy lifestyle behaviors of the students. This result of the study was interpreted as the need to reconsider health education in accordance with today's understanding of health, which we can define as biopsychosocial. On the basis of this result obtained from the study, students should be given both nutrition education and sexual health education in order for them to develop healthy lifestyle behaviors. However, these courses are either given electively or are not given at all in the teacher education programs of the Council of Higher Education in Turkey. For example, nutrition education and sexual health education courses are not included in the science education curriculum. At the university where the present research was carried out, these courses were offered electively and by one of the researchers. The importance of nutrition education and sexual health education is indisputable for the upbringing of healthy people. Therefore, it is recommended, based on the results of this study, that these courses be offered compulsorily, not electively, in all disciplines that educate teachers, not only in the science education program.

There were certain limitations of this study: The study is limited to the students taking the nutrition and sexual education courses. Similar research studies can be conducted on preservice teachers who are studying in different departments.

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### **References**

Altun, I. (2008). Effect of a health promotion course on health promoting behaviours of university students. *Eastern Mediterranean Health Journal*, 14(4), 880-887.

- Ararat, Y. & Karagün, E. (2016). Beden eğitimi ve spor öğretmen adaylarının sağlık davranışlarının incelenmesi. *Kocaeli Üniversitesi Sağlık Bilimleri Dergisi*, 2(1), 23-27.
- Ardıç, C. & Taşkın, N. (2018). Tıp fakültesi öğrencilerinde sağlıklı yaşam biçimi davranışlarının değerlendirilmesi/an evaluation of healthy lifestyle behaviors of medical school students. *Bezmialem Science*, 6(3), 191-196.
- Aytekin, F. ve Bulduk, S. (2000). Eğitim Modellerinin Öğrencilere Beslenme Eğitimi Verilmesindeki Etkinliğinin Araştırılması. Trabzon: VIII. Ulusal Eğitim Bilimleri Kongresi Bilimsel Çalışmaları, Karadeniz Teknik Üniversitesi s: 56-61.
- Bahar, Z., Beşer, A., Gördes, N., Ersin, F., & Kıssal, A. (2008). Sağlıklı yaşam biçimi davranışları ölçeği II'nin geçerlik ve güvenilirlik çalışması. *Cumhuriyet Üniversitesi Hemşirelik Yüksekokulu Dergisi*, 12(1), 1-13.
- Baysal, A. (1981). Beslenme Sorunları. *Gıda Dergisi*, 6(5).
- Baltaş, Z. (2000). *Sağlık Psikolojisi*. Ankara: Remzi Kitabevi.
- Bozdemir, N. Özcan, S. (2011). Cinselliğe ve Cinsel Sağlığa Genel Bakış *Turkish Journal Of Family Medicine And Primary Care (Tjfmpe)* Vol. 5, No. 4 [http://www.cukurovaale.org/tjfmpe/2011\\_4/2011\\_4\\_2.pdf](http://www.cukurovaale.org/tjfmpe/2011_4/2011_4_2.pdf)
- Büyüköztürk, Ş., Çakmak, E., Akgün, Ö., Karadeniz, Ş ve Demirel, F. (2018). *Bilimsel Araştırma Yöntemleri* (24. baskı). Ankara: Pegem Akdemi.
- Bilir, N. (2013). Sağlık okur-yazarlığı. *Turk Public Health* 2014;12(1).
- Ertop, N. G. , Yılmaz, A., Erdem, Y. (2012). Üniversite Öğrencilerinin Sağlıklı Yaşam Biçimleri. *KÜ Tıp Fak Dergisi* 14(2).
- Gayef, A. (2019). Healthy Living Behaviors in University Students and Related Factors. *The Anatolian Journal of Family Medicine*, 2(1), 2-6.
- Gölbaşı, Z. (2003). Sağlıklı Gençlik ve Toplum için Bir Adım: Cinsel Sağlık Eğitimi . *Aile ve Toplum*, Yıl: 5 Cilt: 2 Sayı: 6
- Gürsoy, E. Gençalp, N.S. (2010). Cinsel Sağlık Eğitiminin Önemi. *Aile ve Toplum* Yıl: 11 Cilt: 6 Sayı: 23.
- Kalaycı, Ş. (2006). *SPSS Uygulamalı Çok Değişkenli İstatistik Teknikleri* (2. baskı). Ankara: Asil.
- Kaplan, M. (2016). Kültürel Bir İnşa Süreci olarak Sağlık: Kavramsal ve Tarihsel Bir Bakış. *Dört Öge*, (10), 11-18.
- Karagöz, Y. (2016). *SPSS 23 ve AMOS 23 Uygulamalı İstatistiksel Analizler*. Ankara: Nobel.
- Kaymak Y, Açıkel C.H., Göçgeldi E, Güleç M., Şimşek I. (2006). Üniversite öğrencilerinin cinsel yolla bulaşan hastalıklar hakkında bilgi düzeylerinin saptanması. *Türkiye Klinikleri Dermatoloji Dergisi*;16:153-59.
- Koçak, D. Y., & Duman, N. B. (2019). Türkiye’de Hemşirelik Alanında Üreme Sağlığı-Cinsel Sağlık Konularında Yapılmış Olan Tezlerin İçerik Açısından İncelenmesi. *ACU Sağlık Bil Dergisi* 10(2):265-270
- Koçak, H. S., Öncel, S., Zincir, H. & Seviş, E. Ü. (2017). Sınıf öğretmenlerinde tip 2 diyabet riski ve sağlıklı yaşam biçimi davranışlarının belirlenmesi. *Turkish Journal of Public Health*, 15(2), 70-83.

- Kostak, M. A., Kurt, S., Süt, N., Akarsu, Ö. & Ergül, G. D. (2014). Hemşirelik ve sınıf öğretmenliği öğrencilerinin sağlıklı yaşam biçimi davranışları. *Taf Prev Med Bull*, 13(3), 189-96.
- Mertoglu, H. (2019). Effects of Interdisciplinary Nutrition Education on Prospective Science Teachers' Development of Healthy Life Style Behaviours. *Journal of Education and Training Studies*, 7(12), 52-65.
- Mete, B., Nacar, E., Tekin, Ç. & Pehlivan, E. (2017). Tıp fakültesi öğrencilerinde beslenme ve sağlıklı yaşam biçimi davranışları. *Uluslararası Hakemli Beslenme Araştırmaları Dergisi*, Sayı: 09.
- Morgan, G. A, Leech, N. L., Barrett, K. C. & Gloeckner, G. W. (2011). *SPSS For Introductory Statistics: Use and Interpretation* (Fourth Edition). London: Routledge.
- Öksüz, Y. (2016). Cinsel Eğitim. Kurtman Ersanlı, Hatice Kumcağız (Ed.), in Cinsel Sağlık Eğitimi (p 13-45). Pegem Academy
- Özdamar, K. (2002). *Paket Programlar ile İstatistiksel veri Analizi* (Çok Değişkenli Analizler). Eskişehir: Kaan.
- Özbaşaran, F., Çetinkaya, A. Ç. & Güngör, N. (2004). Celal Bayar üniversitesi sağlık yüksekokulu öğrencilerinin sağlık davranışları. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi*, 7(3), 43-55.
- Özkan, A. (2018). *Sınıf öğretmenlerinin ve adaylarının enerji ve besin ögesi alımları (beslenme alışkanlıkları) ile sağlıklı yaşam biçimi davranışlarının ve fiziksel aktivite düzeylerinin belirlenmesi* Master's Thesis, Bartın Üniversitesi, Eğitim Bilimleri Enstitüsü.
- Özenoğlu, A., Yalnız, T., & Uzdil, Z. (2018). Sağlık eğitiminin beslenme alışkanlıkları ve sağlıklı yaşam biçimi davranışları üzerine etkisi. *ACU Sağlık Bilimleri Dergisi*, 9(3), 234-242.
- Özyazıcıoğlu, N., Kılıç, M., Erdem, N., Yavuz, C. & Afacan, S. (2011). Hemşirelik öğrencilerinin sağlıklı yaşam biçimi davranışlarının belirlenmesi. *Uluslararası İnsan Bilimleri Dergisi*, 8(2), 277-332.
- Özkula, G. (2019). Cinsel sağlık içinde *Beslenme ve Sağlık* Ed. Sıdıka Bulduk ve Emre Özgür Bulduk. Ankara: Nobel akademi.
- Set T, Dağdeviren N, Aktürk Z. (2006). Ergenlerde cinsellik Genel Tıp Dergisi 16(3):137-141.
- Siyez D.M, Siyez E. (2009). Üniversite öğrencilerinin cinsel yolla bulaşan hastalıklara ilişkin bilgi düzeylerinin incelenmesi. *Türk Üroloji Dergisi*; 35: 49-55.
- Sönmez, V. & Alacapınar, F. G. (2016). Sosyal bilimlerde ölçme aracı hazırlama. *Ankara: Anı yayıncılık*.
- Tambağ, H., Turan, Z. (2012). Öğrencilerin Sağlıklı Yaşam Biçimi Davranışlarına Halk Sağlığı Hemşireliği Dersi'nin Etkisi, *Turkish Journal of Research & Development in Nursing*, 14(1).
- Tedik, E. & Hacıaloğlu, N. (2017). Hemşirelik öğrencilerinde fazla kilo durumu ve sağlıklı yaşam biçimi davranışları arasındaki ilişkinin incelenmesi. *Uluslararası Hakemli Hemşirelik Araştırmaları Dergisi* Sayı: 10.

- Tokuç, B. & Berberoğlu, U. (2007). Edirne merkez ilçe ilköğretim okullarında çalışan öğretmenlerde sağlığı geliştirici davranışlar. *Tsk Koruyucu Hekimlik Bülteni*, 6(6), 421-426.
- Walker, S. N., Sechrist, K. R., & Pender, N. J. (1987). The Health-Promoting Lifestyle Profile: Development and psychometric characteristics. *Nursing Research*, 36, 76-80. <https://doi.org/10.1097/00006199-198703000-00002>.
- WHO (2006). [https://www.who.int/reproductivehealth/topics/sexual\\_health/sh\\_definitions/en/](https://www.who.int/reproductivehealth/topics/sexual_health/sh_definitions/en/)  
[https://www.who.int/reproductivehealth/topics/sexual\\_health/sh\\_definitions/en/](https://www.who.int/reproductivehealth/topics/sexual_health/sh_definitions/en/)
- Yıldırım, N., Aydın, M., Hayırsever, F. & Ankaralı, H. (2016). Bir hemşirelik lisans programında verilen sağlığı geliştirme dersinin etkinliği. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*, 9(3), 88-92.
- Yılmaz, E. (2016). Bütünsel (Holistik) Tıp <https://www.birikimdergisi.com/guncel-yazilar/7777/butunsel-holistik-tip#.Xj1eX2gzbIU>.



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