Original Article
International Journal of Basic and Clinical Studies (IJBCS)
2015; 4(2): 47-60, Karakoc Kumsar A et al.

The Effect of Cardiovascular Risk Factors Knowledge Level on Healthy Life Style Behaviors and Related Factors in Nursing Students

Azime Karakoc Kumsar[1], Feride Taskin Yilmaz[2], Ozlem Altinbas Akkas[3],

[1]**RN, PhD, Assist. Prof.** Biruni University Faculty of Healthy Science Department of Nursing, Istanbul, Turkey e-mail: azimekkoc@hotmail.com
[2]**RN, PhD, Assist. Prof.** Cumhuriyet University, School of Susehri Health High Department of Nursing, Sivas, Turkey e-mail: feride_taskin@hotmail.com
[3]**Ozlem Altinbas Akkas**, **RN, Lecturer** Duzce University, School of Health High Department of Nursing, Duzce, Turkey e-mail: altinbasakkas@hotmail.com

Abstract

Nurses play a crucial role in health promotion and health protection and therefore it is important for them to have sufficient knowledge about cardiovascular disease risk factors and to adopt healthy life style behaviors starting from university years in order to protect themselves from cardiovascular diseases. The present study was conducted in order to determine the effect of level of knowledge on cardiovascular disease risk factors on healthy life style behaviors and to determine related factors in nursing students.

This descriptive and correlational study was conducted with 393 students. Data was collected using the identification form, the Cardiovascular Disease Risk Factors Knowledge Level Scale, and the Healthy Life Style Behaviors Scale – II. In statistical analysis, percentiles, t-test, analysis of variance, the Kruskall Wallis test, and the Pearson correlation analysis were used.

It was determined that students' cardiovascular disease risk factors knowledge level was above average, that their healthy life style behaviors were at medium levels, and that healthy life style behaviors increased with cardiovascular disease risk factors knowledge level.

It was found that students healthy life style behaviors improved as their cardiovascular disease risk factors level increased and that students whose cardiovascular disease risk factors level was higher than medium levels showed satisfactory improvements in healthy life style behaviors.

Keywords: Nursing student, cardiovascular disease, risk factors, knowledge, healthy life style behavior.

Correspondence to: Azime Karakoc Kumsar, 10. Yıl Cd. No: 45 Topkapı-Istanbul/TURKEY, Gsm: +90(533) 6994603, e-mail: akumsar@biruni.edu.tr

Introduction

Healthy life style behaviors are defined as behaviors that serve protecting and promoting one's well-being. These behaviors include maintaining a sufficient and balanced diet, stress management, regular physical activity, effective spiritual development, positive interpersonal relationships, and taking responsibility in protecting and promoting one's own health status (1).

In order to constitute a healthy population, healthy life style behaviors should be adopted in terms of preventing controllable diseases. Nursing students, who will participate in the provision of health services and will continuously interact with patients, are expected to adopt healthy life style behaviors starting from university years, to understand the importance of health promotion, to be a model for the society, and to guide people who are healthy/ill/under risk (2).

In the literature, there are no studies that investigate the effect of cardiovascular disease risk factors knowledge level on healthy life style behaviors in nursing students. Nursing students' cardiovascular disease risk factors knowledge level may affect disease awareness and attitudes. This phenomena would contribute to nursing students being a role model for the society regarding health protection and health promotion as well as to their individual behaviors through the adoption of healthy life style behaviors. In addition, determination of nursing students' cardiovascular disease risk factors knowledge level and their healthy life style behaviors would provide information for evaluating nursing curricula and for identifying shortcomings in this field.

Background

Cardiovascular diseases (CVD) are defined as conditions affecting the heart and the vascular system due to atherosclerosis. CVD, which is among the most important health problems throughout the world and in our country, is the leading cause of mortality and morbidity according to the WHO 2015 data (3). In the 2009 report of the Cardiac Diseases and Risk Factors in Turkish Adults study, which involved the years 1990 to 2008, it was determined that the ratio of deaths related to coronary artery disease (CAD) in 1000 men aged between 45-74 years was 7.64, while this rate was 3.84 in women. These ratios are the highest among 30 European countries (4).

Cardiovascular diseases risk factors are examined under two categories: modifiable and unmodifiable risk factors. Race, age, gender and family history are among unmodifiable risk factors; while hypertension, diabetes, hyperlipidemia, smoking-alcohol consumption, and obesity are regarded as modifiable risk factors (5). An abundance of studies indicated that early interventions aimed at modifiable risk factors may prevent or slow the progress CVD (6,7,8).

Prevention of disease development through life style changes which bring risk factors under control in people without signs and symptoms of CVD constitute primary protection (9); while interventions for preventing disease progress in people diagnosed with CVD constitute secondary protection (10). Nurses are among the health professionals who play an important role in health protection and health promotion and it is important for them to have sufficient knowledge about CVD risk factors and to guide individuals in adopting healthy life style behaviors in order to provide CVD protection (11).

Methods

Aim and type of the study

This descriptive and correlational study was conducted in order to determine

cardiovascular disease risk factors knowledge level, the effect of cardiovascular disease risk factors knowledge level on healthy life style habits, and factors related to healthy life style behaviors in nursing students.

Study population and sample

Study universe consisted of 422 students who were studying at the Duzce University Health High School Department of Nursing between January, 15th and February, 15th of the year 2015. A sample was not drawn and it was aimed to reach the entire universe during the pre-determined time period. Thus, 393 students who agreed to participate in the study and who completed the data collection forms were included in the sample.

Data collection tools

Data was collected using the sociodemographic question form and two scales.

Sociodemographic question form: This form was prepared by the researchers and included 15 questions about characteristics related to sociodemographic and cardiovascular risk factors such as age, gender, place of residence, presence of health problems, smoking and alcohol consumption, and sudden death in first degree relatives.

Cardiovascular disease risk factors knowledge level (CARRF-KL) scale: The scale was developed by Arikan et al. (2009) and was tested for validity and reliability (12). First 4 items of the scale, which includes a total of 28 items, investigates CVD features, CVD prevention, and the age factor; while 15 items investigate risk factors and 9 items examine the results of changing risky behaviors. Items are presented as sentences that can either be true or false and the participants are expected to respond to these items by selecting "yes", "no", or "I do not know". Correct responses receive 1 point and 6 questions are reverse scored. The highest score that can be obtained from the scale is 28. Knowledge level increases as the score increases. Arikan et al. found the Cronbach alpha value of the scale to be 0.76. In the present study, the Cronbach alpha value of the scale was 0.88.

Healthy life style behaviors scale II (HLSBS-II): The scale was developed by Walker et al. in 1996 and was translated into Turkish and was tested for validity and reliability by Bahar et al. in 2008 (13). The scale consists of 52 items and 6 subscalas, which include health responsibility, physical activity, diet, spiritual development, interpersonal relationships and stress management. It is scored on a 1 to 4 Likert scale: "never - 1", "sometimes - 2", "often - 3", and "regularly - 4". The lowest score that can be obtained from the scale is 52, while the highest score is 208. Higher scores indicate that healthy life style behaviors are at a satisfactory level. Bahar et al. determined the Cronbach alpha value of the scale to be 0.92. In the present study, the Cronbach alpha value of the scale was found to be 0.90.

Application

Data was collected via face-to-face interviews within a specific time period in order to avoid interruption of courses. The researchers provided information to the students about the objective and

importance of the study. Students who agreed to participate in the study individually filled out the data collection forms, which took approximately 20-25 minutes.

Data collection

Data was analyzed using the SPSS 14.00 software. Data was grouped according to mean values and standard deviations and was presented in percentage distributions. In order to determine differences between groups, the independent samples t-test, analysis of variance and the Kruskall Wallis test were used. The relationships between scale scores were analyzed using the Pearson correlation analysis. Finally, p values lower than 0.05 were accepted to be statistically significant.

Ethic Approval

Prior to data collection, written permission from the Clinical Research Ethics Committee of a university was obtained (Decision number: 31/14-2013) and permission to conduct the study was taken from the institution were the study took place. Written consent was taken from the participating students.

Results

Mean age of the students was 20.60 ± 1.87. Among the students, 84.1% were female, almost all of them were single (98.7%), 62.3% stayed at a dormitory, and 48.8% were in first grade. It was determined that 14% of the students had a chronic disease, 7.4% regularly used medications, 9.2% were currently smoking, and 6.6% displayed social drinking. It was found that 75.6% of the students were of normal weight and had a mean waist circumference of 75.48 ± 10.48 cm. Cardiovascular risk factors in the first degree relatives of the students were examined and it was determined that 31.8% reported presence of male relatives diagnosed with cardiac disease, hypertension, and diabetes; 32.8% reported presence of male relatives diagnosed with cardiac disease, hypertension, and diabetes; 11.2% reported sudden death in male relatives before the age of 55; 7.6% reported sudden death in female relatives before the age of 65 and 22.9% reported to have a first degree relative with obesity.

Table 1. The distribution of mean CARRF-KL scores and mean total HLSBS-II score and subscalas scores (n = 393)

Scalas	Range of obtainable scores (Min-Max)	Range of scores obtained (Min-Max)	Mean ± SD	n (%)
CARRF-KL Scala	0-28	0-28	19.08 ± 6.05	393 (100)
CARRF-KL Grouping				
≤14 score				96 (24.4)
15 score ≤				297 (75.6)
HLSBS -II	52-208	85 - 192	136.48±17.90	
Health responsibility	9-36	10 - 36	23.04±4.47	
Physical activity	8-32	8 - 31	18.06±4.54	
Diet	9-36	11 - 35	21.48±3.90	
Spiritual development	9-36	14 - 36	27.01±4.51	
Interpersonal relationships	9-36	15 - 36	26.36±4.01	
Stress management	8-32	11 - 31	20.48±3.38	

Table 1 shows the distribution of mean CARRF-KL scores and of mean total HLSBS-II score and subscala scores. Mean CARRF-KL score was found to be 19.08 ± 6.05, while 24.4% of the students had a score lower than the mean score (≤14). These findings indicate that one fourth of the students do not have a sufficient cardiovascular disease risk factors knowledge level. Mean total HLSBS-II score of the students was found to be at a medium level (136.48±17.90). The highest score was obtained from the spiritual development subscala (27.01±4.51), while the lowest score was obtained from the physical activity subscala (18.06±4.54). This finding indicates that the physical activity level of the students is insufficient.

Mean CARRF-KL scores were compared according to sociodemographic characteristics and CARRF-KL scores were significantly associated with grade, age, BMI, waist circumference, and diagnosed cardiac disease, hypertension, and diabetes in first degree female relatives ($p<0.01$). CARRF-KL scores were not significantly associated with place of residence, presence of a chronic disease, and diagnosed cardiac disease, hypertension, and diabetes in first degree male relatives ($p>0.05$). It was determined that students who were in second grade, who were obese, who had a waist circumference of 70-79 cm, and who had a first degree female relative diagnosed with cardiac disease, hypertension, and diabetes had higher cardiovascular disease risk factors knowledge levels.

Mean HLSBS-II subscala scores were compared according to sociodemographic characteristics. It was found that the mean health responsibility scores of students who were in fourth grade and who had first degree female relatives diagnosed with cardiac disease, hypertension, and diabetes were higher; the mean spiritual development scores of students who were in second grade and who had a waist circumference of 70-79 cm were higher; the mean interpersonal relationships scores of students who were in second grade, who lived with their families, who had a waist circumference of 70-79 cm, and who had first degree male relatives diagnosed with cardiac disease, hypertension, and diabetes were higher; the mean stress management score of students who did not have a chronic disease was higher and that these differences were statistically significant ($p<0.01$ and $p<0.05$) (Table 2). Mean CARRF-KL and HLSBS-II total scores of the students did not show significant differences according to gender, smoking status, presence of sudden death in first degree male relatives before the age of 55, and presence of sudden death in first degree female relatives before the age of 65 ($p>0.05$).

Table 2. Comparison of CARRF-KL and HLSBS-II scores according to students' sociodemographic characteristics

Sociodemographic characteristics		CARRF-KL Scala	HLSBS-II						
			General	Health responsibility	Physical activity	Diet	Spiritual development	Interpersonal relationships	Stress management
	n (%)	X RTİ İBsalcerisi± SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS	X RTİ İBsalcerisi±SS
Grade									
1	192 (48.8)	18.70±5.73	136.83±17.77	22.28±4.35	18.16±4.60	21.14±3.93	27.60±4.30	26.71±3.77	20.8 ±3.41
2	85 (21.6)	23.01±3.06	138.82±15.85	23.50±4.43	17.71±4.51	22.08±3.46	27.78±3.99	27.54±3.31	20.18±2.88
3	47 (12.0)	16.34±7.08	132.49±20.04	23.27±4.60	17.36±4.52	20.85±4.25	25.97±5.27	24.80±4.59	20.21±3.46
4	69 (17.6)	17.17±6.68	135.33±18.95	24.43±4.40	18.68±4.42	22.13±3.97	25.10±4.57	25.00±4.38	19.98±3.75
F		20.297	1.386	4.526	0.991	2.208	7.197	8.391	1.602
P		0.000**	0.247	0.004**	0.397	0.087	0.000**	0.000**	0.189
Age									
≤ 20	8 (7)	19.81±5.49	137.24±17.33	22.50±4.38	18.00±4.58	21.49±3.84	27.60±4.22	26.94±3.70	20.64±3.29
≥ 21	10 (8.8)	18.00±6.68	135.37±18.76	23.84±4.50	18.16±4.51	21.48±4.01	26.11±4.80	25.50±4.30	20.24±3.52
T		2.920	1.016	-2.953	-0.342	0.021	3.237	3.539	1.136
P		0.004**	0.310	0.003**	0.733	0.983	0.001**	0.000**	0.256
Place of residence									
Family home	52 (13.2)	20.34±5.59	137.40±18.93	24.15±4.99	17.36±4.46	21.01±3.61	27.09±5.41	26.90±4.41	20.86±3.46
With friends	96 (24.4)	17.98±5.97	133.33±18.60	22.66±4.43	17.96±5.13	21.25±3.74	26.34±4.17	25.31±4.02	19.79±3.25
Dormitory	245 (62.4)	19.24 ±6.13	137.52±17.32	22.95±4.34	18.24±4.31	21.67 ± 4.06	27.25 ± 4.42	26.66 ± 3.85	20.67 ± 3.39
F		2.811	1.970	1.998	0.828	0.841	1.411	4.522	2.737
P		0.061	0.141	0.137	0.438	0.432	0.245	0.011*	0.066
Chronic disease									
Yes	55 (14.0)	18.69±6.33	134.24±17.31	23.60 ± 5.23	17.07±3.79	20.90±3.46	26.63±4.55	26.43±4.28	19.58±2.62
No	338 (86.0)	19.14±6.01	136.84±18.00	22.954.33	18.22±4.64	21.57±3.96	27.07±4.51	26.35±3.97	20.62±3.47
T		-0.519	-1.001	0.991	-1.743	-1.182	-0.661	0.144	-2.136
P		0.604	0.318	0.322	0.082	0.238	0.509	0.885	0.033*
Body Mass Index (kg/m²)									
<18.5	46 (11.5)	18.85±3.97	136.47±17.74	23.06±3.92	19.31±4.24	22.00±3.86	27.10±4.75	26.29±3.74	20.37±3.31
18.5 - 24.9	289 (75.6)	20.41±4.57	138.56±15.92	23. 90±4.52	17.84±4.69	21.46±4.01	27.09±4.41	26.51±3.95	20.48±3.32
25 - 29.9	36 (9.4)	22.54±2.29	133.49±21.05	22.39±5.02	17.89±3.57	20.63±3.22	25.92±5.39	25.28±4.84	19.92±3.93
≥30	22 (5.5)	25.66±0.57	135.33±18.26	23.90±3.23	18.90± 4.39	22.63±2.61	28.18±2.31	26.36±3.50	22.90±2.70
KW		15.856	1.407	0.415	1.581	1.206	1.022	1.052	2.269
P		0.001**	0.269	0.742	0.194	0.307	0.383	0.370	0.080
Waist circumference (cm)									
<70	110 (28.0	19.20 ± 6.33	136.75 ± 16.99	23.24±4.26 42.10 ±	17.68±4.48	21.49±4.07	27.25 ± 4.14	26.34±3.86	20.73 ± 3.15
70-79	152 (38.7)	20.09±5.30	137.97 ± 17.86	23.09±4.50	17.94±4.42	21.69±3.86	27.71±4.40	27.00±3.81	20.45 ± 3.60
80≤	131 (33.3)	17.80±6.43	134.52 ± 18.63	22.82±4.61	18.51±4.73	21.24±3.82	25.99±4.78	25.64±4.25	20.29 ± 3.32
F		5.141	1.326	0.277	1.101	0.459	5.434	4.103	0.507
P		0.006**	0.267	0.758	0.333	0.632	0.005**	0.017*	0.603
Diagnosed cardiac disease, hypertension, and diabetes in first degree male relatives									
Var	125 (31.8)	17.37±6.97	139.96±17.53	23.44±4.62	17.64±4.55	21.64±3.78	27.42±4.41	27.20±3.93	20.59±3.22
Yok	268 (68.2)	19.26±5.95	135.75±18.07	22.85±4.39	18.26±4.53	21.40±3.96	26.80±4.56	25.95±3.99	20.42±3.46
T		-1.766	1.150	1.228	-1.274	0.558	1.278	2.949	0.469
P		0.078	0.251	0.220	0.203	0.577	0.202	0.003**	0.639
Diagnosed cardiac disease, hypertension, and diabetes in first degree female relatives									
Var	129 (32.8)	20.79±4.99	137.98±19.11	24.02±4.94	17.93±4.69	21.74±4.18	26.93±4.81	26.78 ±4.11	20.56±3.38
Yok	264 (67.2)	18.24±6.35	135.78±17.30	22.58±4.16	18.11±4.48	21.36±3.77	27.04±4.37	26.17±3.95	20.44±3.39
T		3.999	1.134	2.992	-0.372	0.894	-0.222	1.366	0.343
P		0.000**	0.257	0.003**	0.710	0.372	0.824	0.173	0.732

*p<0.05 **p<0.01

Table 3 shows correlations between mean CARRF-KL score, mean HLSBS-II total score, and mean HLSBS-II subscala scores. There were positive and significant correlations between the CARRF-KL score and the HLSBS-II total score (r=.021, p<0.05), the spiritual development score (r=.000, p<0.01) and the interpersonal relationships score (r=.000, p<0.01).

Table 3. The relationship between students' mean CARRF-KL and HLSBS-II scores

Scalas/ Subscalas	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CARRF-KL	-							
HLSBS-II General	.021*	-						
Health responsibility	.451	.000**	-					
Physical activity	.065	.000**	.000**	-				
Diet	.334	.000**	.000**	.000**	-			
Spiritual development	.000**	.000**	.000**	.000**	.000**	-		
Interpersonal	.000**	.000**	.000**	.017*	.000**	.000**	-	
Stress management	.444	.000**	.000**	.000**	.000**	.000**	.000**	-
Table key: 1. CARRF-KL scala, 2. HLSBS-II General, 3.Health responsibility, 4.Physical activity, 5. Diet, 6. Spiritual development, 7. Interpersonal relationships, 8. Stress management								

*p<0.05 **p<0.01

Table 4. Comparison of mean HLSBS-II and CARRF-KL total and mean HLSBS-II subscala scores

CARRF-KL Scala					
≤14 score (n=96, %24.4)			*15 score ≤ (n=297, %75.6)*		
HLSBS-II	**M**	**SD**	**M**	**SD**	**F / p value**
General	133.71	17.10	137.38	18.09	3.055 / 0.081
Health responsibility	23.32	4.18	22.95	4.56	0.487 / 0.486
Physical activity	18.53	4.19	17.90	4.65	1.360/ 0.244
Diet	21.23	3.66	21.56	3.98	0.505 / 0.478
Spiritual development	25.26	4.55	27.47	4.41	13.463 /**0.000***
Interpersonal relationships	24.82	4.26	26.86	3.80	19.639 / **0.000***
Stress management	20.22	3.98	20.56	3.38	0.709 / 0.400

*p<0.01

Table 4 shows the comparison of HLSBS-II total and subscala scores according to students' CARRF-KL scores that are higher or lower than the mean value. Students who had a CARRF-KL score higher than the mean CARRF-KL score obtained higher spiritual development and interpersonal relationships subscala scores compared to students who had a CARRF-KL score lower than the mean score ($F=13.463$ and $F=19.639$, $p<0.01$). There were no significant differences in other subscalas of the HLSBS-II ($p>0.05$).

Discussion

Topics such as improving the cardiovascular disease risk factors knowledge level and bringing these risk factors under control are of top priority in the fight against CVD which is an important cause of mortality and morbidity throughout the world and in turkey (8). During the recent years, planning education programs that provide the basis for briefing the population on cardiovascular risk factors, evaluating the effectiveness of such programs, and to evaluate people's level of knowledge in order to monitor the population for cardiovascular risk factors have become more important in our country (12). In the present study, it was determined that the students had a cardiovascular disease risk factors knowledge level above medium values, while one fourth of the students had a level of knowledge below medium levels. It was found that students who were in second grade, who were obese, who had a waist circumference of 70-79 cm, and who had a first degree female relative diagnosed with cardiac disease, hypertension, and diabetes had higher cardiovascular disease risk factors knowledge levels. In a study conducted with students who studied at the Faculty of Health Sciences, nursing students' cardiovascular disease risk factors knowledge level was found to be similar to the finding of the present study (17.64±3.33); while students who were in fourth grade and who had a familial history of cardiac disease had higher cardiovascular disease risk factors knowledge levels (14). In the present study, it was determined that students who were in second grade had a higher cardiovascular disease risk factors knowledge level. This finding can be associated with the fact that the students learned about CVD in detail during the Internal Disease Nursing course in second grade and that they actively participated in the treatment and care of people diagnosed with CVD during clinical practice, resulting in having newly learned knowledge on the topic.

Unmodifiable factors such as genetics and age and modifiable factors including unhealthy life styles and the social environment provide a basis for CVD. The most important factor in population based protection is life style habits because life style and behavior modification is a cheap and effective intervention (12). In the present study, it was found that the healthy life style behaviors of the students were at medium levels. This finding is consistent with

numerous study findings pertaining to nursing students (1,15,16,17). In other studies conducted with nursing students in 4-year programs, similar results were obtained (18,19,20,21,22,23). On the other hand, some studies found lower levels of healthy life style behaviors in students compared to the findings of the present study (24,25). The findings are parallel with the literature and they can be explained by factors such as not being able to adopt healthy life style behaviors in early years due to the family environment and cultural characteristics. In studies that investigate the healthy life style behaviors of nurses, it was reported that healthy life style behaviors were at medium levels (26,27) ya da daha düşük düzeyde olduğu saptanmıştır (28).

Having positive health behaviors is associated with individuals' HLSBS total and subscala scores (15). In the present study, students obtained the highest score from the spiritual development subscala of healthy life style behaviors, while they obtained the lowest score from the physical activity subscala. Other studies conducted in turkey yielded similar results (18,26,29). In a study conducted with Canadian and Jordanian nursing students, it was found that the health responsibility subscala ranked last (30). In a study conducted with nursing students in the US, highest scores were obtained from the interpersonal relationships subscala, while the lowest scores were obtained from the health responsibility subscala (31). Studies carried out in Kuwait reported that people scored highest on the interpersonal relationships subscala and scored lowest on the physical activity subscale (17,24,32). Other studies also found that people score lowest on the physical activity subscala (16,33). These findings indicate that students' physical activity levels are low. Lack of physical activity in students may be due to spending most of their time at school, to the length of time spared for mobile device/computer use, television habits, and insufficiency of sports fields.

In the literature, the effect of educational level on engaging in healthy behaviors has been stressed out (2,16,24,29). In the present study, healthy life style behaviors did not show significant differences according to students' grade, however students in fourth grade had higher health responsibility. In other studies, it was indicated that mean health responsibility scores of students in third and fourth grade were higher compared to students in first and second grade (16,18,34). In a study which followed 57 nursing students between the beginning and end of nursing education, it was found that healthy life style behaviors improved (121.63±14.93 in the beginning, 140.15±15.88 in graduation) with time (29). In two studies conducted in Taiwan, it was determined students' health promoting behaviors improved as the duration of education increased (35,36). In a longitudinal study, it was reported that nursing students significantly improved some health behaviors during university education (37). The finding of the present study is not consistent with the literature and this can be explained by the fact that students failed to transfer their knowledge to their life styles at satisfactory levels.

In the present study, it was determined that students who were 21 years and older had better health responsibility scores, whereas students who were 20 years and younger had better spiritual development and interpersonal relationships scores. Other studies conducted with nursing students also indicated that healthy life style behaviors increased with age (1,17,22).

In the study, it was found that students who stayed at a dormitory had higher healthy life style behaviors compared to students who live with their families or friends at home; however, this difference was not statistically significant and students who live with their families at home had higher interpersonal relationships scores. In another study conducted with nursing students, it was reported that students who stayed at a dormitory had higher healthy life style behaviors but this difference between students who stayed at a dormitory and students who live with their families or friends at home was not statistically significant (15). In other studies, it was found that students who live with their families at home had better healthy life style behaviors (1,26). The finding of the present study can be explained by the fact that students who live with their families at home receive support from their families in terms of meeting their basic needs involving eating an adequate and balanced diet, social support, and stress management. Students who stay at a dormitory may engage in longer periods of physical activity for meeting one's own needs, shopping, and using transportation.

One of the factors that affect the acquisition of healthy life style behaviors involves perceiving illness as a threat. Regardless of literature findings, it was found that students with a chronic disease had lower healthy life style behaviors than students without a chronic disease and that these students' stress management level was not satisfactory. In other studies, it was also reported that students with a chronic disease had lower healthy life style behaviors (1,23). Finding of the present study shows that students with a chronic disease did not care for their health status, which suggests that these students are not well informed about their chronic condition or that they do not place importance on their condition.

Undergraduate nursing education is important for raising nurses who will play an active role in bringing the modifiable risk factors of chronic diseases under control and in health promotion. Nurses are expected to be responsible for the health education of patients at clinics and the population; therefore, it is important for nurses to be role models for the society by combining their professional responsibilities with their life styles (15). In the present study, it was determined that students' healthy life style behaviors improved as cardiovascular disease risk factors knowledge levels increased. In addition, it was found that students whose cardiovascular disease risk factors knowledge level was higher than the mean value obtained better scores from the spiritual development and interpersonal relatinships subscala compared to students whose cardiovascular disease risk factors

knowledge level was lower than the mean value. It is established that in diseases such as CVD with well-known modifiable risk factors, interventions aimed at risk factors delay disease development and progress and decrease absolute risk in both sexes (6). For this purpose, providing knowledge about healthy life style behaviors and promoting such behavioral habits among healthy youths and health personnel may be an important step in establishing a "healthy population" (38).

Conclusion

It was determined that nursing students, who are expected to be pioneers of health promotion and health protection, had a cardiovascular disease risk factors level higher than medium levels and had medium levels of healthy life style behaviors. In addition, it was found that students' healthy life style behaviors improved as their cardiovascular disease risk factors level increased and that students whose cardiovascular disease risk factors level was higher than medium levels showed satisfactory improvements in healthy life style behaviors. It was shown that cardiovascular disease risk factors level and various subscalas of healthy life style behaviors were affected by age, grade, and the presence of a first degree female relative diagnosed with cardiac disease, hypertension and diabetes. Accordingly, the following are suggested:

- To place importance on relevant course content during each academic year in order to decrease morbidity and mortality rates associated with CVD,
- To conduct regular assessments of cardiovascular disease risk factors level and healthy life style behaviors during vocational education, to determine topics in which students have insufficient knowledge, and to carry out activities such as symposium or conferences,
- To provide opportunities for students regarding professional and social responsibilities such as risk screening in healthy/ill individuals, early diagnosis, health education, and individual counseling,
- To provide courses/elective courses which comprehensively include topics such as health promotion and improvement of healthy life style behaviors within the curriculum,
- To support students' participation in relevant scientific activities in order to increase the awareness levels of students who have a first degree relative under risk for cardiac disease,
- To constitute appropriate areas in environments populated by students and to arrange encouraging activities in order to increase the level of physical activity,
- To conduct intervention studies that aim to improve cardiovascular disease risk factors level and healthy life style behaviors with larger samples.

References

1. Aksoy T, Ucar H. Healthy lifestyle behaviors of nursing students. Journal of Hacettepe University Faculty of Nursing 2014;53-67.
2. Aciksoz S, Uzun Ş, Arslan F. Relationship between perceptions of health status and health promotion behaviors in nursing students. Gulhane Medical Journal 2013;55: 181-187.
3. http://www.who.int/mediacentre/factsheets/fs317/en/index.html, Erişim tarihi: 13.05.2015
4. Onat A, Ugur M, Tuncer M, et al. Age at death in the Turkish adult risk factor study: Temporal trend and regional distribution at 56,700 person-years' follow-up. Türk Kardiyol Dern Arş 2009;37:155-160.
5. Abacı A. The current status of cardiovascular risk factors in Turkey. Arch Turk Soc Cardiol 2011;39(4):1-5.
6. Ayraler A, Akan H, Kapsar EC, et al. Compliance of patients admitted to a cardiology outpatient clinic to recommendations of life-style changes related with cardiac risk factors. JAREM 2012;2:59-63.
7. Murray J, Honey S, Hill K, Craigs C, House A. Individual influences on lifestyle change to reduce vascular risk: a qualitative literature review. Br J Gen Pract 2012;62: 403-410.
8. Tan M, Dayapoglu N, Sahin ZA, Curcani M, Polat H. Determining cardiovascular disease risk factors knowledge level of women living in rural area. Gümüşhane University Journal of Health Sciences 2013;2(3):331-341.
9. Turkmen E, Guven GS. Principles of primary prevention of cardiovascular diseases. Hacettepe Medical Journal 2010;41:179-185.
10. Turkmen E, Badir A, Ergun A. Coronary artery diseases risk factors: role of nurses on primary and secondary prevention. Acibadem University Journal of Health Sciences 2012;3(4):223-231.
11. Wood DA, Kotseva K, Connolly S, et al. Nurse – coordinated multidisciplinary, family – based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: A paired, cluster – randomised controlled trial. Lancet 2008; 371:1999-2012.
12. Arikan G, Metintas S, Kalyoncu C, Yıldız Z. The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale: A validity and reliability study. Arch Turk Soc Cardiol 2009;37(1):35-40.
13. Bahar Z, Beşer A, Gördes N, Ersin F, Kısal A. Healthy Life Style Behavior Scale II: A reliability and validity study. Cumhuriyet University Journal of Nursing School 2008;12:1-13.
14. Gurdogan EP, Kurt S, Unsar S. The knowledge about cardiovascular risk factors among students in a faculty of health sciences. Euras J Fam Med 2014;3(2):79-84.
15. Yilmazel G, Cetinkaya F, Nacar M. Health Promoting Behaviors in Nursing Students. TAF Preventive Medicine Bulletin 2013;12(3):261-270.

16. Ayaz S, Tezcan S, Akinci F. Health promotion behavior of nursing school students. Cumhuriyet University Journal of Nursing School 2005;9:26-34.
17. Al-Kandari F, Vidal VL. Correlation of the health-promoting lifestyle, enrollment level and academic performance of college of nursing students in Kuwait. Nursing and Health Science 2007;9:112-119.
18. Cihangiroglu Z, Deveci SE. Healthy life style behaviours and related influencing factors of the students of Elazig High School of Health Sciences of Fırat University. Fırat Medical Journal 2011;16(2):78-83.
19. Curcani M, Tan M, Ozdelikara A. Healthy life style behaviours of the nurses and the determination of affecting factors. TAF Preventive Medicine Bulletin 2010;9(5):487-492.
20. Ilhan N, Batmaz M, Akhan LU. Healthy lifestyle behaviors of university students. Maltepe University Journal of Nursing Science and Art 2010;3:34-43.
21. Celik Oyur G, Malak AT, Bektas M, Yilmaz D, Sami Yumer A. Examination of factors affecting health school student's health promotion behavior. Anatol J Clin Investig 2009;3:164-169.
22. Kocaakman M, Aksoy G, Eker HH. Healthy life style behavior of the students at the nursing college in Istanbul. SDU Journal of Medicine 2010;17(2):19-24.
23. Zaybak A, Fadiloglu C. Determining the health improvement behavior and associated factors in university students. Ege University Journal of Nursing School 2004;20(1):77-95.
24. Hui WH. The health-promoting lifestyles of undergraduate nurses in Hong Kong. Journal of Professional Nursing 2002;18(2):101-111.
25. Ertop NG, Yılmaz A, Erdem Y. Healthy Lifestyle of University Students. KÜ Journal of Medicine 2012;14(2):1-7.
26. Hacihasanoglu R, Yildirim A, Karakurt P, Saglam R. Healthy lifestyle behaviour in university students and influential factors in eastern Turkey. International Journal of Nursing Practice 2011;17:43-51.
27. McElligott D, Siemers S, Thomas L, Kohn N. Health promotion in nurses: Is there a healthy nurse in the house? Appl Nurs Res 2009;22(3):211-215.
28. Altay B, Cavusoglu F, Gunestas I. Healthy Lıfe Style Behaviours And Influencıng Factors Of Nurses Who Work At The University Hospital. DEUHFED 2015;8(1):12-18.
29. Alpar S, Senturan L, Karabacak U, Sabuncu N. Change in the health promoting lifestyle behaviour of Turkish University nursing students from beginning to end of nurse training. Nurse Education in Practice 2008;8:382-388.
30. Haddad L, Kane D, Rajacich D, Cameron S, Al-Ma'aitah R. A comparison of health practices of Canadian and Jordanian nursing students. Public Health Nursing 2003:21(1):85-90.
31. Stark MA, Manning-Walsh J, Vliem S. Caring for self while learning to care for others: A challenge for nursing students. Journal of Nursing Education 2005;44(6):266-270.
32. Al-Kandari F, Vidal VL, Thomas D. Health promoting lifestyle and body

mass index among college of nursing students in Kuwait: A correlational study. Nurs Health Sci 2008;10:43-50.
33. Ozyazıcıoglu N, Kılıc M, Erdem N, Yavuz C, Afacan S. Determinants of nursing students' healthy life style. International Journal of Human Sciences 2011;8(2):277-332.
34. Can G, Ozdilli K, Erol O. et al. Comparison of the health promoting lifestyles of nursing and non-nursing students in Istanbul, Turkey. Nurs Health Sci 2008;10:273-280.
35. Hsiao YC, Chen MY, Gau YM, Hung LL, Chang SH, Tsai HM. Short-term effects of a health promotion course for Taiwanese nursing students. Public Health Nursing 2005;22(1):74-81.
36. Yeh L, Chen CH, Wang CJ, Wen MJ, Fetzer S. A preliminary study of a healthy-lifestyle-promoting program for nursing students in Taiwan. Journal of Nursing Education 2006;44(12):563-566.
37. Clement M, Jankowski LW, Bouchard L, Perreault M, Lepage Y. Health behaviors of nursing students: A longitudinal study. Journal of Nursing Education 2001;6(41):257-265.
38. Yalçınkaya M, Özer FG, Karamanoğlu AY. Evaluation of Healthy Lifestyle Behaviors in Health Care Workers. TSK Preventive Medicine Bulletin 2007;6(6):409-420.