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Evaluation of healthy lifestyle behaviors and the level of knowledge of cardiovascular risk factors of individuals 60 years old and older with a chronic disease

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
D Data Interpretation
E Manuscript Preparation
F Literature Search
G Funds Collection

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abstract

Background: This study aimed to evaluate healthy lifestyle behaviors and levels of knowledge of cardiovascular risk factors of individuals with chronic diseases aged 60 and over.

Material and methods: The study was conducted with 362 participants over the age of 60 (female 67.12 ± 5.11 and male 69.38 ± 5.51). The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale and the Healthy Lifestyle Behaviors Scale II (HLBS II) were used in the study.

Results: The total mean scores of the participants in CARRF-KL and HLBS II were 16.99 ± 4.69 and 105.17 ± 22.88, respectively. The mean scores of the spiritual development sub-dimensions of HLBS II were the highest, and the mean scores of the physical activity sub-dimensions were the lowest. There was a significant difference ($p < 0.05$; $^{**}p < 0.01$) in CARRF-KL and HLBS II total scores and other sub-dimensions according to gender, marital status, smoking, education, income and chronic disease status. A positive, weak and statistically significant correlation ($r = 0.316^{**}$, $p < 0.01$) was found between CARRF-KL and HLBS-II.

Conclusions: Increasing CARRF-KL and the development of HLBS II is thought to be an inevitable necessity for individuals 60 years old and older with a chronic disease to have a healthy lifestyle.

Key words: chronic disease, cardiovascular risk factors, knowledge level, healthy lifestyle.

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INTRODUCTION

Cardiovascular disease (CVD) remains a global major cause of death and represents a significant burden of disease in populations around the world [1]. Cardiovascular diseases (CVD) are the leading diseases among older adults, accounting for 30.3% of all diseases affecting people aged 60 and over [2]. Aging is an independent risk factor for CVD, and deaths associated with CVD increase with aging. The population aged 60 and over is still increasing around the world, and this is likely to increase the number of people affected by CVD-related mortality [3]. Knowledge of CVD risk factors is an important prerequisite for initiating an appropriate response to acute CVD events and adopting a healthy lifestyle [4]. The origin of CVD is inherently multifactorial with a synergistic effect. The World Health Organization (WHO) has identified different risk factors for CVD that are divided into two groups: behavioral risk factors, such as tobacco use, physical inactivity, and poor eating habits, and clinical risk factors, such as hypertension, diabetes mellitus, high body mass index, and hyperlipidemia. Early detection and prevention of these risk factors can help reduce the impact of CVD.

Similarly to the global trend, mortality rates caused by CVDs have been rapidly increasing in Turkey. It is estimated that our population will increase by 13.2% in 2023. However, the increase rate of the population aged 40 and over, which is considered as the risk group 2 for CVD, is estimated as 39.7% due to our aging population. According to these dynamics, it is predicted that the number of CVDs will increase by an average of 7% per year [5]. Healthy lifestyle behaviors (HLB) are defined as behaviors aimed at maintaining and promoting one's well-being. These behaviors include an adequate and balanced diet, stress management, regular physical activity (PA), effective spiritual development, positive interpersonal relationships, and taking responsibility for maintaining and improving one's own health. To create a healthy population and a healthy lifestyle, behaviors should be adopted in terms of preventing controllable diseases [6].

Protection based on society is also the most important factor, since it is economical and effective to change lifestyle and behaviors. Research shows that 10.8% of persons with CVD smoke cigarettes, 12.1% drink alcohol and 73.9% do not do any physical activity [7]. Another study reported that 68.6% of hypertensive patients do not exercise, 14.1% smoke cigarette, 25.2% drink alcohol and 30.9% do not adhere to a healthy diet [8]. PA and HLB are important factors for optimal health in the elderly. Examining the relationship between PA and HLB becomes more and more important as the number of elderly people in the world increases. Therefore, PA plays an important role in promoting healthy lifestyle behaviors among the elderly and improving aging health [9]. The increasing interest in the relationship between PA and HLB in the elderly aged 60 and over in recent years emphasizes that a moderate PA level has a positive effect on daily living activities and the importance of physical life in the elderly. It is also important to include PA in the life of older adults as a way to improve the quality of life. For the planning and evaluation of prevention programs against cardiovascular diseases, it is necessary to determine the knowledge levels of the society about the risk factors that cause CVD and healthy lifestyle behaviors [9]. For all these reasons, it is very important to determine the probability of cardiovascular diseases in healthy individuals in advance and to make efforts to gain HLB to reduce these risks in individuals 60 years old and older diagnosed with a chronic disease in order to protect their health. Therefore, the purpose of this study was to evaluate the healthy lifestyle behaviors and the levels of knowledge of cardiovascular risk factors of individuals aged 60 and over with chronic diseases.

MATERIAL AND METHODS

DESIGN, SETTINGS AND SAMPLING

A cross-sectional survey was conducted in the main referral hospitals in Turkey, Ankara, Gölbaşı Şehit Ahmet Özsoy State Hospital. This study was conducted in chronic follow-up

units of the hospital. The chronic follow-up unit provides regular outpatient care for patients with chronic conditions, such as coronary artery disease, diabetes mellitus, hypertension and hyperlipidemia. The clinic specifically focuses on providing follow-up services which include treatment of CVD and counselling of patients to achieve healthy lifestyle behaviors. During the study period (01 October 2019 – 31 January 2020), 820 patients with CVD attended the follow-up care in the participating hospitals.

Patients with a confirmed diagnosis of coronary artery disease, diabetes mellitus, hypertension and hyperlipidemia, aged 60 and over were eligible for participation in the study. Patients with congenital heart disorders, rheumatic heart disease, infectious heart disease and inflammatory heart disease were excluded. The sample size was determined using single population proportion formula with the following assumptions: 95% confidence level, 1.96 (Zα/2), 50% proportion, 5% degree of precision (d), and N (1035) total CVD patients attending chronic follow-up units of the hospitals. Based on this assumption and using finite correction, the sample size was 329, and predicting a 10% nonresponse rate, the final sample size was 362. Convenience sampling was used to select study participants.

ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Mersin University social sciences ethics committee (Ethics No: 31.10.2019-027), Ankara Gölbaşı Şehit Ahmet Özsoy State Hospital and Ankara Provincial Directorate of Health. Informed and written consent was obtained from each participant prior to participation in the study.

DATA COLLECTION TOOLS

Personal information form used in data collection and developed by the researcher, the "Cardiovascular Diseases Risk Factors Knowledge Level (CARRF-KL))" scale and Healthy Lifestyle Behaviors Scale II (HLBS-II) data were collected using.

Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale
A standardized, valid and reliable (Cronbach α = 0.76) scale developed by Arikan et al. [11] was used to evaluate information on CVD. The scale consists of 28 items presented in sentences that investigate CVD symptoms, prevention, the role of age, different risk factors, and the effect of changing risky behaviors. Responses to these items included "yes", "no" or "do not know". Correct answers were given 2 points; wrong answers – 1 point; and “I do not know” was given a score of 0. This resulted in a total of 56 points. As the score increased, the level of knowledge increased. A score greater than 28 (> 50%) was considered a "sufficient" knowledge level, while a score of ≤ 28 (50%) was considered an "unsatisfactory" level of knowledge. In this study, Cronbach's α value was 0.79.

Healthy Lifestyle Behaviors Scale II (HLBS-II)
The scale was developed by Walker, Sechrist and Pender [12], and it was revised again in 1996, as the Healthy Lifestyle Behavioral Scale-II of nursing students [13]. Turkish validity and reliability study of HLBS-II was conducted by Bahar et al. [14]. It is used to evaluate the health behaviors associated with an individual's healthy lifestyle. The scale consists of six subscales: “health responsibility” (evaluating the individual's level of responsibility for his or her health), “physical activity” (evaluating the individual's physical activity practices), "eating habits" (evaluating the individual's food choices), "spiritual development" (evaluating access to self-actualization and fulfillment), “interpersonal relationships” (evaluating the individual's continuous communication with the social environment around him), and "stress management" (evaluating sources of stress identified by the individual and stress coping mechanisms). The scale consists of 52 items (nine items for “health responsibility”, eight items for “physical activity”, nine items for “dietary habits”, nine items for “spiritual development”, nine items for “interpersonal relationships”, and eight items for "management"). Each item

was scored according to the four-point Likert scale with "never" = 1, "sometimes" = 2, "often" = 3, and "regularly" = 4. Hence, the scores obtained ranged from 52 to 208. Higher scores indicated more health-promoting behaviors. Cronbach α for this scale was 0.81.

STATISTICAL ANALYSIS

Statistical analysis was performed by using IBM SPSS statistics version 25. The univariate analysis was reported as proportion, percentage, and frequency, and continuous data were reported as means and standard deviations. The compliance of the data to normal distribution was evaluated by the Kolmogorov-Smirnow and Shapiro-Wilk tests. The Mann Whitney U test and Kruskal Wallis test were applied for data that did not show normal distribution. Complementary post-hoc analysis was used to identify differences. The relationship between CARRF-KL and HLBS-II mean scores was evaluated by Spearman correlation analysis. In all the data analyses, a value of $p<0.05$ was accepted as statistically significant.

RESULTS

DEMOGRAPHIC CHARACTERISTICS OF THE PARTICIPANTS

Table 1 presents the general characteristics of the study participants. The results showed that out of 362 participants aged 60 years and over, 189 (52.2%) were female and 175 (47.8%) male. While the average age of women was 67.12 years, it was 69.38 for men. The average body mass index (BMI) of the individuals participating in the study was 26.01 ± 3.37 for women and 25.34 ± 2.80 for men. It was determined that there was no significant difference between men and women. However, it was determined that approximately 39% of the participants were overweight and 6.5% were obese. It was determined that 32.6% of the participants were high school graduates and 29.5% were university graduates. However, postgraduate education was determined as 2.5%. 73.8% of the participants were married and 26.2% were single. While the rate of employees was 42.8%, 57.2% were not working. 31.8% of the participants aged 60 and over had an income level of <1400 TL, for 43.1% of then it was between 1400–4999 TL and 25.1% had an income of >5000 TL. When we look at the chronic diseases of the individuals aged 60 and over who participated in the study, the rate of those with coronary artery disease was 43.4%, hypertension 29.8%, diabetes mellitus 18.8% and hyperlipidemia 8.0%. 230 participants with a chronic disease (63.5%) used medication. 40.1% of the individuals were smoking, while 59.9% did not smoke. 31.5% of the smokers smoked for 20 years or more. 93.4% of the participants did not use alcohol (Table 1).

Table 1. The participants' sociodemographic characteristics

Sociodemographic Variables (n:362)			
		n	%
Gender			
	Male	189	52.2
	Female	173	47.8
		(Mean±SD)	
Mean age			
	Male	67.12±5.11	
	Female	69.38±5.51	
Mean height			
	Male	162.6±5.86	
	Female	173.2±4.86	
Mean weight			
	Male	66.02±8.20	

Sociodemographic Variables (n:362)			
	Female	75.95±9.55	
Mean BMI			
	Male	26.01±3.37	
	Female	25.34±2.80	
		n	%
Educational Level			
	Elementary School	68	18.8
	Secondary School	60	16.6
	High School	118	32.6
	University	107	29.5
	Postgraduate	9	2.5
Marital Status			
	Married	267	73.8
	Single	95	26.2
Working Status			
	Yes	155	42.8
	No	207	57.2
Income (monthly)			
	< TL 1400	115	31.8
	TL1 400-4999	156	43.1
	>TL 5000	91	25.1
Chronic Disease Status			
	Coronary Artery Disease	157	43.4
	Diabetes Mellitus	68	18.8
	Hypertension	108	29.8
	Hyperlipidemia	29	8.0
Regular Medication Use			
	Yes	230	63.5
	No	132	36.5
Smoking Habits			
	Yes	145	40.1
	No	217	59.9
Smoking Use Time			
	1-5 year	7	1.9
	6-10 year	12	3.3
	11-20 year	13	3.6
	20 year and above	113	31.5
Alcohol Consumption			
	Yes	24	6.6
	No	338	93.4

n = number of participants; % = percentage; Body Mass Index (BMI)

The results showed that the total CARRF-KL score of the participants aged 60 and over was 16.99 ± 4.69, and they got the highest score from risk factors. With the HLBS-II total mean score of 105.17 ± 22.88, it was determined that they got the highest score from the sub-dimension of spiritual development and the lowest score from physical activity (Table 2).

Table 2. Distribution of the participants' (n = 362) average scores in CARRF-KL and HLBS-II sub-dimensions

Variables (n:362)		Mean ± SD
CARRF-KL Scale and Sub-Dimensions	CVD Features	2.54±1.01
	Risk Factor	9.69±3.05
	Risk Behavior	4.74±1.44
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	20.04±4.75
	Health Responsibility	15.40±3.89
	Physical Activity	13.64±4.37
	Nutritional Habits	17.90±3.87
	Spiritual Growth	21.07±5.48
	Stress Management	17.10±4.07
Total Scale Score	CARRF-KL	16.99±4.69
	HLBS-II	105.17±22.88

SD = standard deviation

Our study shows that there was a significant difference in the mean score of both the total and each individual CARRF-KL scale aspect with the exception of "risk behavior", ($p<0.05$; $^{**}p<0.01$). Regarding the HLBS-II scale, significant changes were a significant difference in the mean score of the total HLBS-II and its subscales among the participants, with the exception of "health responsibility" ($^{**}p<0.01$;$^{***}p<0.001$) (Table 3).

Table 3. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to gender

Variables (n:362)		Gender	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Male	189		
		Female	173	-4.660	0.001**
	Risk Factor	Male	189		
		Female	173	-2.050	0.040*
	Risk Behavior	Male	189		
		Female	173	-0.418	0.676
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Male	189		
		Female	173	-3.891	0.000***
	Health Responsibility	Male	189		
		Female	173	-1.801	0.072
	Physical Activity	Male	189		
		Female	173	-3.465	0.001**
	Nutritional Habits	Male	189		
		Female	173	-3.930	0.000***
	Spiritual Growth	Male	189		
		Female	173	-6.535	0.000***
	Stress Management	Male	189		
		Female	173	-4.650	0.000***
Total Scale Score	CARRF-KL	Male	189		
		Female	173	-2.510	0.012*
	HLBS-II	Male	189		
		Female	173	-4.989	0.000***

Mann Whitney U - Wilcoxon W non-parametric test was performed; significant at level: *p<0.05; **p<0.01; ***p<0.001

Table 4 shows that there is no significant difference in both total and each CARRF-KL Scale scores (p> 0.05), whereas there is a significant difference in the HLBS-II Scale (**p<0.01, ***p <0.001). The HLBS-II scores of employees were higher than those who did not work. They got the highest score in the physical activity sub-dimension (z = -7.355, p <0.000).

Table 4. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to the working status

Variables (n:362)		Working status	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Yes	155		
		No	207	-1.555	0.120
	Risk Factor	Yes	155		
		No	207	-1.0381	0.167
	Risk Behavior	Yes	155		
		No	207	-1.691	0.091
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Yes	155		
		No	207	-6.569	0.000***
	Health Responsibility	Yes	155		
		No	207	-3.480	0.000***
	Physical Activity	Yes	155		
		No	207	-7.355	0.000***
	Nutritional Habits	Yes	155		
		No	207	-5.194	0.000***
	Spiritual Growth	Yes	155		
		No	207	-6.667	0.000***
	Stress Management	Yes	155	-5.174	0.000***
		No	207		
Total Scale Score	CARRF-KL	Yes	155	-1.717	0.086
		No	207		
	HLBS-II	Yes	155	-6.654	0.000***
		No	207		

Mann Whitney U - Wilcoxon W non-parametric test was performed; significant at level: *p<0.05; **p<0.01; ***p<0.001

Our study shows a significant difference in the mean score of both the total and each individual CARRF-KL scale aspect, with the exception of "CVD Features (z=-1,656, p=0,098)", (p<0.05). Regarding the HLBS-II scale, there was a significant difference in the mean score of the total HLBS-II and its subscales among the participants, (**p<0.05;***p<0.001) (Table 3). It was determined that the CARRF-KL and HLBS-II scores of single persons were higher than those who were married. They got the highest score in the physical activity and stress management sub-dimension (Table 5).

Our study shows that there is a statistically significant (*p<0.05, **p<0.01) difference scale total score and all sub-dimensions. It was determined that there was no significant difference in the total mean scores of the participants' HLBS-II and subscales (p>0.05). It was determined that the CARRF-KL scores of the smokers in the total and all sub-dimensions of the scale were higher than the non-smokers, and they got the highest score in the risky behavior sub-dimension (Table 6).

When the mean scores of CARRF-KL and HLBS-II scales of the elderly participants with a chronic disease were compared according to alcohol consumption, no statistically significant difference was determined in the total score and all sub-dimensions of the scales (p> 0.05) (Table 7).

Table 5. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to marital status

Variables (n:362)		Marital status	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Married	267	-1.656	0.098
		Single	95		
	Risk Factor	Married	267	-1.964	0.049*
		Single	95		
	Risk Behavior	Married	267	-2.517	0.012*
		Single	95		
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Married	267	-4.494	0.000***
		Single	95		
	Health Responsibility	Married	267	-2.096	0.036*
		Single	95		
	Physical Activity	Married	267	-5.268	0.000***
		Single	95		
	Nutritional Habits	Married	267	-3.197	0.000***
		Single	95		
	Spiritual Growth	Married	267	-5.081	0.000***
		Single	95		
	Stress Management	Married	267	-5.395	0.000***
		Single	95		
Total Scale Score	CARRF-KL	Married	267	-2.384	0.017*
		Single	95		
	HLBS-II	Married	267	-5.219	0.000***
		Single	95		

Mann Whitney U - Wilcoxon W non-parametric test was performed; significant at level: *p<0.05; **p<0.01; ***p<0.001

Table 6. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to smoking habits

Variables (n:362)		Smoking habits	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Yes	145	-3.151	0.002**
		No	217		
	Risk Factor	Yes	145	-3.079	0.002**
		No	217		
	Risk Behavior	Yes	145	-2.136	0.033*
		No	217		
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Yes	145	-.273	0.785
		No	217		
	Health Responsibility	Yes	145	-.422	0.673
		No	217		
	Physical Activity	Yes	145	-.033	0.973
		No	217		
	Nutritional Habits	Yes	145	-.103	0.918
		No	217		
	Spiritual Growth	Yes	145	-.831	0.406
		No	217		
	Stress Management	Yes	145	-.362	0.717
		No	217		

Variables (n:362)		Smoking habits	n	z	p
Total Scale Score	CARRF-KL	Yes	145	-3.363	0.001**
		No	217		
	HLBS-II	Yes	145	-.174	0.862
		No	217		

Mann Whitney U - Wilcoxon W non-parametric test was performed; significant at level: *p<0.05; **p<0.01; ***p<0.001

Table 7. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to alcohol consumption

Variables (n:362)		Alkohol consumption	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Yes	145	-.417	0.676
		No	217		
	Risk Factor	Yes	145	-.090	0.928
		No	217		
	Risk Behavior	Yes	145	-.012	0.990
		No	217		
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Yes	145	-.669	0.504
		No	217		
	Health Responsibility	Yes	145	-1.401	0.161
		No	217		
	Physical Activity	Yes	145	-1.410	0.158
		No	217		
	Nutritional Habits	Yes	145	-.021	0.983
		No	217		
	Spiritual Growth	Yes	145	-.373	0.709
		No	217		
	Stress Management	Yes	145	-1.557	0.120
		No	217		
Total Scale Score	CARRF-KL	Yes	145	-.183	0.855
		No	217		
	HLBS-II	Yes	145	-.948	0.343
		No	217		

Mann Whitney U - Wilcoxon W non-parametric test was performed

As shown in Table 8, there is a statistically insignificant difference (p>0.05) in the CARRF-KL scale total score and all sub-dimensions. Regarding the HLBS-II scale, there was a significant difference (***p<0.001) in the mean score of the total HLBS-II and its subscales among the participants, with the exception of "health responsibility (Table 8).

It was determined that there is a statistically significant difference (***p<0.001) in terms of CARRF-KL and HLBS-II scale total score and all sub dimensions according to the education and income levels. The scores of university graduates were higher than of the others, and the lowest score was obtained by primary school graduates. It was determined that scores were higher among those with an income level of > 5000 TL, and the lowest score was among those with an income below 1400 TL. When compared according to the chronic disease status, there was not a significant difference (p>0.05) in the CARRF-KL scale total score and all sub-dimensions, but the HLBS-II total score and mean scores of all sub-dimensions were higher in the hyperlipidemia patient group, while the lowest score was found in individuals with coronary artery disease (Table 9 and Table 10).

Table 8. Distribution of participants' CARRF-KL and HLBS-II scale sub-dimensions and total mean scores according to regular medication use

Variables (n:362)		Regular Medication Use	n	z	p
CARRF-KL Scale and Sub-Dimensions	CVD Features	Yes	230	-1.868	0.062
		No	132		
	Risk Factor	Yes	230	-1.475	0. 140
		No	132		
	Risk Behavior	Yes	230	-. 674	0.500
		No	132		
HLBS-II Scale and Sub-Dimensions	Interpersonal Relationships	Yes	230	-3.591	0.000***
		No	132		
	Health Responsibility	Yes	230	-.628	0.530
		No	132		
	Physical Activity	Yes	230	-6.108	0.000***
		No	132		
	Nutritional Habits	Yes	230	-4.511	0.000***
		No	132		
	Spiritual Growth	Yes	230	-4.709	0.000***
		No	132		
	Stress Management	Yes	230	-3.705	0.000***
		No	132		
Total Scale Score	CARRF-KL	Yes	230	-.183	0.423
		No	132		
	HLBS-II	Yes	230	-4.543	0.000***
		No	132		

Mann Whitney U - Wilcoxon W non-parametric test was performed; significant at level: ***p<0.001

Table 9. Distribution of participants' CARRF-KL scale sub-dimensions and total mean scores according to the educational level, income (monthly) and chronic disease status

Variables (n:362)		n	CVD Features	Risk Factor	Risk Behavior	Total Scale Score CARRF-KL
			χ^2 / P	χ^2 / P	χ^2 / P	χ^2 / P
Educational Level	Elementary School	68	43.840 / 0.000***	68.962 / 0.000***	35.178 / 0.000***	67.621 / 0.000***
	Secondary School	60				
	High School	118				
	University	107				
	Postgraduate	9				
Income Level	<TL 1400	115	55.016 / 0.000***	40.712 / 0.000***	12.446 / 0.000***	44.744 / 0.000***
	TL 1400-4999	156				
	>TL 5000	91				
Chronic Disease Status	Coronary Artery Disease	157	1.769 / 0.622	4.149 / 0.246	1.336/ 0.721	1.351 / 0.717
	Diabetes Mellitus	68				
	Hypertension	108				
	Hyperlipidemia	29				

χ^2: Kruskal Wallis test was performed; significant at level:***p<0.001

Table 10. Distribution of participants' HLBS-II scale sub-dimensions and total mean scores according to educational level, income (monthly) and chronic disease status

Variables (n:362)		n	Interpersonal Relationships	Health Responsibility	Physical Activity	Nutritional Habits	Spiritual Growth	Stress Management	Total Score HLBS-II
			χ^2 / P	χ^2 / P	χ^2 / P	χ^2 / P	χ^2 / P	χ^2 / P	χ^2 / P
Educational Level	Elementary School	68	116.97 / 0.000***	60.530 / 0.000***	91.796 / 0.000***	75.834 / 0.000***	78.282 / 0.000***	87.492 / 0.000***	110.23/ 0.000***
	Secondary School	60							
	High School	118							
	University	107							
	Postgraduate	9							
Income Level	<TL 1400	115	70.285 / 0.000***	36.152 / 0.000***	59.201 / 0.000***	46.754 / 0.000***	51.190 / 0.000***	66.732 / 0.000***	69.81/ 0.000***
	TL 1400-4999	156							
	>TL 5000	91							
Chronic Disease Status	Coronary Artery Disease	157	29.386 / 0.000***	10.307 / 0.016*	21.418 / 0.000***	25.927 / 0.000***	25.56/ 0.000***	15.849 / 0.001**	25.63/ 0.000***
	Diabetes Mellitus	68							
	Hypertension	108							
	Hyperlipidemia	29							

χ^2: Kruskal Wallis test was performed; significant at level:***p<0.001

A positive weak and statistically significant correlation was found between the CARRF-KL and HLBS-II scale total scores and all sub-dimensions among participants aged 60 and over with chronic disease. HLBS-II Total Scale Score (r = 0.316 **, p <0.01; interpersonal relationships (r = 0.344 **, p <0.01), health responsibility (r = 0.346 **, p <0.01), physical activity (r = 0.232 **, p <0.01), nutritional habits (r = 0.207 **, p <0.01), spiritual growth (r = 0.229 **, p <0.01) and stress management (r = 0.266 **, p <0.01) (Table 11).

Table 11. Relationship between participants' CARRF-KL scale mean scores and HLBS-II scale average scores

Scale Sub-Dimensions	1	2	3	4	5	6	7	8
CARRF-KL	-							
Total Score HLBS-II	r=0.316** P=0.01	-						
Interpersonal Relationships	r=0.344** P=0.01	r=0.876 P=0.01**	-					
Health Responsibility	r=0.346** P=0.01	r=0.725** P=0.01	r=0.611** P=0.01	-				
Physical Activity	r=0.232** P=0.01	r=0.882** P=0.01	r=0.684** P=0.01	r=0.569** P=0.01	-			
Nutritional Habits	r=0.207** P=0.01	r=0.819** P=0.01	r=0.729** P=0.01	r=0.489** P=0.01	r=0.709** P=0.01	-		
Spiritual Growth	r=0.229** P=0.01	r=0.894** P=0.01	r=0.716** P=0.01	r=0.534** P=0.01	r=0.774** P=0.01	r=0.667** P=0.01	-	
Stress Management	r=0.266** P=0.01	r=0.932** P=0.01	r=0.760** P=0.01	r=0.647** P=0.01	r=0.843** P=0.01	r=0.716** P=0.01	r=0.823** P=0.01	-

Significant at level: *p<0.05, **p<0.01

DISCUSSION

Cardiovascular diseases was the leading cause of morbidity and mortality among older adults, affecting people aged 60 and over. The present study was conducted to evaluate the lifestyle behaviors and cardiovascular risk factors knowledge levels of individuals aged 60 and over with chronic diseases. This study revealed that participants aged 60 and over with higher socioeconomic status had more access to health services and medical information. It has been suggested that these people are more likely to adopt healthier behaviors. These results show that the socio-economic level is closely related to the risk factors related to cardiovascular diseases.

Participants aged 60 and over were found to have a total mean score of CARRF-KL (16.99 ± 4.69) and HLBS-II (105.17 ± 22.88). In a study conducted by Çürük et al. [15], It has been determined that the total CARRF-KL and HLBS-II score average of patients and their relatives were 18.7±4.1 and 19.3±5.8 respectively. In similar studies, Uçar and Arslan [16] determined the score of 20.21 ± 4.39 in adult individuals, while Arıkan et al. [11] found it to be 19.3 ± 3.2 in adult individuals. The fact that these results are slightly higher than our findings may be due to our participants having both chronic diseases and being 60 years old and older. As the highest score of the HLBS-II scale is 208, the fact that the average score of individuals with chronic diseases at the age of 60 and above is 50% can be seen as an important risk factor. Our study found that spiritual development mean scores of the HLBS-II sub-dimension were the highest, and the physical activity sub-dimension mean scores were the lowest. In a study conducted by Çürük et al. [15], it has been determined that the total CARRF-KL and HLBS-II score average of patients and their relatives were 117.9±19.1 and 119.7±23.2, respectively. In other studies, Küçükberber et al. [17], Savaşan et al. [18], Kuru and Piyal [19] obtained similar results. On the other hand, the literature supports that the inclusion of exercise in daily PA and healthy lifestyle provides an important tool in preventing primary diseases while reducing the risk of chronic diseases and mortality. Although changing disease risk factors reduces the overall risk of chronic diseases, modifiable risk factors such as sedentary behavior are suggested to be associated with an increased risk of a chronic disease [19].

The results of this study showed that, as regards gender, the CARRF-KL scores of men were higher than of women. In terms of the employment status, the HLBS-II scores of employees were higher than of non-working people. It was found that employees got the highest score in the physical activity sub-dimension compared to those who were not working. According to marital status, the mean CARRF-KL and HLBS-II scores of single individuals were higher than of the married ones. It was determined that smokers had higher CARRF-KL scores than non-smokers. As concerns alcohol consumption, when the CARRF-KL and HLBS-II mean scores are compared, there was no statistically significant difference in the total score and all sub-dimensions. When CARRF-KL scores were compared in the use of medication, it was found that there was no significant difference in the mean scores obtained from the HLBS-II scale, and there was a significant difference in the total score and other sub-dimensions except health responsibility. It was determined that the scores of those who did not use medication were higher than those who used medication. Studies on the elderly towards healthy lifestyle behaviors [21–23] and studies conducted in other countries [24-26] support our findings. Unhealthy lifestyle and social environment are among the main causes of CVD. For healthy lifestyle behaviors, awareness of the individual's changeable risk factors in CVD is seen as a prerequisite in disease management. Protection based on society is also the most important factor, as it is economical and effective to change lifestyle and behavior. Since changing lifestyle and behaviors will cause a lack of knowledge and motivation, studies to prevent CVD should focus on informing the public.

When CARRF-KL and HLBS-II scores of our study participants aged 60 and over with a

chronic disease are compared according to their education level, the total and all sub-dimensions score of high school and university graduates were higher than of the others. When CARRF-KL and HLBS-II scores are compared according to the income level, there was a significant difference in the scale total score and all sub-dimensions; it was high for those with income > 5000 TL and lower for those below <1400 TL. When CARRF-KL mean scores are compared according to the chronic disease status, there was no significant difference in the scale total score and all sub-dimensions. However, when HLBS-II was evaluated in terms of the total score and all its sub-dimensions, it was found that there was a significant difference, and the difference was higher in the hyperlipidemia patient group. The lowest score was found in individuals with coronary artery disease.

In a study by Liu et al. [2], 0.8% of 1120 participants had a good knowledge of CVD, while 56.9% of them had a low level. Low CVD knowledge, advanced age, low income and low education level are the most effective determinants of a high cardiovascular risk level. Thus, it shows that participants with low knowledge of CVD risk factors have a higher cardiovascular risk. It has been reported that higher education levels are associated with better knowledge of CVD, fewer risk factors and health-related behavioral changes. Similarly, in other studies conducted on the subject, it has been shown that patients with a high level of education have higher average healthy lifestyle scores [17, 19, 27]. These results show that socioeconomic level is important in increasing the knowledge level of risk factors related to cardiovascular diseases. In a study conducted by Küçükberber et al. [17], it was found that patients with poor income status had lower HLBS II mean scores. However, similar results were obtained in the studies of Kuru and Piyal [19]. This shows that older adults with a low income have a higher cardiovascular risk. This is consistent with previous studies where people with low socioeconomic status were at a higher cardiovascular risk [28–29], because people with a higher socioeconomic status have better access to healthcare and medical information, which increases their likelihood of adopting healthier behaviors.

Sungur et al. [30], in their study on patients, found that the group over the age of 65 had the lowest healthy lifestyle behaviors of all subgroups. Therefore, individuals aged 60 and over with chronic diseases should be encouraged in terms of HLBS. The results of the study conducted by Yılmaz et al. [31] on patients with cancer, hypertension and diabetes aged 60 and over, show that the healthy lifestyle behaviors of the elderly with diabetes are better than of those with hypertension and cancer, and that developing programs to increase healthy lifestyle behaviors for the elderly with hypertension and cancer will contribute to the active aging process of the elderly and increase their quality of life.

According to our study, a positive, weak, and statistically significant relationship was found between the CARRF-KL and HLBS-II total scales scores and all sub-dimensions of participants aged 60 and over with chronic diseases. The most effective way to prevent cardiovascular diseases is to acquire and maintain healthy lifestyle behaviors. Knowledge of risk factors is a prerequisite for adopting healthy lifestyle behaviors. Insufficient knowledge to change lifestyle and behavior causes insufficient motivation [32]. Çürük et al. [15] conducted a study on 304 patients aged 60 years and older and found a positive significant relationship between the CARRF-KL scale score of the patients and the total of the HLBS-II scale and all sub-dimensions. Similar results were obtained from other studies that were in line with our findings [33-34]. Therefore, increasing the level of knowledge about risk factors in all diseases and controlling these risk factors prevents and delays the emergence of diseases. The effect of disease characteristics on the level of knowledge can be explained by the awareness of the disease in individuals and the increased awareness of potential risk factors.

CONCLUSIONS

All of the behaviors that people make in line with their beliefs about maintaining their current health and preventing diseases that will adversely affect their lives are expressed as healthy lifestyle behaviors. For healthy lifestyle behaviors, awareness of the individual's changeable risk factors in CVD is seen as a prerequisite in disease management. Since changing lifestyle and behaviors will cause a lack of knowledge and motivation, studies to prevent CVD focus on informing the public. It is necessary to determine the level of knowledge of the society about the risk factors that cause CVD in order to plan and evaluate the prevention programs from cardiovascular diseases.

Therefore, in order to minimize the risks of illness, death and disability, individuals' healthy lifestyle behavior levels should be increased. One of the ways to do this is to examine the healthy lifestyle behaviors and knowledge levels of cardiovascular risk factors of elderly individuals diagnosed with a chronic disease. For all these reasons, it is very important to determine the likelihood of healthy individuals suffering from cardiovascular disease in advance and to make attempts for individuals diagnosed with the disease to gain healthy lifestyle behaviors to reduce these risks. It is thought that it is an inevitable necessity to increase CARRF-KL and development of HLBS in individuals aged 60 and over with chronic diseases.

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REFERENCES

[1] Negesa LB, Magarey J, Rasmussen P, Hendriks JML. Patients' knowledge on cardiovascular risk factors and associated lifestyle behaviour in Ethiopia in 2018: A cross sectional study. PLoS One. 2020;15(6):e0234198. https://doi.org/10.1371/journal.pone.0234198.

[2] Liu Q, Huang YJ, Zhao L, et al. Association between knowledge and risk for cardiovascular disease among older adults: A cross-sectional study in China. Int J Nurs Sci. 2020;7(2): 184-190. https://doi.org/10.1016/j.ijnss.2020.03.008

[3] Prince MJ, Wu F, Guo Y, et al. The burden of disease in older people and implications for health policy and practice. Lancet. 2015;385(9967):549-62. https://doi.org/10.1016/S0140- 6736(14)61347-7.

[4] Ibanez B, James S, Agewall S, et al. ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The task force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). Eur Heart J. 2018;39(2),119-177. https://doi.org/10.1093/eurheartj/ehx393.

[5] Turkish Statistical Institute (TUIK). Turkish Statistical Institute, Causes of Death Statistics, 2016. Retrieved from http://www.tuik.gov.tr/ PreHaberBultenleri.

[6] Kumsar AK, Yilmaz FT, Akkas ÖA. The effect of cardiovascular risk factors knowledge level on healthy life style behaviors and related factors in nursing students. Int J Basic Clin Stud. 2015;4(2):47-60.

[7] Misganaw A, Haregu TN, Deribe K, et al. National mortality burden due to communicable, non-communicable, and other diseases in Ethiopia, 1990–2015: findings from the Global Burden of Disease Study 2015. Population Health Metrics. 2017;15:29 https://doi.org/10.1186/s12963-017-0145-1

[8] Tibebu A, Mengistu D, Negesa L. Adherence to recommended lifestyle modifications and factors associated for hypertensive patients attending chronic follow-up units of selected public hospitals in Addis Ababa, Ethiopia. Patient Preference and Adherence; 2017;11:323–330. http://doi.org/10.2147/PPA.S126382

[9] Vagetti GC, Barbosa Filho VC, Moreira NB, Oliveira V, Mazzardo O, Campos WD. Association between physical activity and quality of life in the elderly: A systematic review, 2000–2012. Rev Bras Psiquiatr.2014;36(1):76-88. https://doi.org/10.1590/1516-4446-2012-0895

[10] Anderson E, Durstine J.L. Physical activity, exercise, and chronic diseases: A brief review. Sports Med Health Sci. 2019;(1):3–10. https://doi.org/10.1016/j.smhs.2019.08.006

[11] Arikan I, Metintaş S, Kalyoncu C, Yildiz Z. The Cardiovascular Disease Risk Factors Knowledge Level (CARRF-KL) Scale: A validity and reliability study. Turk Kardiyol Dern Ars. 2009;37(1):35-40.

[12] Walker SN, Sechrist KR, Pender NJ. Health promotion model – Instruments to measure health promoting lifestyle: Health-promoting lifestyle profile [HPLP II] (Adult Version). Nurs Res. 1987;36(2):76-81. https://doi.org/10.1097/00006199-198703000-00002

[13] Walker SN, Hill-Polerecky DM. Psychometric evaluation of the Health Promoting Lifestyle Profile II. Unpublished manuscript, University of Nebraska Medical Center; 1986.

[14] Bahar Z, Beser A, Gordes N, Ersin F, Kissal A. The validity and reliability study of Healthy Lifestyle Behavior Scale II. J Cumhuriyet University Health of School of Nursing. 2008;12(1):1-13.

[15] Çürük GN, Bayındır SK, Oğuzhan A. The relationship of the healthy lifestyle behaviors and cardiovascular disease risk factors knowledge level of patients with cardiovascular disease and theır relatives. J Health Sci. 2018;27:40-47.

[16] Uçar A, Arslan S. The knowledge level of cardiovascular disease risk factors of adult individuals living in a family health center region. J Cardiovasc Nurs. 2017;8(17):121-130. https://doi.org/10.5543/khd.2017.36035

[17] Küçükberber N, Özdilli K, Yorulmaz H. Evaluation of factors affecting healthy life style behaviors and quality of life in patients with heart disease.Anatolian J Cardiol. 2011;11:619-626. https://doi.org/10.5152/akd.2011.166

[18] Savaşan A, Ayten M, Ergene O. Hopelessness and healthy life style behaviors ın patients with coronary artery disorder. J Psychiatr Nurs. 2013;4(1):1-6. https://doi.org/10.5505/phd.2013.07279

[19] Kuru N, Piyal B. Gulhane military medical academy training hospital, the applicant determination of healthy lifestyle behaviors in ındividuals diagnosed coronary artery disease. TAF Prevent Med Bull. 2012;11(3):287-298. https://doi.org/10.5455/pmb.1-1310111881

[20] Katzmarzyk PT, Lear SA. Physical activity for obese individuals: a systematic review of effects on chronic disease risk factors. Obes Rev. 2012;13(2):95–105. https://doi.org/10.1111/j.1467-789X.2011.00933.x.

[21] Kulakçı H, Kuzlu Ayyıldız T, Emiroğlu ON, Köroğlu E. Evaluation of the self-efficacy perceptions and healthy lifestyle behaviors of elderly people living in nursing home. DEUHYO ED; 2012;5(2):53-64.

[22] Softa HK, Bayraktar T, Uğuz C. Elders' perceived social support systems and factors affecting their healthy life-style behaviour. Elderly Issu Res J. 2016;9(1):1-12.

[23] Vatansever Ş, Ölçücü B, Özcan G, Çelik A. The Relationship between physical activity level and life quality among middle aged individuals. Inesjournal Int J Educ Sci. 2015;2(2):63-73. https://doi.org/10.16991/INESJOURNAL.14

[24] Yin Z, Geng G, Lan X, et al. Status and determinants of health behavior knowledge among the elderly in China: A community-based cross-sectional study. BMC Publ Health. 2013:13(1):1. http://www.biomedcentral.com/1471-2458/13/710

[25] Duncan MJ, Kline CE, Vandelanotte C, Sargent C, Rogers NL, Di Milia L. Cross-sectional associations between multiple lifestyle behaviors and health-related quality of life in the 10,000 Steps cohort. PloS One. 2014;9(4):e94184. https://doi.org/10.1371/journal.pone.0094184

[26] Adams ML, Katz DL, Shenson DA. Healthy lifestyle composite measure: Significance and potential uses. Prev Med. 2016;84:41–7. https://doi.org/10.1016/j.ypmed.2015.12.005

[27] Dirimeşe E, Korkmaz FD, Alcan AO. Investigation of patients' quality of life and healthy lifestyle behaviors before coronary artery bypass graft surgery. Balıkesır Health Sci J. 2016;(5):2. https://doi.org/10.5505/bsbd.2016.70299

[28] Kollia N, Panagiotakos DB, Georgousopoulou E, et al. Exploring the association between low socioeconomic status and cardiovascular disease risk in healthy Greeks, in the years of financial crisis (2002–2012): the ATTICA study. Int J Cardiol. 2016; 223:758e63. https://doi.org/10.1016/j.ijcard.2016.08.294.

[29] Min YI, Anugu P, Butler KR, et al. Cardiovascular disease burden and socioeconomic correlates: findings from the Jackson heart study. J Am Heart Assoc. 2017;6(8):e004416. https://doi.org/ 10.1161/JAHA.116.004416.

[30] Sungur C, Kar A, Kıran Ş, Macit M. Evaluation of healthy lifestyle behaviors: A research on hospitalized patients. Balkan J Soc Sci. 2019;8(15):43–52.

[31] Yılmaz M, Uyanık G, Böckün E, Tokem Y, Tekin N. Investigation of healthy lifestyle behaviors in elderly people with chronic disease. TJFMPC. 2019;13(3):248-257. https://doi.org/10.21763/tjfmpc.442410

[32] Mollaoğlu M, Solmaz G. Analysis of healthy lifestyle behaviours of hypertensive patients. Prim Health Care: Open Acc. 2014;04(03). https://doi.org/10.4172/2167-1079.1000168

[33] Amruth M, Mullick S, Balakrishna AG, Prabhudeva MC. Assessment of awareness about cardiovascular disease risk factors and association between overweight and family history of cardiovascular disease among first-year medical students of a medical college in Karnataka. Int J Med Sci Public Health. 2015;4:92-96. https://doi.org/10.5455/ijmsph.2015.1709201425

[34] Ammouri AA, Tailakh A, Isac C, Kamanyire JK, Muliira J, Balachandran S. Knowledge of coronary heart disease risk factors among a community sample in Oman. Sultan Qaboos University Med J. 2016;16:e189–e196. https://doi.org/10.18295/squmj.2016.16.02.009

[35] Baig M, Gazzaz ZJ, Gari MA, et a. Prevalence of obesity and hypertension among University students' and their knowledge and attitude towards risk factors of Cardiovascular Disease (CVD) in Jeddah, Saudi Arabia. Pakistan J Med Sci. 2015;31:816–820. https://doi.org/10.12669/pjms.314.7953

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