## Original Article

# Cardiovascular Risk Factors Knowledge Levels and Healthy Lifestyle Behaviors In Menopausal Women with Cardiovascular Disease

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**Abstract**

**Purpose:** The present research aimed to define the knowledge level of cardiovascular disease risk factors and healthy lifestyle behaviors in menopausal women diagnosed with cardiovascular disease.

**Design:** The sydy is Descriptive and cross-sectional and the data were collected between 15.06.2021 and 15.10.2021 in the Cardiology Polyclinic of one University Medical Faculty Hospital.
study.

**Methods:** A face-to-face survey was conducted with 138 women.

**Findings:** The average age of the women was 65.9±8.9, and the majority was school graduates (65.2%) and married (77.5%) . The mean duration of cardiovascular disease diagnosis of the women was 12.9±8.4. Hypertension (79.7%) was the most common in women, followed by coronary artery disease (63.8%), hyperlipidemia (30.4%), chronic heart failure (15.2%) and arrhythmia (7.2%). It was determined that 45.7% of the women had a diagnosis of diabetes accompanying cardiovascular disease. Average age at marriage of women is 20.2±3.9, mean age at menarche is 13.5±1.5 amd menopause mean age was 47.9±4.6. The mean score of the HLBS II scale is 135.6±2. Non-smokers had significantly higher HLBS II nutrition sub-dimension scores (t=-2.848, p=0.005). There was a strong linear relationship between the sub-dimensions of spiritual development and stress management and interpersonal relationships, and a moderate linear relationship between health responsibility, physical activity and nutrition (r=0.745, r=0.723, r=0.588, r=0.542, r, respectively). =0.531).

**Conclusion:** Women's cardiovascular disease risk factors knowledge level is good. There is a significant difference in terms of their educational status and HLBS II scores and physical activity sub-dimension scores. Health professionals have an important role in increasing the knowledge of CVD risk factors in menopausal women. It is recommended that public health nurses and midwives have to raise awareness by informing women about CVD risk factors and healthy lifestyle behaviors, identify the difficulties that women experience in adapting to health promotion behaviors and discuss possible solutions.

**Clinical Evidence:** Health professionals have an important role in increasing the knowledge of CVD risk factors in menopausal women.

**Keywords:** Cardiovascular disease, Health, Lifestyle, Menopause, Women

## Introduction

Women's health is directly in relation with the family and community health and is of great importance for public health. That's why it has great importance in the presentation and application of health services and differs according to life periods (Orhan, 2020). According to the World Health Organization (WHO), the menopause period, which is one of the significant processes of women's life, is defined as "the woman's absence of menstruation for one year due to the decrease in estrogen level due to the cessation of ovarian functions" and there is no pathological cause in natural menopause (WHO, 1996; Nazari et al.,2016). Although the average age of menopause varies according to countries, it is accepted as 51 years of age in the world and 47 years in Turkey (Orhan, 2020; WHO,1996).

During the period of menopause, a woman's health and lifestyle are of great importance. Because postmenopausal women are known as a defenseless group of community, it is necessary to develop a strategy to improve and protect health (Nazari et al., 2016).

Cardiovascular disease (CVD) is generally defined as the disease of men due to the protective effect of estrogen from endogenous secretions against cardiovascular risk factors in premenopausal women. However, with the decrease in estrogen levels in postmenopausal women, cardiovascular diseases become the highest reason of death in women (Ural, 2014). The increase in CVD risk may be due to estrogen deprivation directly or indirectly due to controllable risk factors such as hyperlipidemia, overweight, insulin resistance, diabetes, smoking and alcohol use, lack of physical activity or hypertension (Colpani et al., 2018; Newson, 2018). Many women are still under diagnosis and treatment and are not qualified enough to manage their risk factors for cardiovascular disease enough. In order to reduce the mortality rates and incidence of CVDs, cardiovascular risk factors should be controlled first (Zhao et al., 2018). If controllable risk factors can be intervened in the early period, the formation of CVDs can be prevented or their progression can be prevented (Abacı, 2011).

CVDs experienced during the period of menopause may occur depending on women's knowledge about menopause and their health-related lifestyle behaviors[3]. In the menopausal period, women should be informed about developing health-promoting behavioral models and putting their roles into practice in order to increase their level of knowledge[1]. In addition, the quality of life of women in the menopausal period should be maintained and the factors that negatively affect health should be determined (Eriksson, 2009).

Studies conducted show that application programs containing education and counseling are not qualified enough to develop healthy lifestyle behaviors (Orhan, 2020). The health service to be serviced and the training should be planned especially for the needs of the age group and considering the socio-economic levels of the people (Abay, 2016).

This study was carried out to define the knowledge level of cardiovascular disease risk factors and healthy lifestyle behaviors in menopausal women diagnosed with cardiovascular disease.

**Methodology**

**Purpose and Process of Research:** The study was carried out in a descriptive and cross-sectional manner in order to determine the level of knowledge of cardiovascular disease risk factors and healthy lifestyle behaviors in menopausal women diagnosed with cardiovascular disease.

**Place and Time of Research:** The data of the study were collected by face-to-face interview method between 15.06.2021 and 15.10.2021 in the Cardiology Polyclinic of one University Medical Faculty Hospital.

**The Scope and Sample of the Research:** The extent of the research; It consisted of women in the menopausal period who applied to the Cardiology Outpatient Clinic of a University Hospital. Based on the correlation value between cardiovascular disease risk factors, knowledge level and healthy lifestyle behaviors in patients with cardiovascular disease and their relatives in the literature, g-power was calculated and the correlation coefficient was calculated as 0.551. When 95% confidence (1-α), 5% (α) error margin, 80% test power (1-β), ρH1=0.551 and ρH0= 0.7 were included in the study with the bivariate hypothesis, according to the bivariate normal model power analysis results of 131 women were included in the sample of the study. Considering the losses, the study was completed with 138 people (Curuk, 2018).

**Data Collection Tools of the Research**

**Personal Information Form:** The form prepared by the researchers; It consists of 28 questions in total, 17 of which are related to the socio-demographic characteristics of individuals (age, education, occupation), 3 questions about their general habits, and 8 questions including measurements such as height, weight and blood pressure.

**Cardiovascular Diseases Risk Factors Knowledge Level (CARRF-KL) Scale:** The scale, which consists of 28 items, was developed in 2009 by Arıkan et al. The first 4 items of the scale are related to the characteristics, preventability and age factor of CVDs, 15 items (5,6,9-12,14,18,20,23-25,27,28.), 9 items (7. ,8,13,15,16,17,21,22,26. Items) aim to define the outcome of changes in risk behaviors. The items in the scale are presented to the participants in the form of a complete sentence that can be true or false, and the participants are asked to answer

these statements as "Yes", "No" or "I don't know" and 1 point is given for each correct answer. 22 questions are scored straight, 6 questions (11,12,16,17,24,26) are scored in reverse. The highest score that can be obtained from the scale is 28, and as the scores increase, the level of knowledge of the individuals increases. Arikan et al. The Cronbach alpha value of the scale was defined as 0.76 (Arıkan, 2009).

In our study, the Cronbach's alpha value for CARRF-KL was determined as 0.602. According to Ozdamar (Atıf), reliability is sufficient (Ozdamar, 1999).

**Healthy Lifestyle Behaviors Scale (HLBS II):** The scale, whose validity and reliability study in our country was conducted by Bahar et al. in 2008, was developed by Walker et al. It was developed by in 1996. Health responsibility (3,9,15,21,27,33,39,45,51), physical activity (4,10,16,22,28,34,40,46), nutrition (2,8,14, 20,26,32,38,44,50), spiritual development (6,12,18,24,30,36,42,48,52), interpersonal relationships (1,7,13,19,25,31, 37,43,49) and stress management (5,11,17,23,29,35,41,47) and six sub-dimensions, the scale consists of 52 items. Interpersonal relations scale sub-dimension evaluates the relations between the individual and the environment. It is necessary to use communication in a healthy relationship. Communication includes the sharing of feelings and thoughts through messages. In addition, the relationship is a continuous action.

Health responsibility scale sub-dimension is the existence of a sense of responsibility for the individual's mental and physical well-being. It is the ability of the individual to show the necessary care for health, to be informed about health in issues such as protecting and maintaining health, and to apply to the right people for help when he notices a problem or is faced with a problem.

The sub-dimension of physical activity scale covers practicing exercises in a regular program. It has an indispensable place among the elements necessary for an individual to lead a healthy life.

Nutrition determines the elements that the individual pays attention to in choosing, organizing and choosing meals at the daily and habitual level.

The sub-dimension of the spiritual development scale determines the individual's goals for life, his ability to add value to himself personally, to develop on himself, and to what extent he can recognize and satisfy himself. It focuses on the development of one's inner resources.

Development is operating in line with the determined life goals, maximizing the power it contains for optimal well-being.

Stress management scale sub-dimension is the individual's ability to identify and apply his/her psychological and physiological resources in order to minimize or effectively control the tension experienced by the individual.

All items of the scale, which is evaluated as a 4-point Likert scale as never (1), sometimes (2), often (3), regularly (4), are positive, and its overall score gives the healthy lifestyle behaviors score. The lowest score obtained from the scale is 52, and the highest score is 208. The Cronba alpha coefficient of the scale was found to be 0.94 (Bahar et al., 2008).

In our study, the Cronbach's alpha value for the HLBS-II scale was found to be 0.93. In the analysis for its sub-dimensions, Cronbach's alpha values were 0.80 for health responsibility, 0.84 for physical activity, 0.59 for nutrition, 0.81 for spiritual development, 0.71 for interpersonal relations, 0.78 for stress management. was determined (Ozdamar, 1999).

### Research Questions

1. What is the level of knowledge of women in menopause about CVD risk factors?

2. What is the level of healthy lifestyle behaviors of women in the menopause period?

3. Is there a correlation between the level of knowledge of CVD risk factors and healthy lifestyle behaviors in menopausal women?

**Ethical Aspect of the Research:** In order to be able to carry out the research, the ethics committee approval dated 12.04.2021 and numbered 09/22 was obtained from the Scientific Research Ethics Committee of a University. For the scale forms used in the research, permission was obtained from the authors by e-mail. All data collected in the study were collected in accordance with the Declaration of Helsinki. After the participants were informed about the content, goal, importance and data collection forms of the research, they were informed that their personal information would be kept confidential and that no one other than the researchers could access their personal information through the questionnaires they answered, and the necessary written and verbal consents were obtained.

**Statistical Design of the Research:** Before data is collected; Trakya University Faculty of Medicine Clinical Research Ethics Committee

permission, institutional permission from Trakya University Faculty of Medicine, and written and verbal informed consent from the choosen patients were obtained. Written permission for use was obtained from the owners of the CARRF-KL and HLBS II Scales. Normality condition in constant variables was checked with the Shapiro-Wilk test. When the normality condition was obtained, the data of 2 groups were compared by using the Student's t-test, and the data of three or more groups were compared by using One-way analysis of variance. When the normal distribution condition was not obtained, the Mann-Whitney U test and Kruskal Wallis test (Post-Hoc: Dunn test) were used instead. The relationship between two continuous variables was examined with Spearman's (rho) rank correlation coefficient. Continuous data were summarized with mean and standard deviation (mean±sd), median, minimum and maximum value (med (min-max)). Analyzes were performed with the SPSS version 23 (SPSS Inc., Armonk, NY) program. Significance level was determined as $p < 0.05$.

**Results**

The average age of the women was 65.9±8.9, and the majority of them were primary school graduates (65.2%), married (77.5%), housewives (83.3%), their incomes partially afford their expenses (42%) and smoking. It was determined that the average of drinking alcohol (15.2%').

It was determined that the mean duration of cardiovascular disease diagnosis of the women included in the study was 12.9±8.4 (Med 11.5, Min-Max = 1-35). Hypertension (79.7%) was the most common in women, followed by; coronary artery disease (63.8%), hyperlipidemia (30.4%), chronic heart failure (15.2%) and arrhythmia (7.2%). It was determined that 45.7% of the women had a diagnosis of diabetes accompanying cardiovascular disease.

Average age at marriage of women is 20.2±3.9 (Med, Min-Max = 19, 14-45), mean age at menarche is 13.5±1.5 (Med.13, Min.11-Max. 18), menopause mean age was 47.9±4.6 (Med, Min-Max = 49, 36-59).

It was determined that only 8% of the women were at a healthy weight, 35.5% were overweight and 56.5% (78) were obese. When cholesterol levels are taken into consideration, women with borderline and high total cholesterol levels are respectively; 26.1% and 14.5%, those with borderline high, high and very high LDL levels,

respectively; 19.6%, 11.6% and 31.2%, those with high HDL levels were found to be 31.2%. The rates of women with borderline and high triglyceride levels are respectively; 23.2% (32) and 11.6% (16).

It was found that the women got the mean CARRF-KL total score of 21.6±2.5 and the highest mean score of 12.2±1.5 from the risk factor sub-dimension. The mean score of the HLBS II scale is 135.6±2. When the HLBS II scale sub-dimension mean scores were examined, it was determined that women got the highest average in interpersonal relationships, spiritual development, health responsibility, stress management and nutrition sub-dimension in turn, and the lowest score in physical activity sub-dimension.

In the research, a negative and weak linear relationship was found between the age of the patients and the CARRF-KL scores (r=-0.291, p= 0.001). There was a negative and very weak linear relationship between CVD characteristics and risk behavior sub-dimensions and the age of the patients, while no significant linear relationship was found with the risk factor sub-dimension (r=-0.239, p=0.005, r=-0.179, p= 0.035, respectively, r=-0.087, p=0.310) (Fig. 1).

In the examination performed for the other socio-demographic characteristics of the patients, no significant correlation was found between the CARRF-KL scores and the scores obtained from its sub-dimensions (p>0.05).

In the examination performed for the educational status of the patients, a statistically significant difference was found in terms of HLBS II scores and physical activity sub-dimension scores (p<0.05) (Respectively; X2=12.053, p=0.017; X2=17.503, p=0.002). The HLBS II scores and physical activity scores of the illiterate patients were found to be significantly lower than those of primary, secondary, high school and university graduates (Post-Hoc, Literate-Primary School: p=0.045, p=0.026, Literate-Secondary School: p=0.008, p =0.016, Literate-High School: p=0.017, p=0.018, Literate-University: p=0.001, p=0.010). At the same time, it was observed that the HLBS II scores of primary school graduates were significantly lower than the scores of university graduates (Post-Hoc, Primary School-University: p=0.009).

When the patients were examined for social security, the HLBS-II scores of those with social security were found to be significantly higher

(Z=163.5, p=0.015). At the same time, it was observed that the scores obtained from the sub-dimensions of nutrition, health responsibility and stress management were significantly higher in patients with social security (Respectively; Z=173.5, p=0.020; Z=168.5, p=0.017; Z= 207.5, p=0.048).

When the patients were examined in terms of occupations, the HLBS II scores of those with social security were found to be significantly higher (Z=163.5, p=0.015). At the same time, it was observed that the scores obtained from the sub-dimensions of nutrition, health responsibility and stress management were significantly higher in patients with social security (Respectively; Z=173.5, p=0.020; Z=168.5, p= 0.017; Z= 207.5, p=0.048).

In the research conducted for smoking, it was observed that non-smokers had significantly higher HLBS II nutrition sub-dimension scores (t=-2.848, p=0.005). Mean nutrition scores were 20.5±3.6 in non-smokers and 18.1±3.6 in smokers. In the research conducted for the amount of daily smoking, a negative and very weak linear relationship was discovered between the nutrition score and the nutritional score (r=-0.232, p=0.006).

A very weak positive linear relationship was detected between CARRF-KL and HLBS II (r=0.218). When the relationship between HLBS II sub-dimensions and CARRF-KL was examined, it was observed that there was a very weak and significant linear relationship with spiritual development, nutrition, health responsibility and physical activity (r=0.198, r=0.199, r=0.209, r=0.250, respectively).

A strong linear relationship was confirmed between the spiritual development, stress management, health responsibility, physical activity and nutrition sub-dimensions of the HLBS II scale, and a moderate linear relationship with the interpersonal relations sub-dimension (r=0.864, r=0.835, r=0.807, r=0.749, respectively). r=0.735).

There was a strong linear relationship between the sub-dimensions of spiritual development and stress management and interpersonal relationships, and a moderate linear relationship between health responsibility, physical activity and nutrition (r=0.745, r=0.723, r=0.588, r=0.542, r, respectively). =0.531).

Interpersonal relations sub-dimension had a moderate correlation with stress management, and a weak linear relationship with health responsibility, nutrition and physical activity (r=0.569, r=0.473, r=0.316, r=0.263, respectively).

A moderate linear relationship was found between nutrition and physical activity, health responsibility and stress management sub-dimensions (r=0.586, r=558, r=513), respectively.

A moderate linear relationship was confirmed between health responsibility and stress management and physical activity sub-dimensions (r=0.619, r=0.557, respectively).

A moderate linear relationship was confirmed between stress management and physical activity (r=0.522, Table 3.).

**Table 1.** Mean CARRF-KL and HLBS II Scale Scores of Women (N=138)

| Scales/Sub | Dimensions (Min-Max) | $\overline{x}\pm ss$ |
|---|---|---|
| **CARRF-KL*** | 22 (11-27) | 21.6±2.5 |
| **HLBS II**** | 135.5 (89-186) | 135.6±21 |
| **Spiritual Development** | 29 (16-36) | 28.8±4.4 |
| **Interpersonal Relations** | 30 (20-36) | 29.6±3.8 |
| **Nutrition** | 20 (11-29) | 20.2±3.7 |

| | | | |
|---|---|---|---|
| **Health Responsibility** | | 23 (13-35) | 22.9±4.7 |
| **Stress Management** | | 20 (11-32) | 20.7±4.9 |
| **Physical Activity** | | 12 (8-28) | 13.5±4.9 |

Minimum-maximum points that can be obtained; Min-Max: Minimum-Maximum; Median:Median; x̄±sd: Mean±standard deviation; *CARRF-KL: Cardiovascular Diseases Risk Factors Knowledge Level; **HLBS: Healthy Lifestyle Behaviors Scale

**Table 2.** Comparison of Scale Scores by Socio-demographic Characteristics of Women (N=138)

| Socio-demographic Characteristics | n (%) | CARRF-KL | HLBS-II |
|---|---|---|---|
| **Age** | 138 (100) | | |
| **r / p** | | -0.291 / 0.001 | 0.043 / 0.620 |
| **Educational Status** | | | |
| Illiterate | 24 (17.4) | 21 (11-26) | 119 (98-178) |
| Primary School | 90 (65.2) | 22 (13-27) | 137.5 (89-186) |
| Secondary School | 9 (6.5) | 22 (18-25) | 143 (130-164) |
| High school | 7 (5.1) | 21 (18-23) | 144 (124-175) |
| University | 8 (5.8) | 22.5 (20-25) | 147.5 (100-185) |
| **Test Statistics / p** | | $\chi^2$ =5.084 / 0.279[a] | $\chi^2$ =12.053 / 0.017[a] |
| **Marital Status** | | | |
| Married | 107 (77.5) | 22 (13-27) | 136 (89-186) |
| Single | 31 (22.5) | 21 (11-26) | 125 (98-186) |
| **Test statistics / p** | | Z=-1.098 / 0,272[b] | Z=-0.367 / 0.713[b] |
| **Occupation** | | | |
| Housewife | 115 (83.3) | 22 (11-27) | 132 (89-186) |
| Retired | 23 (16.7) | 23 (18-25) | 143 (100-185) |
| **Test Statistics/ p** | | Z=-1.302 / 0.193[b] | Z=-2.137 / 0.033[b] |
| **Income status** | | | |
| Afford | 63 (45.7) | 21 (11-27) | 135.3±21.1 |
| Partly Afford | 58 (42) | 22 (13-26) | 135.4±20.7 |
| Not Afford | 17 (12.3) | 22 (20-25) | 137.6±22.7 |
| **Test Statistics / p** | | $\chi^2$ =1.4 / 0.497[a] | F=-0.088 / 0.916[c] |

**Family Type**

| | | | |
|---|---|---|---|
| Nuclear Family | 114 (82.6) | 22 (11-27) | 135 (89-186) |
| Extended Family | 24 (17.4) | 21 (16-25) | 142 (92-178) |

| | | | |
|---|---|---|---|
| **Test Statistics/ p** | | Z=-0.937 / 0,349[b] | Z=0.231 / 0.817[b] |

**Smoking**

| | | | |
|---|---|---|---|
| Yes | 117 (84.8) | 22 (18-25) | 136±21.1 |
| No | 21 (15.2) | 22 (11-27) | 133.6±20.6 |

| | | | |
|---|---|---|---|
| **Test statistics / p** | | Z=-0.084 / 0.933[b] | t=-0.480 / 0.632[d] |

Normally distributed data were summarized as mean and standard deviation ($\bar{x}$±ss), non-normally distributed data were summarized as median and minimum to maximum value (Med (Min-Max). a: Mann-Whitney U test, b: Kruskal Wallis test , c: Student's t test, d: One-way analysis of variance, r: Spearman (rho) correlation coefficient.

**Table 3.** Correlation analysis between CARRIF-BD, HLBS II and its sub-dimensions

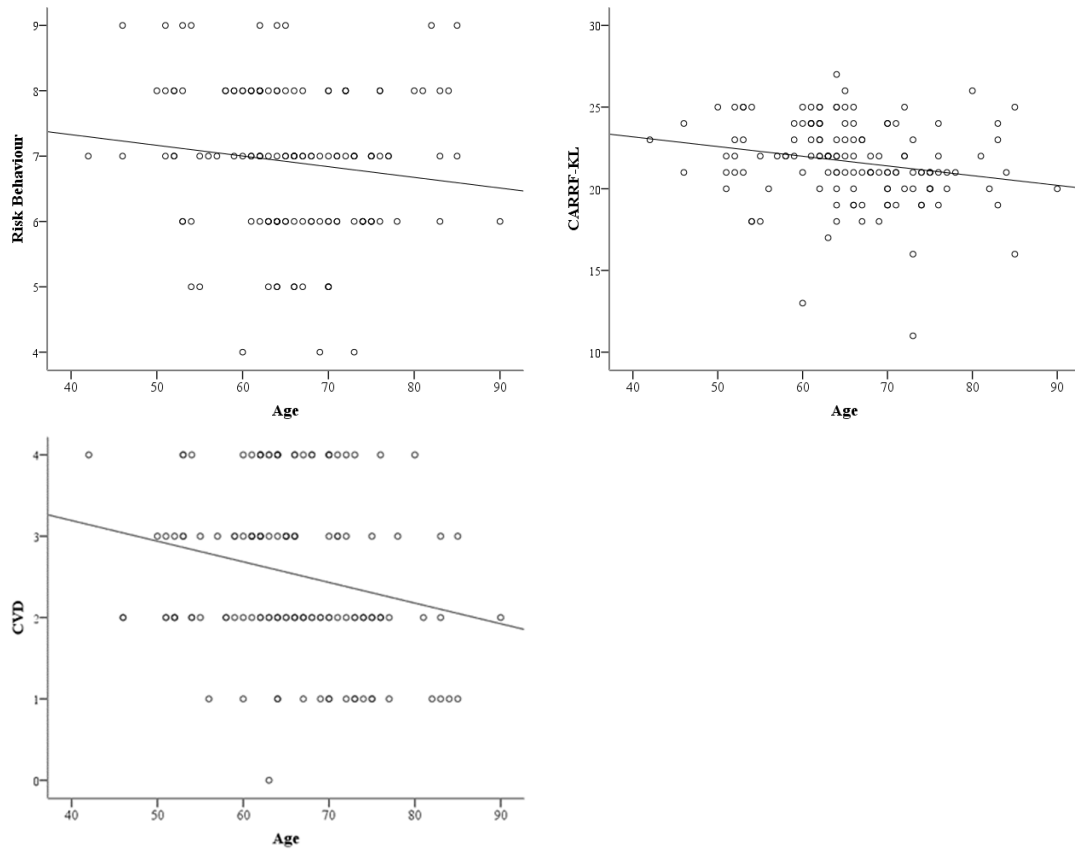| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| 1. | **CARRF-KD** | 1.000 | | | | | | | |
| 2. | **HLBS-II** | 0.218[*] | 1.000 | | | | | | |
| 3. | **Spiritual development** | 0.198[*] | 0.864[**] | 1.000 | | | | | |
| 4. | **Interpersonal Relations** | 0.051 | 0.681[**] | 0.723[*] | 1.000 | | | | |
| 5. | **Nutrition** | 0.199[*] | 0.735[**] | 0.531[**] | 0.316[**] | 1.000 | | | |
| 6. | **Health Responsibility** | 0.209[*] | 0.807[**] | 0.588[**] | 0.473[**] | 0.558[**] | 1.000 | | |
| 7. | **Stress Management** | 0.166 | 0.835[**] | 0.745[**] | 0.569[**] | 0.513[**] | 0.619[**] | 1.000 | |
| 8. | **Physical Activity** | 0.250[*] | 0.749[**] | 0.542[**] | 0.263[**] | 0.586[**] | 0.557[**] | 0.522[**] | 1.000 |

*: p<0.05 *: p<0.001

**Figure 1.** The relationship between women's age and cardiovascular disease risk factors awareness scale and scores of its sub-dimensions
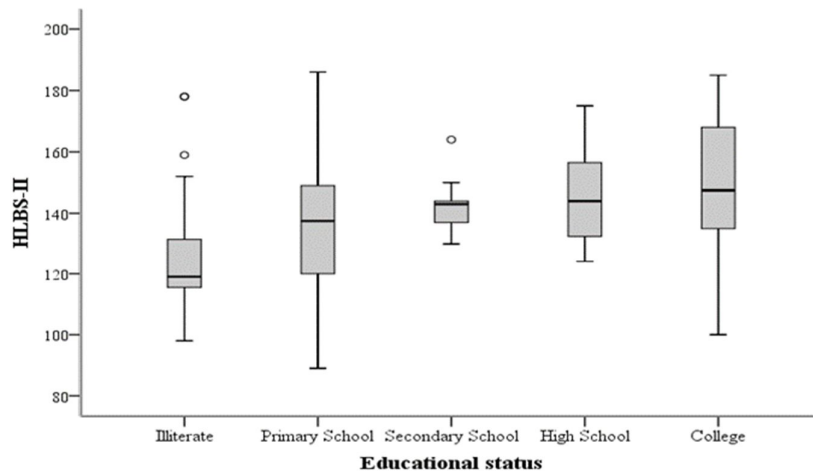


**Figure 2.** The relationship between women's education and healthy lifestyle behaviors II scale scores

**Discussion**

In this study, in which the relationship between the knowledge levels of risk factors related to cardiovascular diseases and healthy lifestyle behaviors in menopausal women was researched, it was determined that the level of knowledge of risk factors related to cardiovascular diseases was good and the scores of healthy lifestyle behaviors were moderate. In this research, a negative and weak linear relationship was confirmed between the age of the patients and their CARRF-KL scores, while the HLBD II scale scores of those with higher education levels and those who retired were found to be higher (Figure 1, Figure 2).

In our study, it was determined that the total mean score of the participants on the CARRF-KL scale was 21.6±2.5. Considering that the highest score that can be obtained from the CARRF-KL scale is 28, it is seen that the scores of the participants in this study are at a good level. When the literature was searched, the mean scores of the CARRF-KL scale were; In the studies of Hepcan Ors and Tumer (2020), it was found to be 17.67±4.85 (Hebcan, 2020). It is seen that the participants have lower CARRF-KL scale mean score than our study. In the study of Ucar and Arslan (2017), the mean CARRF-KL scale score of individuals was 20.21±4.39, while Curuk et al. (2018) found it to be 19.3±5.8 in their study ( Curuk, 2018; Ucar, 2017). The results of the study are similar to our study.

There was a negative and weak linear relationship between the age of the women and their CARRF-KL scores (p<0.05). While there was a negative, very weak linear relationship between CVD characteristics and risk behavior sub-dimensions and the age of the patients, no significant linear relationship was confirmed with the risk factor sub-dimension. Similar to our study, in the study conducted by Oz and Koc (2018), it was observed that there was a negative relationship between the age and the level of knowledge of individuals (Oz, 2018). In the study conducted by Uyanik and Metintas (2016), it was stated that the median score obtained from the CARRF-KL scale decreased as the age increased in the study group (Uyanik, 2016).

The highest score that can be obtained from the Healthy Lifestyle Behaviors Scale II is 208. In our study, it was determined that the total mean score of the participants on the HLBD II scale was 135.6±21. In a study conducted by Ozkan et al.

(2019), the mean HLBS II total score average of the patients was 132.75±3.37, and in another study conducted with 253 women aged 20-65 living in a military lodging, it was 125.29±22.04 (Ozkan, 2019; Demirsoy, 2010). Erbas et al. (2004) in the study that included 238 women aged 40-60 years who were in the menopause period, it was determined that the mean score of the healthy lifestyle behaviors scale of women was 117.03±18.84 (Erbas, 2004)). Our study is similar to the literature.

When the scores of the women in the subgroups of the HLBS II scale were evaluated in our study, it was seen that the lowest mean belonged to the physical activity sub-dimension (13.5±34.9) and the highest mean belonged to the interpersonal relations scale sub-dimension (29.6 ±3.8). Ozkan et al. (2019) in their study, when the mean scores of the patients in the HLBS II sub-dimensions were examined; it was observed that they got the highest score from interpersonal relationships and the lowest score from physical activity, which is similar to our study (Ozkan et al., 2019). Karakoc Kumsar et al. (2015) found that students got the highest score from the spiritual development sub-dimension of the HLBS II scale and the lowest score from the physical activity sub-dimension (Karakoc, 2015).

In the study conducted by Yesil Bayulgen and Altiok (2017), it was found that the mean HLBS-II score of the patients was 136.55±25.30, while the highest score was obtained from the spiritual development and interpersonal relationships, and the lowest score was obtained from the physical activity sub-dimension, Kucukberber et al. (2011) also found that the participants got the highest score from the interpersonal relations sub-dimension and the lowest score from the physical activity sub-dimension (Yesil, 2017; Kucukberber, 2011). When the study findings and the literature are examined, the fact that the lowest average score of the individuals is the physical activity sub-dimension shows that the physical activity habit is not at a sufficient level.

When the mean scores of the HLBS II scale and its subgroups were examined according to the socio-demographic characteristics of the patients, there was no statistically significant difference between the age, marital status, income status and family type characteristics, and the HLBS II scores and sub-dimensions (p>0.05). A significant difference was found in terms of HLBS II scores and physical activity sub-dimension scores

(p<0.05). The HLBS II scores and physical activity scores of the illiterate patients were significantly lower than those of primary, secondary, high school and university graduates (p<0.05). In addition, in the examination made, it was seen that the HLBS II scores of primary school graduates were significantly lower than the scores of university graduates (p<0.05). Ozkan et al. (2019) also found that as the educational status of women increased, the mean physical activity score increased statistically significantly (p<0.05) (Ozkan et al., 2019)

Similar to our study, in a study conducted with patients who underwent coronary artery bypass surgery, it was stated that higher education graduates pay more attention to healthy lifestyle behaviors, the higher the education level, the higher the cognitive function and perception capacity of people, and the better understanding of the importance of lifestyle changes and the implementation of healthy lifestyle behaviors (Okgun, 2017). In the study conducted by Hepcan Ors and Tumer (2020), it was stated that there was no significant difference in the mean HLBS II score averages of the women according to the education level, marital status and family type status of the women (p>0.05) (Hebcan, 2020).

In order to reduce the mortality rates and incidence of CVDs, cardiovascular risk factors must be controlled first (Abaci, 2011). If controllable risk factors can be intervened in the early period, the formation of CVDs can be prevented or their progression can be stopped (Eriksson, 2009). The most effective way to prevent cardiovascular risk factors is to acquire and maintain healthy lifestyle behaviors (Rankin, 2012). When the literature is examined, it is stated that patients who have more information about cardiovascular risk factors adapt more to lifestyle changes and practice more healthy lifestyle behavior (Alm-Roijer et al., 2004). In support of these studies, in our study, it was determined that there was a very weak positive and significant relationship between the CARRIF-BD scale score of the patients and the sum of the HLBS II scale and all the sub-dimensions of the scale.

**Limitations of the Research:** The fact that the study is single-centered constitutes the limitation of the study.

**Conclusion:** Women's cardiovascular disease risk factors knowledge level is good, there is a significant difference in terms of their educational status and HLBS II scores and physical activity sub-dimension scores. Scores were found to decrease.

For this reason, health professionals have an important role in increasing the knowledge of CVD risk factors in menopausal women, developing and maintaining healthy lifestyle behaviors. It is recommended that public health nurses and midwives raise awareness by informing women about CVD risk factors and healthy lifestyle behaviors within the scope of their outpatient and clinical service, identify the difficulties that women experience in adapting to health promotion behaviors and discuss possible solutions.

**Main Points**

1. There was a significant difference in terms of education status and HLBS II scores of the patients and physical activity sub-dimension scores,

2. The HLBS II and physical activity scores of illiterate patients were significantly lower than those of literate patients,

3. It was also observed that as the education level decreased, the HLBS II scores also decreased

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