Original Article

Assessment of Turkish Patients' Knowledge about Management of Cardiac Risk Factors

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Abstract

Background: The patients' knowledge about cardiac risk factors is crucial for the effective management of modifiable risk factors.
Aim: This research aimed to assess the knowledge needs of patients on the risk factors and management of coronary artery diseases.
Methods: It is a descriptive study. The study sample consisted of 324 patients with coronary artery diseases. Data were collected using the Personal Information Survey and the Turkish version of the Coronary Artery Disease Education Questionnaire-Short version (12th-item).
Results: The mean age of the sample was 63.72 ± 12.72 years. Patients with coronary artery diseases had moderate knowledge about the management of cardiac risk factors. The knowledge about cardiac diet, stress management, and the medication was slightly better than the level of knowledge about cardiac symptoms, exercise, and depression risk. Females, less educated patients, and housewife patients, and those with low income and living alone had less knowledge ($p < 0.05$). Patients with additional chronic disease obtained statistically higher scores from Diet, Stress and Medication Knowledge subscale and total scale.
Conclusions: The patients with coronary artery diseases need particularly support for improving their knowledge about cardiac risk factors such as diet, stress management, and medication regimen.

Keywords: Coronary artery disease, Knowledge, Risk factors, Patient.

Introduction

Coronary artery diseases are one of the leading causes of morbidity and mortality all around the world. World Health Statistics Report (2016) published by the World Health Organization revealed that cardiovascular diseases make up 46.2% (17.9 million people) of non-contagious diseases as a death cause (World Health Statistics, 2016). Coronary artery diseases are a burden due to the high mortality rate in developing countries and preventive interventions against the disease are recognized as the most effective method. Therefore; in the context of preventive measures against coronary artery disease, assessing the knowledge level of patients is of vital importance to help them

develop healthy lifestyle behaviors and contribute to the development of strategies for reducing both morbidity and mortality (Choudhary et al., 2014).

Nurses have significant roles and responsibilities in the prevention of cardiovascular diseases. Nurses particularly guide and encourage people at risk or cardiac patients to lead healthy lifestyle behaviors and manage the cardiac risk factors effectively and to support the patients for achieving specified treatment goals. Nurses support patients and their relatives in patients' self-care, contribute to the adaptation to disease and treatment; coordinate care and enable early diagnosis of problems (Inangil & Sendir, 2014; Turkmen et al., 2012).

The findings of this study are going to contribute to a better understanding of the lack of knowledge that patients diagnosed with coronary artery disease have on the risk factors and control of coronary artery disease. Thus, these findings will guide the development of educational programs about the management of cardiac risk factors. Assessment of misleading and imperfect knowledge of patients diagnosed with coronary artery diseases about coronary artery disease, risk factors, and management of these risk factors is going to shed light on the planning and development of training and counseling services based on the needs of patients and their relatives. Therefore, this research was conducted to assess the knowledge needs of patients on the risk factors and management of coronary artery diseases.

Research Questions

1.   What is the knowledge level of patients about coronary artery disease risk factors?
2.   Is there any association between the knowledge level of patients about coronary artery disease risk factors and patients' characteristics?
3.   Is there any association between the knowledge level of patients about coronary artery disease risk factors and disease-related characteristics?

Methods

Design: This research is a descriptive study.

Research Setting: This study was conducted at an outpatient unit of cardiology service in a university hospital.

Study Population and Sample: The study population comprised all patients at or over the age of 18 who were hospitalized with a diagnosis of coronary artery disease and monitored and treated at the outpatient unit. The study sample comprised patients at or over the age of 18 who were hospitalized with a diagnosis of coronary artery disease between April 1, 2017, and April 1, 2018, and volunteered to participate in the study. A total of 324 patients who fulfilled the inclusion criteria were approached. The study sample was formed with a convenience sampling method, which is one of the improbable sampling methods. All patients who fulfilled inclusion criteria were involved in the study sample. Sample inclusion criteria were: (1) being monitored and treated with a diagnosis of coronary artery disease (myocardial infarction, angina pectoris), (2) being 18 or older, (3) volunteering to participate in the study, (4) having a good condition for an interview and being conscious, (5) knowledge of Turkish and not having no problems with communication (language etc.).

Data Collection Tools: Two tools were used for data collection. Data were collected using the Personal Information Survey and the Turkish version of the Coronary Artery Disease Education Questionnaire-Short version (12th-item). Data were collected in face to face interview.

Personal Information Survey: It includes questions to identify socio-demographic characteristics, medical diagnosis, treatment and healthy lifestyle habits of patients. Patient Data Form includes three sections. The first comprises seven questions on socio-demographic features and the second comprises 13 questions on medical history and risk factors. The third section involves eight questions on the disease and its treatment while the fourth section has 13 questions on cardiac risk factors and healthy lifestyle habits.

CADE-Q SV: Coronary Artery Disease Education Questionnaire- Short Version

Coronary Artery Disease Education Questionnaire-Short Version is made up of 20 questions to assess the knowledge level of patients diagnosed with coronary artery disease on coronary artery disease, related risk factors, and control of these factors. Each question in the scale is answered with "True", "False" or "I don't know". The scale comprises five sub-dimensions

(subscales): Clinical Aspects, Risk Factors, Exercise, Diet and Psychosocial Risk. There are four statements in one sub-dimension in the original English version of the scale. The score of each correct answer is 1, for the incorrect answer is 0. The highest scale score is 20. Coronary Artery Disease Education Questionnaire Short Version was developed by cardiac rehabilitation experts based on the previous version of the Coronary Artery Disease Education Questionnaire. The original version was examined by 12 experts and 20 patients were subjected to pilot-scheme to ensure its content validity. The scale was applied to 132 cardiac rehabilitation patients. Fifty patients were subjected to test-retest interviews at 2-week intervals to test the reliability of the scale. Cronbach's alpha internal consistency of all sections was found higher than 0.70 (Ghisi et al., 2016).

Validity and reliability analysis of the Turkish version of the scale was carried out by on patients with coronary artery diseases (n =324) treated and followed up at the cardiology ward or outpatient clinics. The validity and reliability study revealed a two-factor structure. Two-factor structures were found that accounted for 46.49% of the total variance. The analysis shows that there are 7 items in the first factor and 5 items in the second factor. The first factor includes 2nd, 6th, 9th, 12th, 14th, 19th, and 20th items. This factor was named Diet, Stress and Medication Knowledge subscale. The second factor includes 3rd, 4th, 8th, 10th, and 17th items. This factor was named Knowledge of Symptom, Exercise, and Depression Risk after a Heart Attack subscale. Cronbach's alpha reliability coefficient was found 0.84 for the whole scale, 0.81 for the Diet, Stress, and Medication Knowledge subscale and 0.67 for the Knowledge of Symptom, Exercise, and Depression Risk after a Heart Attack subscale. Correct answers were rated as "0", wrong answers were rated as "1". The score of the Turkish version of the Coronary Artery Disease Education Questionnaire (12th-item version) ranges between 0 and 12 (Metin-Akten et al., 2018).

Ethical Considerations: Ethics board approval (Number: 05/21 and date: 15.03.2017) and institutional permission were received before the study. Permission was received from researchers who adapted the scale to Turkish. Patients who were involved in the sample were informed about the goal of the study and explained that any information would be kept confidential and not shared with anyone and they did not have to write their names on questionnaire forms. Participants granted oral and written consent.

Statistical Analysis: Data were analyzed on a statistics program. Data distribution was analyzed by using descriptive statistics such as frequency, arithmetic mean, standard deviation, and percentile. Scale scores were compared in terms of personal-, disease-related and treatment-related variables with parametric and non-parametric tests. Mean scores of the scale were compared with patients' characteristics such as medical history and cardiac risk factors using the Mann-Whitney U test, and Kruskal Wallis analysis. Pearson correlation analysis was carried out to identify if there is a relationship between measured variables and scale and subscale scores of patients. The results were assessed at a 95% reliability range and $p < 0.05$ significance level.

Results

Personal Characteristics of Participants: The average age of participants is 63.72 ± 12.72 and the majority is male patients (65.7%). The majority of the sample is married (71.6%) and graduates of primary school (51.8%). One-third of the patients had additional comorbid conditions (33.3%). The majority of the sample did not consume alcohol (53.1%) or smoke (83.3%). Participants reported that they did not do exercise (74.1%) but approximately half of the sample led an inactive life (45.7%). Most patients did not receive training about their cardiac disease (80.6%) (Table 1).

Patients' Knowledge of Coronary Artery Disease Risk Factors: Scale and subscale mean scores were calculated. The mean score of Diet, Stress and Medication-Knowledge subscale was 4.60 ± 2.21, while the mean score of Knowledge of Symptom, Exercise, and Depression Risk after a Heart Attack subscale was 2.60 ± 1.61. The total scale score was 7.21 ± 3.44 (Table 2). Mean scores indicated that patients with coronary artery diseases had moderate knowledge about management of cardiac risk factors, overall. The knowledge about cardiac diet, stress management, and the medication regimen was slightly better than knowledge about the cardiac symptom, exercise, and depression risk.

Table 1. Socio-demographic Characteristics of Participants (n = 324)

Variables	n	%
Gender		
Female	111	34.3
Male	213	65.7
Marital status		
Married	232	71.6
Single	92	28.4
Education level		
Illiterate	29	9
Literate	55	17
Primary education	168	51.8
Secondary education	42	13
Higher education	30	9.2
Occupation		
Self-employed	86	26.5
Retired	137	42.3
Housewife	92	28.4
Civil servant	9	2.8
Comorbid conditions		
Yes	108	33.3
No	191	59
No answer	25	7.7
Family history of heart disease		
Yes	137	42.3
No	187	57.7
Smoking		
Currently using	52	16
Not using currently	172	53.1
Quit	100	30.9
Alcohol consumption		
Currently using	54	16.7
Not using currently	270	83.3
Perceptions about daily life		
Stressful daily life	138	42.6
Not having a stressful daily life	109	33.6
Partly experiencing stress	77	23.8
Exercise status		
Doing (walking, fitness, etc.)	84	25.9
Do not exercise	240	74.1
Individual perceptions of the level of mobility		
Physically not active	39	12.0
Moderately active	148	45.7
Physically active	119	36.7
Physically much active	18	5.6
Regular health check-ups		
Yes	177	54.6

No	117	36.1
No answer	30	9.3
Receiving education about heart disease		
Yeah	56	17.3
No	261	80.6
No answer	7	2.2
Perception of the level of knowledge about the disease		
Good	24	7.4
Medium-level	123	38
Insufficient	177	54.6

Table 2. Patients' Knowledge Scores Obtained From Coronary Artery Disease Education Questionnaire (CADE-Q SV) (*n* = 324)

Turkish Version of Coronary Artery Disease Education Questionnaire [Short Version (CADE-Q-SV)]	Mean ± SD	Min-Max
Diet, Stress and Medication Knowledge subscale *(2nd, 6th, 9th, 12th, 14th, 19th ve 20th items)*	4.60 ± 2.21	0-7
Knowledge of Symptom, Exercise, and Depression Risk after a Heart Attack subscale *(3rd, 4th, 8th, 10th, and 17th items)*	2.60 ± 1.61	0-5
Total scale *(total of 12 items)*	7.21 ± 3.44	0-12

Table 3. Comparison of Scale Scores with Socio-demographic Characteristics of Participants (*n* = 324)

	Subscales		
Variables	Diet, Stress and Medication Knowledge	Knowledge of Symptom, Exercise and Depression Risk after a Heart Attack	Total Scale
	Mean ± SD	**Mean ± SD**	**Mean ± SD**
Gender			
Female	3.93 ± 2.35	2.39 ± 1.67	6.31 ± 3.75
Male	5.01 ± 2.02	2.73 ± 1.56	7.74 ± 3.14
	z = 3.509	z =1.454	z = 2.665
Test and p value	*p*< 0.001***	*p*= 0.10	*p*= 0.008**
Marital status			
Married	4.81 ± 2.07	2.58 ± 2.65	7.39 ± 6.81
Single	12.36 ± 4.89	9.46 ± 3.19	21.82 ± 7.45
	z = 0.725	z = 0.284	z = 0.858
Test and p value	*p*= 0.08	*p*= 0.78	*p*= 0.39
Education status			
Illiterate[a]	2.65 ± 2.23	1.52 ± 1.44	4.17 ± 3.34
Literate[b]	3.59 ± 2.41	1.94 ± 1.81	5.53 ± 3.99
Primary education[c]	4.82 ± 2.09	2.86 ± 1.51	7.68 ± 3.19
Secondary education[d]	5.95 ± 0.94	3.00 ± 1.49	8.95 ± 2.06

	Diet, Stress and Medication Knowledge	Knowledge of Symptom, Exercise and Depression Risk after a Heart Attack	Total Scale
Higher education[e]	5.89 ± 0.94	3.00 ± 1.37	8.89 ± 1.73
Test and p value	KW = 35.820 **p< 0.001*** a<c,d,e b<d,e**	KW = 20.047 **p< 0.001*** a<c,d,e b<c**	KW = 31.667 **p< 0.001*** a,b < c,d,e**
Occupation			
Self-employed[a]	4.10 ± 2.21	2.65 ± 1.64	6.74 ± 3.51
Retired[b]	5.27 ± 1.89	2.81 ± 1.55	8.08 ± 3.00
Housewife[c]	3.81 ± 2.38	2.24 ± 1.62	6.04 ± 3.71
Civil servant[d]	5.00 ± 1.73	3.33 ± 2.08	8.33 ± 3.79
Test and p value	KW = 21.812 **p< 0.001*** c,a<b**	KW = 5.952 *p= 0.11*	KW = 14.599 **p< 0.002** c<b**
Perceived income level			
Below avarage[a]	5.06 ± 1.99	3.11 ± 1.51	8.17 ± 3.16
Avarage[b]	4.37 ± 2.31	2.40 ± 1.65	6.77 ± 3.58
Good[c]	5.67 ± .98	2.83 ± 1.11	8.50 ± 1.31
Test and p value	KW = 5.672 *p= 0.06*	KW = 8.012 **p= 0.018*** b<a**	KW = 7.480 **p= 0.024*** b<a**
Living alone			
Yes	4.80 ± 2.05	2.69 ± 1.57	7.49 ± 3.24
No	3.84 ± 2.61	2.29 ± 1.73	6.13 ± 3.97
Test and p value	z = 2.059 **p= 0.039***	z = 1.490 *p= 0.14*	z = 1.978 **p= 0.048***

*p< 0.05 **p< 0.01 ***p< 0.001 z = Mann-Whitney U test KW = Kruskal Wallis test

Table 4. Comparison of Scale Scores with Participants' Cardiac Risk Factors and Treatment Compliance (*n* = 324)

	Subscales		
Variables	Diet, Stress and Medication Knowledge	Knowledge of Symptom, Exercise and Depression Risk after a Heart Attack	Total Scale
	Mean ± SD	**Mean ± SD**	**Mean ± SD**
Co-morbid conditions			
Yes[a]	4.91 ± 2.05	2.73 ± 1.54	7.64 ± 3.13
No[b]	4.15 ± 2.22	2.36 ± 1.60	6.51 ± 3.49
No answer[c]	4.40 ± 2.18	2.48 ± 1.78	6.88 ± 3.57
Test and p value	KW =9.853 **p= 0.007*** b<a**	KW = 3.920 *p= 0.14*	KW = 7.852 **p= 0.020*** b<a**
Smoking			

Currently using[a]	4.77 ± 1.93	2.67 ± 1.50	7.44 ± 2.92
Do not use[b]	4.31 ± 2.25	2.45 ± 1.58	6.77 ± 3.49
Stopped smoking[c]	5.06 ± 1.97	2.78 ± 1.62	7.84 ± 3.13
	KW = 6.345	KW = 2.846	KW = 7.865
	*p= 0.020***	*p*=0.24	*p= 0.042***
Test and p value	**b<c**		**b<c**
Sense of loneliness			
Yes[a]	4.00 ± 2.34	2.59 ± 1.50	6.59 ± 3.48
No[b]	4.69 ± 2.08	2.58 ± 1.58	7.27 ± 3.25
Sometimes[c]	4.98 ± 2.05	2.62 ± 1.70	7.60 ± 3.36
	KW = 6.383	KW = 0.037	KW = 3.158
Test and p value	*p= 0.041***	*p= 0.98*	*p= 0.21*
	a<c		
Regular health check-ups			
Yes[a]	4.84 ± 2.15	2.77 ± 1.63	7.61 ± 3.39
No[b]	4.50 ± 1.95	2.54 ± 1.42	7.03 ± 2.90
No answer[c]	3.77 ± 2.57	1.73 ± 1.66	5.50 ± 3.90
	KW = 7.333	KW = 11.066	KW = 11.014
	*p= 0.026***	*p= 0.004****	*p= 0.004****
Test and p value	**c<a**	**c<a**	**c<a**
Receiving education about heart disease			
Yes[a]	5.25 ± 2.02	3.02 ± 1.46	8.27 ± 3.07
No[b]	4.52 ± 2.15	2.54 ± 1.59	7.06 ± 3.33
No answer[c]	3.14 ± 1.68	1.00 ± 1.15	4.14 ± 2.27
	KW = 10.796	KW = 11.436	KW = 13.802
	*p= 0.005****	*p= 0.003****	*p= 0.001****
Test and p value	**c<a,b**	**c<a,b**	**b,c<a**
Perception of the level of knowledge about the disease			
Good[a]	6.04 ± 1.20	3.46 ± 1.38	9.50 ± 2.11
Medium-level[b]	5.04 ± 1.89	2.63 ± 1.61	7.67 ± 3.04
Insufficient[c]	4.13 ± 2.26	2.44 ± 1.56	6.57 ± 3.46
	KW = 24.260	KW = 8.816	KW = 19.622
	*p< 0.001*****	*p= 0.012***	*p< 0.001*****
Test and p value	**c<b<a**	**c<b**	**c<b<a**
Being able to list the names of the medication			
Yes[a]	5.04 ± 1.96	2.99 ± 1.48	8.03 ± 3.00
No[b]	4.12 ± 2.29	2.33 ± 1.54	6.45 ± 3.42
Some[c]	4.84 ± 2.00	2.48 ± 1.69	7.32 ± 3.33
Test and p value	KW = 10.883	KW = 10.305	KW = 13.399

	*p< 0.004** b<a*	*p= 0.006** b<a*	*p= 0.001** b<a*
Regular use of medication			
Yes[a]	4.67 ± 2.13	2.61 ± 1.59	7.28 ± 3.31
No[b]	3.85 ± 2.20	2.19 ± 1.44	6.04 ± 3.26
Sometimes[c]	4.88 ± 2.06	2.88 ± 1.69	7.76 ± 3.44
	KW = 4.138	KW = 2.309	KW = 4.363
Test and p value	*p= 0.13*	*p= 0.32*	*p= 0.11*
Awareness about the side effects of medication			
Yes[a]	5.29 ± 1.67	2.97 ± 1.52	8.26 ± 2.83
No[b]	4.24 ± 2.24	2.34 ± 1.57	6.58 ± 3.38
Some[c]	5.20 ± 1.98	3.05 ± 1.56	8.25 ± 3.12
	KW = 16.073	KW = 13.469	KW = 19.622
	*p< 0.001*** b<a,c*	*p= 0.001** b<a,c*	*p< 0.001*** b<a,c*
Test and p value	**b<a,c**	**b<a,c**	**b<a,c**
Compliance with cardiac diet			
Yes[a]	5.24 ± 1.94	3.03 ± 1.50	8.27 ± 2.97
No[b]	4.00 ± 2.17	2.15 ± 1.55	6.15 ± 3.33
No answer[c]	4.40 ± 2.10	2.53 ± 1.64	6.93 ± 3.41
	KW = 30.796	KW = 23.832	KW = 34.183
	*p< 0.001***	*p= 0.001**	*p< 0.001***
Test and p value	**b<a**	**b<a**	**b<a**

*$p< 0.05$ **$p< 0.01$ *** $p< 0.001$ KW = Kruskal Wallis test

Personal Characteristics Associated with Scale Scores: Scale means scores were compared with a medical history and risk factors of patients. The results are presented in Table 3 and Table 4. Scale and subscale scores were compared with socio-demographic characteristics. The scores were compared using the non-parametric Mann-Whitney U test and the non-parametric Kruskal-Wallis test.

Significant differences were found between Diet, Stress, and Medication Knowledge sub- subscale and total scale scores in terms of gender ($p<0.05$). Female patients obtained statistically lower scores from total scale and Diet, Stress, and Medication Knowledge subscale than those of male patients ($p<0.01$) (Table 3).

Significant differences were found between scale scores in terms of education level ($p<0.001$). Patients with lower education obtained worse scores from subscales and total scale.

A very significant difference was found between scale scores in terms of occupation variables ($p<0.001$). Patients who stated to be housewives were found to have a lower level of knowledge about management about cardiac risk factors than those of retired patients.

Interestingly, the patients with lower income levels obtained higher scores from The Turkish Version of Coronary Artery Disease Education Questionnaire-Short Version (CADE-Q SV, 12-item scale) than those with better income levels. The analysis revealed that the patients who stated to live alone obtained statistically higher scores from the scale.

Patients' Disease-Related Characteristics Associated with Scale Scores: Significant differences were detected between Diet, Stress, and Medication Knowledge subscale and total scale scores in terms of additional chronic disease ($p<0.05$). Patients with additional chronic disease obtained statistically higher scores from

Diet, Stress and Medication Knowledge subscale and total scale (Table 4).

Significant differences were found between Diet, Stress, and Medication Knowledge subscale and total scale scores in terms of smoking ($p<0.05$). Diet, Stress and Medication Knowledge subscale scores of smoking patients were higher than patients who quitted smoking (Table 4).

Patients who stated to feel loneliness had statistically lower scores from Diet, Stress, and Medication Knowledge subscale than those who stated to feel from time to time loneliness.

Results obtained as a result of comparing scale mean scores with disease-related features and treatment-adaptation of participants are presented in Table 4.

Significant differences were detected between scale scores in terms of paying regular visits to a physician ($p<0.05$). Scale scores of patients who paid regular visits to a physician were found higher than patients who did not visit did not respond to this question.

Significant differences were found between scale mean scores in terms of taking training about coronary disease ($p<0.05$). The patients who reported to have received training about coronary disease obtained a higher score from both subscales and total scale.

Significant differences were detected between scale scores in terms of participants' perception of their knowledge of coronary disease ($p<0.05$). Scale scores of patients who defined their knowledge of coronary disease as good and moderate were lower than scores of patients who defined their knowledge as insufficient.

Significant differences were detected between scale scores in terms of participants' knowledge of the side effects of their medications ($p<0.05$). Patients who were able to list the names of the medication and who were aware of the side effects of their medication obtained better knowledge scores for the management of cardiac risk factors ($p<0.05$).

Significant differences were detected between scale scores in terms of participants' dietary practices ($p<0.05$). The patients who reported to be more compliant with the suggested cardiac diet obtained better knowledge scores for the management of cardiac risk factors.

There were not any statistically significant differences in mean score in terms of variables such as marital status, a family history of heart disease, consumption of alcohol, perception about stress in daily life, doing a regular exercise, personal perceptions about being physically active, and status of regular use of current medications ($p>0.05$). Statistical analyses also did not reveal any correlations between scale scores and age, duration of living with cardiac illness ($p>0.05$).

Discussion

It is of vital importance for the success of the treatment that patients diagnosed with coronary artery disease have knowledge of the disease, relevant risk factors, and management of these risk factors. Having sufficient knowledge of the management of cardiac risk factors might also positively influence patients' healthy lifestyle behaviors. Patients' knowledge of risk factors and management of these risk factors will also positively influence the mortality and morbidity rates related to coronary diseases. This study was carried out to assess the knowledge level of patients on coronary risk factors and control of these factors and identify their knowledge requirements.

Assessing the knowledge level of patients diagnosed with coronary artery disease on the risk factors and management of these risk factors is important for developing training programs according to their needs. Assessing individuals' knowledge of coronary artery disease risk factors will also provide important data for identifying healthcare needs and developing national strategies (Arikan et al., 2009). Using valid, reliable and practical screening tools to identify the knowledge level of patients on coronary artery disease will provide significant data to achieve the goal of identifying their knowledge level.

The literature review indicates that more studies should be carried out on the knowledge level of patients with cardiovascular diseases on cardiac risk factors. It has been concluded in this study that coronary artery patients have moderate knowledge of coronary risk factors and control of these factors. In another study carries out by Ghisi et al. (2013) in Canada and Brazil, they used Coronary Artery Disease Education Questionnaire (CADE-Q) to assess disease-

related knowledge of patients who attended cardiac rehabilitation program with a diagnosis of coronary artery disease. It was found out in this study that patients' disease-related knowledge was very good and the study sample had the most knowledge in physical exercise subscale (Ghisi et al., 2013). The same study reported that patients who reported that they attended the rehabilitation program for a long time had more knowledge of the disease. Patients with a higher education level and higher family income had higher coronary artery disease scores (they had better knowledge) (Ghisi et al., 2013). The current study results indicated that patients with coronary artery diseases had moderate knowledge about the management of cardiac risks overall. The knowledge about cardiac diet, stress management, and the medication regimen was slightly better than knowledge about the cardiac symptom, exercise, and depression risk.

Consistent with the current study results, another study conducted on Turkish healthy sample reported that the participants' knowledge levels about risk factors on cardiovascular disease were moderate (Andsoy et al., 2015). Another study conducted on healthy participants found that 60.5% of the sample had inadequate mean coronary heart disease knowledge scores (Ammouri et al., 2016). One study found that only 49% of the patients correctly identified heart disease as the leading cause of death and just >1/3 of patients could identify all seven components of ideal cardiovascular health (Wartak at el., 2011). The same study found that the knowledge, attitudes, and health-seeking practices about coronary artery disease were moderate (Mirza et al., 2016).

A study found that the patients' who undergo cardiac rehabilitation had significantly higher knowledge about exercise and their medical condition than risk factors, nutrition, and psychosocial risk (Ghisi et al., 2015b). A study conducted in Iran reported that more than half of the patients (52.8%) undergoing cardiac rehabilitation had a low level of knowledge about cardiovascular diseases (Ranjbar et al., 2018). Another study found that the patients with a history of heart disorders or interventions (such as heart failure, cardiomyopathy, and percutaneous coronary intervention) obtained higher knowledge scores from Coronary Artery Disease Education Questionnaire (CADE-Q) compared with those without such a history (Ghisi et al., 2015b). The study reported that

knowledge about cardiovascular diseases differed in terms of age groups and education levels. The male patients undergoing cardiac rehabilitation obtained better knowledge from exercise subscale and psychosocial risk subscale (Ranjbar et al., 2018).

A study conducted on 214 patients using CADE-Q revealed that the knowledge about cardiac rehabilitation was showed to be ''acceptable" to ''good" level. Higher knowledge was found to be significantly associated with greater education, being married, and history of percutaneous coronary intervention (Ghisi et al., 2015a). Another study conducted on a large sample of cardiac patients found that only 68.8% of them considered the heart diseases as the leading cause of death in men, and only 37% considered the heart diseases as the leading cause of death in women (Ghisi et al., 2015a).

Coronary disease incidence and mortality rates are quite high. Moreover, it is a remarkable result of this study that patients had moderate knowledge of disease risk factors and control of these risk factors. This result reveals that patients treated and monitored due to coronary artery disease need training on coronary risk factors and management of these risk factors. Every healthcare professional, particularly nurses should take an active role in patient training on coronary risk factors and management of these risk factors.

Some studies found that the patients' knowledge about coronary heart diseases differed in terms of the patients' education level. Participants with less than high school education had significantly lower coronary heart disease knowledge (Kayaniyil et al., 2009). Knowledge of CHD risk factors was significantly associated with an education level (Ammouri et al., 2016). The knowledge about was found to be positively associated with high school education or higher (Wartak et al., 2011). The current study found that less-educated patients need closer follow-up and more support for the management of cardiac risk factors.

In this study, it was found that finding indicates that female patients need more attention and training in management with cardiac risk factors. Similarly, another study reported that men had more knowledge about coronary artery disease (Mirza et al., 2016). All these data reveal the need for educational efforts should target all patients independent of their education level and

focus on improving knowledge and awareness about cardiovascular health.

The current study found that patients who stated to be housewives were found to have a lower level of knowledge about management about cardiac risk factors than those of retired patients. This outcome indicates that patients who do not lead an active life need more training on coronary risk factors and control of these risk factors.

In this study, it was found that patients with additional chronic disease gain more experience with the management of chronic conditions. Due to life-experiences associated with previous additional chronic disease, the patients may improve their knowledge about management about cardiac risk factors. This outcome indicates that patients who have multiple chronic diseases need more training on coronary risk factors and control of these risk factors than patients who do not have an additional chronic disease.

The current study found that the patients who defined their knowledge of coronary disease as good and moderate were lower than scores of patients who defined their knowledge as insufficient. As it is expected, the patients who stated to have better knowledge about the management of cardiac risk factors or cardiac conditions obtained better scores from both subscales and total scale.

The patients who have been trained about coronary disease obtained a higher score from both subscales and total scale. This result indicates the importance of training about cardiac risk factors in patients with cardiac disorders.

Analyses of the current research showed that the scale scores of patients who paid regular visits to a physician were found higher than patients who did not visit did not respond to this question. This finding indicates that the patients who paid regular visits to a physician had better knowledge about diet, stress and medication, symptom and exercise for the management of cardiac risk factors or cardiac conditions.

The current study found that patients who reported to be more compliant with the suggested cardiac diet obtained better knowledge scores for the management of cardiac risk factors. This result indicates that patients who were not compliant with the suggested cardiac diet need more training about the management of cardiac risk factors. The training management of cardiac

risk factors may improve the patients' compliance with the diet.

Conclusion: Strategic approaches to raise awareness and knowledge level of coronary artery patients must be increased. Being short and practical, it would be useful to employ this scale in studies to assess the knowledge level of patients on coronary artery diseases.

Research findings will contribute to helping clinicians develop educational programs about the management of cardiac risk factors. Assessment of the knowledge and support needs for management with cardiac risk using open-ended questions and conducting qualitative studies will provide detailed data about the knowledge gap. The studies on bigger sample sizes using different approaches will provide a better understanding of the basic needs of patients with coronary artery diseases.

Limitation of the study: One of the limitations of the study is that the study sample comprises 324 coronary artery patients who are still treated and monitored at a university hospital. In this study, the knowledge level of patients on cardiac risk factors was assessed by questioning individual perceptions. Investigating the knowledge level of patients in each risk factor through open-ended questions in future studies will provide more clear data about their knowledge level. Data obtained are valid only for this study sample and cannot be generalized to all coronary patients.

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