The Relationship Between Fear of Death and Healthy Lifestyle Behaviors in Individuals Having Percutaneous Coronary Intervention

Perkütan Koroner Girişim Geçiren Bireylerde Ölüm Korkusu ve Sağlıklı Yaşam Biçimi Davranışları Arasındaki İlişki

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ABSTRACT

Objective: The study aims to investigate the relationship between fear of death and healthy lifestyle behaviors in individuals undergoing percutaneous coronary intervention.

Materials and Methods: The sample number was determined to be 109. The study was carried out in the angiography unit and cardiology clinics of a hospital. Data were collected using the Thorson-Powell Death Anxiety and Healthy Lifestyle Behaviors II Scales.

Results: The patients' death anxiety scale score was 55.17±11.52 and their healthy lifestyle behavior scale score was 123.51±14.56. A negative relationship (r = -0.683, p = 0.003) was found between death anxiety and healthy lifestyle behavior scales. As death anxiety increased, healthy lifestyle behaviors decreased. A negative correlation was found between death anxiety level and physical activity (r = -0.720, p=0.002). As physical activity decreased, death anxiety level increased.

Conclusions: In order for patients to experience less death anxiety, the importance of a healthy lifestyle, such as diet, exercise, spiritual development, stress management, and a healthy social life, should be known. Healthy lifestyle education programs should be applied to patients. To ensure permanence, patients should be supported with visuals and brochures, and training should be repeated.

Keywords: Intervention, percutaneous coronary, death, health, lifestyle

ÖZ

Amaç: Perkütan koroner girişim geçiren bireylerde ölüm korkusu ve sağlıklı yaşam biçimi davranışları arasındaki ilişkiyi incelemektir.

Materyal ve Metot: Örneklem sayısı 109 olarak belirlendi. Çalışma, bir hastanenin anjiyo ünitesi ve kardiyoloji kliniklerinde gerçekleştirildi. Veriler, Thorson-Powell Ölüm Kaygısı ve Sağlıklı Yaşam Biçimi Davranışları II ölçekleriyle toplandı.

Bulgular: Hastaların ölüm kaygısı ölçeği puanı 55,17±11,52 ve sağlıklı yaşam biçimi davranışları ölçeği puanı 123,51±14,56 olarak bulundu. Ölüm kaygısı ile sağlıklı yaşam biçimi davranışları ölçekleri arasında negatif ilişki (r = -0,683, p= 0,003) bulundu. Ölüm kaygısı arttıkça sağlıklı yaşam biçimi davranışları azaldı. Ölüm kaygısı düzeyi ile fiziksel aktivite arasında negatif korelasyon (r = -0,720, p=0,002) bulundu. Fiziksel aktivite azaldıkça ölüm kaygısı düzeyi arttı.

Sonuç: Hastaların daha az ölüm kaygısı yaşamaları için diyet, egzersiz, manevi gelişim, stres yönetimi ve sağlıklı sosyal hayat gibi sağlıklı yaşam tarzının önemi bilinmelidir. Hastalara sağlıklı yaşam eğitim programları uygulanmalıdır. Kalıcılığı sağlamak için hastalar görsellerle ve broşürlerle desteklenmeli, eğitimler tekrarlanmalıdır.

Anahtar Kelimeler: Girişim, perkütan koroner, ölüm, sağlık, yaşam tarzı

INTRODUCTION

Cardiovascular diseases are the leading cause of death in the world and our country. According to the TUIK (Turkish Statistical Institute) 2020 report, when deaths in our country are examined according to their causes, cardiovascular diseases take the first place with 36.8% in 2019.[1] According to the WHO 2016 report, when the causes of death in the world are examined, cardiovascular diseases come first with 32.3% in 2016.[2] Percutaneous coronary intervention (PCI) is considered among the minimally invasive surgical interventions.[3,4] Necrosis in the heart muscle is prevented by balloon technique or stenting in narrowed or occluded coronaries.[5] Patients feel less pain in PCI.[6] PCI offers less limitation of motion and the possibility of bleeding compared to other surgical interventions of the heart. In addition to all these advantages, PCI still carries risks. The location and degree of obstruction, the skill of the physician, and the quality of the materials used are risk factors.[7]

Patients resort to PCI in critical situations such as chest pain and heart attack. In this process, patients experience an intense emotion between life and death. After experiencing the first myocardial infarction, patients tend to change their behavior.[8] Understanding the seriousness of the clinical situation is associated with fear of death.[9,10] Myocardial ischemia is associated with exercise intolerance that limits patients' activities of daily living.[6] The anti-ischemic effect of exercise reduces myocardial oxygen demand by lowering resting heart rate and systolic blood pressure.[11]

One out of every five people living with CAD also lives with depression and/or anxiety.[12] Perera et al. found that female patients had low adherence to healthy lifestyles after PCI. He stated that anxiety and lack of motivation in women led to this result.[10] Bendig et al. found that depression decreased in CAD as a result of web-based training.[12] The need for PCI and the risk of complications decrease in CAD patients who develop healthy lifestyle behaviors.[8] There are studies in the literature examining the relationship between depression and anxiety and healthy lifestyle behaviors in patients with PCI.[12]

The study aims to examine the relationship between fear of death and healthy lifestyle behaviors in individuals who have undergone PCI.

MATERIALS AND METHODS

Ethical Principles of Research: Before starting the research, ethical approval (Date: 02.11.2021, decision no: 1276) was obtained from the Ethical Principles and Ethics Committee of the Rectorate of Bitlis Eren University. Institutional permission was obtained from the Bitlis Provincial Health Directorate (number 70871440). In accordance with the privacy and confidentiality principle of the Declaration of Helsinki, every precaution has been taken to protect the privacy and confidentiality of the personal information of the patients who volunteered to participate in the study.

Type of Research: Our research was designed to be descriptive and correlational.

Place and time of the research: It was held between 08.11.2021 and 08.07.2022 in Bitlis Tatvan State Hospital's angio unit and cardiology clinics.

Population and Sample of the Research: The universe of the research; It consists of patients who have undergone percutaneous coronary intervention in the last 1 year at Bitlis Tatvan State Hospital. The sample includes patients who met the inclusion criteria and were selected from the population by the nonprobability random sampling method. In this study, statistical power analysis (G-Power version 3.1) was performed by taking the effect size of 0.40 (calculated with η2- eta square), alpha=0.05 and power=0.94, and the total required minimum number of subjects was determined as 109.

Inclusion Criteria: (i) Having had PCI, (ii) Being 18 years or older, (iii) To be able to communicate verbally and not have cognitive problems.

Exclusion Criteria: (i) Desire to leave the research, (ii) Having a communication problem.

Data Collection: Data were collected from patients who were determined using a Patient Information Form created by the researchers, the Thorson-Powell Death Anxiety Scale (TPDAS) and the Healthy Lifestyle Behaviors II Scale (HLBS-II). The forms were filled out using the face-to-face interview method. Each interview lasted 15-20 minutes.

Data Collection Tools

Patient Information Form: The form consists of 11 questions. It was created by researchers by scanning the literature.[8,13-15]

Thorson-Powell Death Anxiety Scale: The scale measures the general death anxiety of patients. The Turkish adaptation of the scale was first done by Karaca and Yıldız. The Cronbach alpha coefficient of the scale was found to be 0.84. Thorson-Powell Death Anxiety Scale consists of 25 items prepared in a 5-point Likert format. A score between 0 and 100 is obtained from the scale, and high scores indicate high death anxiety. Items 4, 10, 11, 13, 17, 21, 23 and 25 in the scale are scored reversely.[16]

Healthy Lifestyle Behaviors Scale II: The scale was developed by Walker et al. and revised again in 1996.[17] The validity and reliability of the scale in Turkey were made by Esin and Akça.[18] The scale measures health-promoting behaviors associated with an individual's healthy lifestyle. The scale consists of 52 items in total and has 6 sub-factors. Subg-

roups: spiritual development, health responsibility, physical activity, nutrition, interpersonal relations and stress management. All items on the scale are positive. The rating is in the form of a 4-point likert. A score between 52 and 208 is obtained from the scale. The alpha reliability coefficient of the scale is 0.94.[18]

Statistical Analysis: The normality of the data according to the groups was checked with the Shapiro-Wilk test. Whether the scale levels differed according to the number of coronary interventions was examined with one-way ANOVA. The Duncan post-hoc test was used for the differences between the groups. Post-hoc test results are symbolized with a lowercase letter. The levels of linear relationship between age, duration of procedure, number of coronary interventions, and scale levels were analyzed using Pearson correlation analysis. In addition, Multiple Correspondence Analysis (MCA) was run to determine the linear and nonlinear relationship structure between age and number of coronary interventions. With MCA analysis, the relationship structure between variables at different measurement levels

can be easily interpreted on a diagram by representing them in a two-dimensional space by dimension reduction method.[19,20] IBM SPSS Statistics for Windows 26.0 software was used for statistical analysis, and $p < 0.05$ was considered statistically significant.

RESULTS

According to Table 1, 52.3% of the patients participating in the study were male, 44.0% were primary school graduates, 55.0% were married, 33.9% were housewives, and 67.0% had a middle-income level. The mean age of the patients participating in the study was 65.20±14.36 years. The mean duration of coronary interventions is 36.52±16.32 minutes.

According to Table 2, the mean death anxiety scale score of the patients was 55.17±11.52. High scores obtained from the scale indicate a high death anxiety level. Accordingly, patients experience moderate death anxiety. The mean score of the healthy lifestyle behaviors scale is 123.51±14.56. High scores indicate that patients have healthy lifestyle behaviors. According to this result, the patients have moderate healthy lifestyle behaviors.

Table 1. Descriptive characteristics of the patients (n=109).

		n (%)
Gender	Female	52(47.7)
	Male	57(52.3)
Educational status	İlliterate	40(36.7)
	Primary school graduate	48(44.0)
	High school graduate and above	21(19.3)
Marital status	Married	60(55.0)
	Single	49(45.0)
Job	Housewife	37(33.9)
	Retired	31(28.4)
	Employee	14(12.8)
	Self-employment	14(12.8)
	Officer	4(3.7)
	Other*	9(8.3)
Income rate	Bad	20(18.3)
	Middle	73(67.0)
	Good	16(14.7)
Number of coronary interventions	1	53(48.6)
	2	29(26.6)
	3	18(16.5)
	4 and above	9(8.3)
Information about the operation	I bought	33(30.3)
	I got some information	53(48.6)
	I did not take	23(21.1)
Is there any cardiovascular disease in your family?	Yes	33(30.3)
	No	76(69.7)
Has anyone in the family died from a heart attack?	Yes	32(29.4)
	No	77(70.6)
	Mean±SD	
Age	65.20±14.36	
Operation time (minutes)	36.52±16.32	

*:Unemployed:4; Farmer:3; Artisan:2

Table 2. Descriptive statistics results of Thorson-Powell Death Anxiety Scale and Healthy Lifestyle Behaviors Scale II and its sub-dimensions (n=109).

	Minimum	Maximum	Mean±SD
TPDAS	25.00	93.00	55.17 ± 11.52
HLBS-II	69.00	164.00	123.51 ± 14.56
Health responsibility	10.00	31.00	20.86 ± 3.95
Physical activity	8.00	25.00	15.90 ±4.86
Nutrition	15.00	32.00	22.28 ± 3.30
Spiritual development	12.00	34.00	23.49 ± 3.52
İnterpersonal relations	12.00	31.00	22.89 ± 3.40
Stress management	9.00	27.00	18.06 ± 3.81

TPDAS: Thorson-Powell Death Anxiety Scale; HLBS-II: Healthy Lifestyle Behaviors Scale II; SD: Standard Deviation.

According to Table 3, negative high correlation (r=-0.683, p=0.003) was found between the death anxiety scale and the healthy lifestyle behaviors scale. A negative high correlation (r=-0.720, p=0.002) was found between death anxiety level and physical activity, which is a sub-dimension of healthy lifestyle behaviors. A high positive correlation (r=0.659, p=0.001) was found between stress management and physical activity.

According to Table 4, death anxiety levels of patients with a coronary intervention number (NCI) of 4 and above were found to be significantly lower than those who had a coronary intervention for the first time (p=0.14). It was observed that the death anxiety levels of the patients who had the first three interventions were high, and this anxiety decreased as the NCI increased.

Table 3. Pearson correlation levels of patients' TPDAS, HLBS-II and sub-dimensional scores between processing time and age variables (n=109).

		Age	OT	TPDAS	HLBS II	HR	PA	N	SD	İR
OT	r	-0.033								
	p	0.736								
TPDAS	r	0.095	0.141							
	p	0.324	0.143							
HLBS II	r	-0.048	-0.067	-0.683						
	p	0.624	0.486	**0.003**						
HR	r	-0.006	-0.115	-0.145	0.697					
	p	0.950	0.233	0.134	**0.001**					
PA	r	-0.174	-0.074	-0.720	0.687	0.433				
	p	0.070	0.447	**0.002**	**0.001**	**0.001**				
N	r	0.020	0.118	-0.131	0.616	0.362	0.203			
	p	0.833	0.223	0.173	**0.001**	**0.001**	**0.035**			
SD	r	0.019	-0.062	-0.163	0.498	0.143	-0.009	0.273		
	p	0.847	0.525	0.089	**0.001**	0.139	0.924	**0.004**		
İR	r	0.006	-0.053	0.057	0.597	0.335	0.084	0.395	0.504	
	p	0.950	0.587	0.557	**0.001**	**0.001**	0.386	**0.001**	**0.001**	
SM	r	0.007	-0.042	-0.647	0.694	0.328	0.659	0.248	0.156	0.125
	p	0.945	0.662	**0.001**	**0.001**	**0.001**	**0.001**	**0.009**	0.105	0.194

OT: operation time; TPDAS: Thorson-Powell Death Anxiety Scale; HLBS II: Healthy Lifestyle Behaviors Scale II; HR: Health responsibility; PA: Physical activity; N: Nutrition; SD: Spiritual development; İR: İnterpersonal relations; SM: Stress management; r: Pearson correlation coefficient.
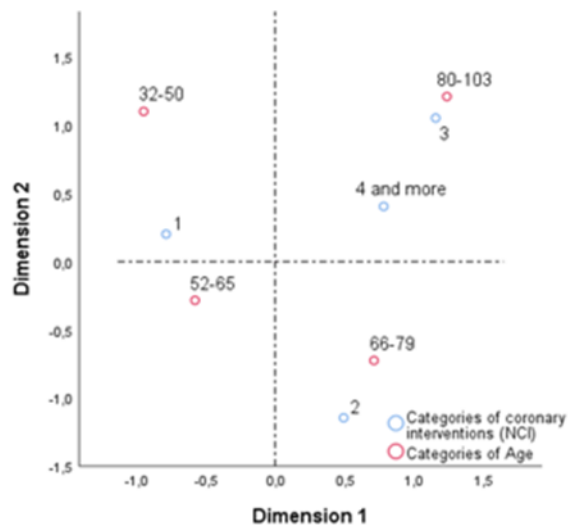
Table 4. Comparison of Thorson-Powell Death Anxiety Scale and Healthy Lifestyle Behaviors II Scale and sub-dimension scores of the patient by number of coronary interventions (n=109).

NCI	TPDAS Mean±SD	HLBS II Mean±SD	HR Mean±SD	PA Mean±SD	N Mean±SD	SD Mean±SD	İR Mean±SD	SM Mean±SD
1	57.45[a]±11.81	123.21±13.82	20.36±3.90	15.43±4.68	22.43±3.53	23.64±3.13	23.51±3.42	17.83±3.81
2	56.55[a]±12.24	122.34±18.94	20.83±4.42	15.55±5.45	22.03±3.58	23.72±4.38	22.34±4.02	17.86±3.95
3	50.56[ab]±8.23	125.39±10.19	22.11±3.61	16.83±4.25	22.39±3.13	22.94±3.40	22.50±2.50	18.61±3.62
≥4	46.56[b]±6.75	125.33±11.27	21.44±3.21	18.00±5.10	22.00±0.71	23.00±3.24	21.89±2.26	19.00±4.15
p	0.014	0.888	0.419	0.400	0.950	0.846	0.322	0.759

NCI: Number of coronary interventions; TPDAS: Thorson-Powell Death Anxiety Scale; HLBS II: Healthy Lifestyle Behaviors Scale II; HR: Health responsibility; PA: Physical activity; N: Nutrition; SD: Spiritual development; İR: İnterpersonal relations; SM: Stress management. P-values represent the results of one-way ANOVA analysis. Duncan's analysis results were symbolized with lowercase letters for differences in death anxiety levels between subgroups.

In addition, when the level of linear relationship between the number of coronary interventions (NCI) that the patients were exposed to and their age was examined, a significant positive correlation level was found (r = 0.470, p=0.030). Accordingly, it was found that there was a moderate linear relationship between age and NCI. However, (according to Figure 1) when the multi-relationship structure between the age variable and the NCI categories is examined by categorizing the age variable, it is seen that there is an increase in the NCI as the age increases. The performance results of the MCA diagram regarding the multi-relationship structure between age categories and NCI categories are summarized in Figure 1. An average of 57.80% confidence level (Cronbach's Alpha level) was observed between dimensions and variables. The average rate of explanation of the variation between the two dimensions between age and NCI categories was 60.00%. Accordingly, the comments on the MCA diagram are sufficient and reliable.

Dimension	Cronbach's Alpha	Variance Disclosure Ratio	
		Total (Eigenvalues)	% of Varyans
1	0.625	1.270	63.485
2	0.531	1.131	56.544
Total		2.401	
Mean	0.578	1.200	60.015

Figure 1. The result of MCA regarding the relationship structure between the age of the patients and the categories of coronary interventions (NCI) to which they were exposed.

DISCUSSION AND CONCLUSION

In this study, the relationship between the level of fear of death and healthy lifestyle behaviors in patients after PCI was examined. The percentage of patients who reported receiving information about the PCI procedure is 78.9%, as shown in Table 1. In the study of Sönmez, in which he examined patients who underwent coronary artery bypass graft surgery, 10.5% of the patients stated that they did not receive any preoperative information.[13] In the study of Afacan, she stated that 97.1% of the patients did not have a history of being informed.[14] In this study, 21.1% of the patients stated that they did not receive information before the procedure. Informing patients before surgery reduces patient anxiety, increases the patient's compliance with treatment, and has an effect on accelerating recovery.[21] Due to the fact that PCI is an acute intervention, it may also suggest that insufficient information can be given to the patients. As a matter of fact, when the literature is examined, very different results are seen regarding informing patients.[5,6]

Our patients experience moderate death anxiety. Our patients have moderate levels of healthy lifestyle behaviors (Table 2). When the average scale levels related to the sub-dimensions of healthy lifestyle behaviors was examined, it was determined that the patients' spiritual development scores were high, physical activity scores were low, and other sub-dimension scores were moderate (Table 2). Buruntekin found in her study that patients experienced moderate levels of death anxiety.[15] Cengizhan found in his study that patients experienced high levels of death anxiety.[22] Doğan determined that patients undergoing PCI have moderate healthy lifestyle behaviors.[23] Afacan reported that patients had moderate healthy lifestyle behaviors.[14] Our scale score averages coincide with the averages of the studies in the literature.[12,24] In addition, HLBS-II sub-dimensions are consistent with the scale mean. Patients expe-

riencing moderate death anxiety; It can be explained by having more than one PCI, high average age and good spiritual development scores. Demonstrating behavior change is a difficult process. It is inversely proportional to the age factor. Patients have moderate healthy lifestyle behaviors; It can be explained by low education levels and high average age (decrease in communication and physical activity, etc.).

In this study, a negative correlation was found between the death anxiety scale and the healthy lifestyle behaviors scale (r = -0.683, p=0.003, Table 3). As the death anxiety level increases, the patient's healthy lifestyle behaviors decrease. In the examination performed by Ashour et al. immediately after PCI and 6 months later, it was observed that the patients' anxiety decreased and they developed a healthy lifestyle.[25] Gulanick et al. reported that the high level of anxiety in patients after PCI prevented them from developing healthy lifestyle behaviors.[6] Higgins et al. reported that high anxiety about their health after PCI prevents them from developing a healthy lifestyle.[24] In all three studies, it is stated that there is a negative relationship between death anxiety levels and healthy lifestyle behaviors. Similar results are seen in the literature review.[26] The high level of anxiety prevents the development of healthy behavior in patients. This situation can be explained by the psychological aspect of human beings.

In this study, a negative relationship was found between the level of death anxiety and the physical activity subscale (Table 3). Gaudel et al. found that the training program positively affected the physical activity sub-dimension.[26] Qin et al. stated that they found the patients' anxiety levels high, but that the patients had sufficient knowledge about physical activity.[27] In their study, Li et al. found a significant relationship between insufficient exercise capacity and anxiety after PCI.[28] Our results are similar to the literature. After cardiac interventions, patients are expected to create healthy lifestyle changes. In order to regain their health, their compliance with exercise and diet programs can be high.

In this study, no significant linear relationship was found between the age of the patients and their death anxiety levels and the level and sub-dimensions of healthy lifestyle behaviors (Table 3). In Doğan's study, individuals aged 65 and over had low HLBS-II scores.[23] In the study of Cengizhan, no significant relationship was found between the age of the patients and their death anxiety levels.[22] Although there is no significant relationship between age and death anxiety, death anxiety increases as age increases. In addition, it may be more difficult for older age groups to change their behavior.

In this study, it was found that death anxiety levels of patients with a coronary intervention number (NCI) of 4 and above were significantly lower than those who had a coronary intervention for the first time (p=0.14, Table 4). It was found that the number of coronary interventions did not create a significant difference between the levels of healthy lifestyle behaviors and the sub-dimensions of the scale (p>0.05, Table 4). In their study, Zaru et al. found that multiple coronary interventions increased compliance with healthy lifestyle behaviors.[29] Astin et al., in their study on patients undergoing PCI, found that the number of previous acute infarctions caused high levels of anxiety.[30] The results of our study differ from the literature. Having a coronary intervention for the first time can cause high anxiety. After repeated interventions, it is expected that patients have sufficient information, increase their compliance with treatment and reduce their anxiety levels. Healthy lifestyle changes are expected in individuals who have undergone multiple coronary interventions. The fact that this situation does not occur can be explained by the high age of the patients.

In Conclusion, our patients undergoing PCI have moderate death anxiety and moderate healthy lifestyle behaviors. As the death anxiety increases, the patient's healthy lifestyle behaviors decrease. As physical activity decreases, death anxiety level increases. It was observed that the level of death anxiety increased in patients who could not manage stress. It was found that the death anxiety levels of the patients decreased significantly as the number of coronary interventions increased. The importance of a healthy lifestyle should be explained to patients so that they can experience less death anxiety. Healthy life education programs should be applied to the patients. Experimental studies with large samples can be conducted.

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