Examination of Type-D Personality, Perceived Social Support, and Psychological Status in Coronary Artery Disease Patients

Koroner Arter Hastalarında D Tipi Kişiliğin, Algılanan Sosyal Desteğin, Psikolojik Durumun İncelenmesi

ABSTRACT

Objective: This study aimed to investigate Type-D personality, perceived social support, and psychological status in patients with coronary artery disease.

Method: This descriptive, cross-sectional, correlational study was conducted between May 2023 and January 2024 with 251 patients admitted to the cardiology departments of a Training and Research Hospital in Istanbul. Data were collected using the Type-D Personality Scale, the Multidimensional Scale of Perceived Social Support (MSPSS), and the Depression-Anxiety-Stress Scale (DASS-21).

Results: The average age of the participants was 61.48 ± 13.45 years. Of the patients, 55% had a previous myocardial infarction (MI), and 64.5% had additional chronic diseases. The mean scores for the total and subscales of the Type-D Personality Scale (Negative Affection, Social Introversion) were 11.81 ± 5.45, 11.01 ± 5.44, and 12.61 ± 5.46, respectively. The mean score for the MSPSS was 73.93 ± 9.79. The average scores for Depression, Anxiety, and Stress were 5.23 ± 3.06, 7.68 ± 3.88, and 7.4 ± 3.43, respectively. A significant negative relationship was found between Negative Affection and Social Introversion and support from private persons, family support, and support from friends, as well as the overall MSPSS score. A significant positive relationship was observed between Negative Affection and Depression, Anxiety, and Stress.

Conclusion: Most patients exhibited a Type-D personality. Perceived social support levels, as well as depression and anxiety levels, were high. Type-D personality negatively affected the perception of social support. Additionally, it was found that Type-D personality traits increased depression, anxiety, and stress scores.

Keywords: Coronary artery disease, nursing, perceived social support, psychological status, type-D personality

ÖZET

Amaç: Bu çalışma, koroner arter hastalarında D tipi kişiliğin, algılanan sosyal desteğin ve psikolojik durumun incelenmesi amacıyla yapılmıştır.

Yöntem: Tanımlayıcı, kesitsel ve ilişki arayıcı olarak tasarlanan bu çalışma, İstanbul'da bir Eğitim ve Araştırma Hastanesi'nin kardiyoloji kliniklerine başvuran 251 hasta ile Mayıs 2023-Ocak 2024 tarihleri arasında yürütülmüştür. Veriler, D Tipi Kişilik Ölçeği, Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ) ve Depresyon-Anksiyete-Stres Ölçeği (DASS-21) kullanılarak toplanmıştır.

Bulgular: Bireylerin ortalama yaşı 61,48 ± 13,45'tir. Hastaların %55'i daha önce miyokard enfarktüsü (MI) geçirmiş, %64,5'inde ek kronik hastalık bulunmaktadır. D Tipi Kişilik Ölçeği toplam ve alt boyutları (Negatif Duygulanım, Sosyal İçe Dönüklük) puan ortalaması sırasıyla 11,81 ± 5,45, 11,01 ± 5,44, 12,61 ± 5,46'dır. ÇBASDÖ ortalama değeri 73,93 ± 9,79'dur. Depresyon ortalaması 5,23 ± 3,06, anksiyete ortalaması 7,68 ± 3,88, stres ortalaması ise 7,4 ± 3,43'tür. Negatif Duygulanım ve Sosyal İçe Dönüklük ile Özel Kişi Desteği, Aile Desteği, Arkadaş Desteği ve ÇBASDÖ arasında negatif yönde anlamlı bir ilişki bulunmuştur. Negatif Duygulanım ile depresyon, anksiyete ve stres arasında pozitif yönde anlamlı bir ilişki olduğu saptanmıştır.

Sonuç: Hastaların çoğunda D tipi kişilik özelliği görülmüştür. Algılanan sosyal destek düzeyi düşük, depresyon ve anksiyete düzeyleri ise yüksek bulunmuştur. D tipi kişilik, sosyal destek algısını olumsuz etkilemekte ve depresyon, anksiyete, stres düzeylerini artırmaktadır.

Anahtar Kelimeler: Koroner arter hastalığı, hemşirelik, algılanan sosyal destek, psikolojik durum, D tipi kişilik

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Çağlar and Özer. Type D Personality and Social Support in CAD

Introduction

Coronary artery disease (CAD) is a condition where the coronary artery blood flow that supports the myocardium of the heart is narrowed or blocked, usually by an atheromatous plaque.[1] CAD is the most common cardiovascular disease. Atherosclerosis in the coronary arteries is a slowly progressive process that begins in childhood. In some individuals, it may progress more rapidly and appear in their 30s, while in others, it may remain silent until their 50s or 60s.[2] In coronary heart disease, risk factors are both genetic and environmental, and can be classified as modifiable or non-modifiable. Non-modifiable risk factors include age, male sex, race, and heredity. Modifiable risk factors for coronary heart disease include smoking and exposure to cigarette smoke, hypercholesterolemia, hypertension (HT), uncontrolled diabetes, obesity, unhealthy diet, sedentary lifestyle, and excessive stress.[1] The process of atherosclerosis in CAD begins with the deposition of lipids in the intima of the arterial wall, followed by a chronic low-level inflammatory response. Plaque formation leads to narrowing of the vessel diameter and a reduction in blood flow to the area supplied by the vessel. The signs and symptoms of CAD vary depending on the location and degree of narrowing of the arterial lumen. Ischemia occurs due to decreased blood flow to the myocardium, and chest pain caused by ischemia is defined as angina pectoris.[2]

In coronary artery disease patients, myocardial infarction (MI) resulting from acute coronary syndrome not only has a high mortality rate but also poses risks to vital integrity and causes numerous psychosocial problems.[3] Personality structure is a key determinant of chronic stress, which is one of these psychosocial issues. Personality is a set of innate and acquired traits consistently exhibited by an individual, distinguishing them from others.[4] These personality traits, which affect every aspect of an individual's life and are consistent within themselves, also play a role in the development of heart disease.[5] Individuals who are depressed, anxious, tense, or angry, who tend to experience negative emotions more frequently, have difficulty expressing themselves to others, and exhibit distressing personality traits are considered to have a Type-D personality.[6] Type-D personality was defined by Denollet et al.[7] as high levels of negative affection and social inhibition. This personality type has been shown to predict poor prognosis in patients with chronic heart disease.[8]

Coronary artery disease (CAD) patients face significant challenges in performing activities of daily living (ADLs). The loss of function impacts them not only physically but also mentally, socially, and economically. As the disease progresses, it leads to increased dependency, limited social activities, difficulty performing roles within the family and community, and social isolation. This intensifies the need for social support.[9] Social support is defined as a network that provides psychological and physical resources, helping individuals cope with stress.[10]

Depression, anxiety, and psychological distress are common among people with coronary artery disease. Studies have shown that CAD patients often experience high levels of hopelessness and depression, which hinder their ability to cope with the disease, impair interpersonal relationships, affect physical well-being, and disrupt the healing process.[11]

MAIN POINTS

- The Type-D personality trait was observed in most of the patients.
- Perceived social support, as well as depression and anxiety levels, were high.
- Type-D personality negatively impacted the perception of social support.
- It was also found that Type-D personality increased depression, anxiety, and stress scores.

Psychosocial risk factors, such as low socioeconomic status, lack of social support, work and family stress, depression, and anxiety, worsen the risk of developing CAD and negatively impact its clinical course and prognosis. These psychosocial factors should be recognized in clinical practice, and their implications should be discussed with patients. Anxiety and depression must be assessed in patients with cardiovascular disease. Those at risk or exhibiting clinical symptoms of anxiety and depression should be referred for professional mental health care. The European Society of Cardiology recommends assessing psychosocial risk factors in its latest guidelines.[12] Coping with CAD is a long-term, dynamic process that involves managing a range of emotions and adjustment needs. Coping may be challenging if the patient denies the seriousness of their condition, experiences stress, depression, and emotional exhaustion, or struggles with family interactions.[13] This study was designed as descriptive and correlational, aiming to investigate Type-D personality, perceived social support, and psychological status in patients with coronary artery disease.

Material and Method

Design
This descriptive, cross-sectional, and correlational study was conducted to investigate Type-D personality, perceived social support, psychological state, and coping attitudes in patients with coronary artery disease.

Place and Time of the Study
The study was conducted at a Training and Research Hospital in Istanbul, from May 15, 2023, to January 13, 2024. The Departments of Cardiology at the hospital where the study was conducted have a total of 160 beds, 45 nurses, 5 charge nurses, 25 clinical support staff, as well as specialist and assistant cardiologists.

Sample and Population of the Study
The population of the study consisted of patients who applied to the Cardiology Department of the hospital during the study period and continued their treatment at this facility. The study sample included 251 patients who continued their treatment in the cardiology outpatient clinic during the study period and met the inclusion criteria. A sample size analysis was conducted using version 3.1 of the GPower program, which determined an effect size of 0.20 with 90% power and a 0.05 margin of error for the current sample (n = 251).

Inclusion Criteria for the Study
The inclusion criteria for participation in the study were as follows:

- Voluntary consent to participate in the research
- Aged 18 years or older
- Diagnosed with coronary artery disease
- Cognitive competence to answer the questions
- No communication problems

Data Collection Tools

The Personal Information Form, Type-D Personality Scale, Multidimensional Scale of Perceived Social Support (MSPSS), and Depression–Anxiety–Stress Scale (DASS–21) were used to collect the data.

Personal Information Form

This form, developed by the researcher based on a review of the literature, consists of 18 questions about sociodemographic characteristics (e.g., age, sex, marital status, educational status, number of children, employment status, occupation, income–expenditure status, place of residence, and cohabitants) and medical information (e.g., smoking, alcohol use, body mass index, disease diagnosis, duration of diagnosis, comorbidities, and family history of heart disease).[14–16]

Type-D Personality Scale

The Type-D Personality Scale was developed by Denollet[7] to measure negative affection and social introversion. Öncü and Köksoy Vayısoğlu[17] conducted a validity and reliability study of the scale in the Turkish population. The 14-item, 5-point Likert-type scale is based on the subjective evaluation of individuals and includes two subscales: negative affection (items 2, 4, 5, 7, 9, 12, 13) and social introversion (items 1, 3, 6, 8, 10, 11, 14). Items 1 and 3 are reverse coded. Each statement is scored on a scale from 0 to 4 points, as follows: 'wrong, partially wrong, undecided, partially right, right'. Subscales can take values between 0 and 28. The cut-off score for each subscale is ≥ 10. Participants who score 10 points or higher in both subscales are classified as having a Type-D personality. In the Turkish validity–reliability study of the scale, Cronbach's alpha was found to be 0.85 for negative affection and 0.76 for social introversion.[17] In the current study, the Cronbach's alpha was found to be 0.65 for negative affection and 0.70 for social introversion.

Multidimensional Scale of Perceived Social Support (MSPSS)

The MSPSS was developed by Zimet et al. to subjectively measure the adequacy of social support. Its validity and reliability in Türkiye were first conducted by Eker et al.[18] It is a 7-point Likert-type scale consisting of 12 items, ranging from "absolutely no" to "absolutely yes." The scale consists of 3 subscales, each containing 4 items. These subscales assess family, friend, and private person support. The questions for the family subscale are items 3, 4, 8, and 11; for the friend subscale, they are items 6, 7, 9, and 12; and for the private person subscale, they are items 1, 2, 5, and 10. The scores of the items within each subscale are summed to obtain the subscale score, and the total score of the scale is obtained by summing the scores of all 3 subscales. The minimum score for each subscale is 4, and the maximum score is 28. The lowest possible total score on the scale is 12, and the highest is 84. High scores indicate high perceived social support. The Cronbach's alpha of the scale is 0.89. In the present study, it was found to be 0.68.

Depression–Anxiety–Stress Scale (DASS–21)

The DASS–21 was developed by Lovibond to measure depression, anxiety, and stress levels. The Turkish validity and reliability were performed by Sarıçam. The scale consists of 21 items and three subscales. It is a 4-point Likert-type scale ranging from "never" to "always." The subscales of the scale include depression (items 3, 5, 10, 13, 16, 17, and 21), anxiety (items 2, 4, 7, 9, 15, 19, and 20), and stress (items 1, 6, 8, 11, 12, 14, and 18). As the score for each item increases, the level of depression, anxiety, and stress increases. A score of five or more points in the depression subscale, four or more points in the anxiety subscale, and eight or more points in the stress subscale indicates that the individual may be experiencing the problem. The Cronbach's alpha for the scale was 0.87 for depression, 0.85 for anxiety, and 0.81 for stress.[19] In this study, the Cronbach's alpha values were found to be 0.75 for depression, 0.73 for anxiety, and 0.71 for stress.

Data Analysis

The data were analyzed using IBM SPSS 25.0 (Statistical Package for the Social Sciences, IBM Corp., Armonk, New York, USA). Descriptive statistical values (mean & SD, median, frequency, and ratio) were used to evaluate the study data. The homogeneity of responses was assessed using the Kolmogorov–Smirnov method. Correlation analysis was employed to examine the relationships between variables. The significance level of the detected data was evaluated at 5%, with the reliability level set at 95%.

Ethical Considerations

Approval was received from the Istanbul Sabahattin Zaim University Ethics Committee (Approval Number: 2023/01, Date: 27.01.2023), and permission was obtained from the Istanbul Provincial Directorate of Health (dated 10.05.2023, numbered 215138065) to conduct the study at the Training and Research Hospital. Before the study commenced, the purpose of the study was explained to all participants, and their consent was obtained using an informed consent form. The study was conducted according to the ethical standards of the Declaration of Helsinki. Participants voluntarily participated, and their personal data were kept confidential. The researchers did not use any AI-assisted technologies (e.g., large language models, chatbots, or image generators).

Results

The average age of the patients was 61.48 ± 13.45 years, the average duration of diagnosis (in years) was 1.02 ± 0.15, and the average BMI was 27.94 ± 5.56. Of the patients, 72.5% were male, 93.6% were married, 49% had a primary school education, and 95.6% had children. Additionally, 79.7% were unemployed, 45.8% were retired, 50.2% had income equal to expenses, 63.7% lived with their spouse and children, 62.9% did not smoke, and 85.7% did not consume alcohol (Table 1).

The diagnosis of the disease was myocardial infarction (MI) in 97.6% of the patients. Of these, 55% (n = 138) had a previous MI, 46.2% had a family history of heart disease, 64.5% had an additional chronic disease, and 52.5% had diabetes (Table 2).

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Table 1. Sociodemographic characteristics of individuals

Variable	X̄ ± SD	Min–Max (median)
Age	61.48 ± 13.45	19–92 (62)
Time since diagnosis (years)	1.02 ± 0.15	1–2 (1)
Body Mass Index	27.94 ± 5.56	15.12–55.7 (27.34)
	n	**%**
Gender		
Female	69	27.5
Male	182	72.5
Marital status		
Married	235	93.6
Single	16	6.4
Education level		
Illiterate		
Primary school	22	8.8
Middle school	123	49.0
High school	35	13.9
University	41	16.3
Children		
Yes	240	95.6
No	11	4.4
Employment status		
Employed	51	20.3
Unemployed	200	79.7
Occupation		
Retired	115	52.3
Housewife	52	23.6
Tradesmen	27	12.3
Other	26	11.8
Income level		
Income < Expenses	98	39.0
Income = Expenses	126	50.2
Income > Expenses	27	10.8
Living arrangement		
Alone	13	5.2
With spouse	71	28.3
With spouse and children	160	63.7
With parent(s)	7	2.8
Smoking status		
Yes	93	37.1
No	158	62.9
Alcohol use		
Yes	36	14.3%
No	215	85.7%

SD, Standard deviation; Min, Minimum; Max, Maximum.

Table 2. Characteristics of individuals regarding the disease

Variable	n	%
Disease diagnosis		
Myocardial infarction	245	97.6
Angina pectoris	6	2.4
Previous myocardial ınfarction status		
Yes	138	55.0
No	113	45.0
Family history of heart disease		
Absent	135	53.8
Present	116	46.2
Concomitant additional chronic disease status		
Absent	89	35.5
Present	162	64.5
Concomitant additional chronic disease*		
Asthma	68	42.0
Hypertension	46	28.4
Diabetes	85	52.5
Heart diseases	8	4.9
Thyroid	3	1.9
Kidney	4	2.5
Cancer	4	2.5

*, Multiple options checked.

The average scores for the various scales were as follows: Negative Affection (11.01 ± 5.44), Social Introversion (12.61 ± 5.46), Private Person Support (25.79 ± 3.00), Family Support (22.85 ± 4.74), Friend Support (25.29 ± 3.41), MSPSS (73.93 ± 9.79), Depression (5.23 ± 3.06), Anxiety (7.68 ± 3.88), Stress (7.40 ± 3.43), Self-help (17.30 ± 4.88), Approach (24.96 ± 3.57), Adaptation (23.34 ± 3.81), Avoidance (13.08 ± 4.18), Self-punishment (20.01 ± 3.64), and the Coping Attitudes Assessment Scale (98.69 ± 10.12). Among the patients, 67.7% exhibited Type-D personality (Table 3).

There was a significant negative relationship between Negative Affection and support from a private person (r = −0.233, P < 0.01), family support (r = −0.170, P < 0.01), friend support (r = −0.206, P < 0.01), and the Multidimensional Scale of Perceived Social Support (r = −0.209, P < 0.01). A significant positive relationship was found between Negative Affection and depression (r = 0.168, P < 0.01), anxiety (r = 0.149, P < 0.05), and stress (r = 0.138, P < 0.05). A significant negative relationship was detected between Social Introversion and private person support (r = −0.176, P < 0.01), family support (r = −0.182, P < 0.01), friend support (r = −0.136, P < 0.05), and the Coping Attitudes Assessment Scale (r = −0.169, P < 0.01). A negative correlation was found between stress and private person support (r = −0.145, P < 0.05), friend support (r = −0.170, P < 0.01), and MSPSS (r = −0.142, P < 0.05) (Table 4).

Discussion

The chronicity of coronary artery disease, whether over many years or with an acute onset, can be a major stress factor.[3] The hormones cortisol and adrenaline, released under intense stress, have significant effects on the body, potentially leading to both physical and mental strain.[20,21] Psychosocial risk factors must be identified in clinical practice, and the medical implications should be discussed with patients. Patients at risk, or those presenting

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Table 3. Type–D Personality Scale, Multidimensional Scale of Perceived Social Support, Anxiety–Depression and Stress Scale, Coping Attitudes Assessment Scale Assessments

Variables	X̄ ± SD	Min–Max (median)
Type–D Personality Scale		
Negative affection	11.01 ± 5.44	0–28 (10)
Social introversion	12.61 ± 5.46	1–28 (12)
Sub–scales of Multidimensional Scale of Perceived Social Support		
Private ındividual support	25.79 ± 3	12–28 (27)
Family support	22.85 ± 4.74	8–28 (23)
Friend support	25.29 ± 3.41	6–28 (26)
Multidimensional Scale of Perceived Social Support	73.93 ± 9.79	36–84 (75)
Depression–Anxiety–Stress Scale		
Depression	5.23 ± 3.06	0–20 (5)
Anxiety	7.68 ± 3.88	0–21 (8)
Stress	7.4 ± 3.43	0–19 (7)
Coping Attitudes Assessment Scale		
Self–Help	17.3 ± 4.88	6–24 (17)
Approach	24.96 ± 3.57	7–28 (26)
Adaptation	23.34 ± 3.81	7–28 (24)
Avoidance	13.08 ± 4.18	1–26 (13)
Self–Punishment	20.01 ± 3.64	10–24 (21)
	n	**%**
Non–Type–D Personality	81	32.3
Type–D Personality	170	67.7

SD, Standard deviation; Min, Minimum; Max, Maximum.

clinical symptoms of anxiety and depression, must be referred for professional mental health care.[6] It is crucial to evaluate coping attitudes for CAD and provide specific interventions to encourage the use of more positive coping strategies, such as problem-focused approaches.[22] The aim of the present study was to investigate Type–D personality, perceived social support, and psychological state in patients with coronary artery disease. Type–D personality traits were observed in the majority of the sampled patients. At the same time, Social Introversion, which is one of the subscales of the Type–D Personality Scale, was found to be higher compared to Negative Affection. Type–D personality has been considered both a vulnerability for the emergence of heart disease and an aggravating factor that negatively impacts the health outcomes of cardiovascular disease (CVD), especially post-myocardial infarction (MI). Dysphoria, anxiety, and irritability are commonly observed in Negative Affection, a subscale of Type–D personality, which has been recognized as being associated with CVD. In the other subscale, Social Introversion, fear of being disapproved of or disliked by others, along with difficulty expressing behaviors, are common features.[8] In the literature, some studies report results that align with the present study's findings. Kauw et al.[23] applied the Type–D Personality Scale to 225 individuals with CVD and found Type–D personality traits in 21% of the patients. In a study by Enatescu,[8] conducted with a sample group of 221 coronary artery disease patients, 19% exhibited Type–D personality traits. Manoj et al.[24] conducted a study with patients diagnosed with MI, where 50.7% of the patient group had Type–D personality traits.

Heo and Kim[25] studied the Type–D Personality scale on a group of 90 patients with heart failure, finding high levels of Negative Affection and Social Introversion in 54% of the patients. Type–D personality is a well-established independent risk factor in patients with CAD and is prospectively associated with worse clinical and patient-reported outcomes.[26] Few studies have examined the associations between Negative Affection and Social Introversion and CVD.[27] The finding that Social Introversion scores were higher than Negative Affection among patients adds a novel dimension to the existing literature. This highlights the need for nurses to consider not only physical but also psychosocial factors in the care of patients with cardiovascular disease, especially post-myocardial infarction. By identifying Type–D personality traits early, nurses can implement more holistic and individualized care plans, potentially improving patient outcomes and long-term recovery.

In the present study, the level of perceived social support was high in the sample group with CAD. It was observed that the greatest support was perceived from friends and private people. Köseoğlu Örnek et al.[28] measured the perceived social support levels of cardiovascular patients in their study. According to the results, the level of perceived social support was found to be high when the patient had individuals nearby to provide support during the care process. According to the results of the studies by Pushkarev et al.[29] and Hermano et al.[30] the level of social support perceived by the patients was found to be high. Kažukauskienė et al.[31] found that individuals with CAD experienced lower mental

Table 4. Type-D Personality Scale, Multidimensional Scale of Perceived Social Support, Depression-Anxiety-Stress Scale Correlation Analysis

	1	2	3	4	5	6	7	8	9
1. Negative affection									
r	1.000								
P	–								
2. Social introversion									
r	**0.611***	1.000							
P	0.000	–							
3. Private individual support									
r	**-0.233***	**-0.176***	1.000						
P	0.000	0.005	–						
4. Family support									
r	**-0.170***	**-182***	**0.684***	1.000					
P	0.007	0.004	0.000	–					
5. Friend support									
r	**-0.206****	**-0.136***	**0.786***	**0.735***	1.000				
P	0.001	0.031	0.000	0.000	–				
6. Multidimensional scale of perceived social support									
r	**-0.209***	**-0.169***	**0.865***	**0.927***	**0.896***	1,000			
P	0.001	0.007	0.000	0.000	0.000	–			
7. Depression									
r	**0.168***	0.099	-0.101	0.059	-0.083	-0.034	1.000		
P	0.008	0.117	0.112	0.352	0.191	0.592	–		
8. Anxiety									
r	**0.149***	0.062	-0039	0.003	-0096	-0.044	**0.559***	1.000	
P	0.018	0.329	0.543	0.956	0.132	0.486	0.000	–	
9. Stress									
r	**0.138***	0	-0.145*	-0.098	**-170***	**-0.142***	**0.416***	**0.411***	1.000
P	0.028	0.127	0.022	0.123	0.007	0.025	0.000	0.000	–

Spearman's *: P < 0.0.

and physical fatigue and decreased activity thanks to social support from friends. It can be seen that people usually receive more social support from friends and private people. Friends and significant others are the people with whom we have the closest emotional relationships. They help patients cope with emotional challenges such as stress, fear, anxiety, and depression. Emotional support contributes positively to the healing process by keeping the patient's morale high. Friends and family also reduce the patient's sense of isolation by encouraging participation in social activities. Social activities and spending time outdoors are thought to improve the patient's overall mood and increase their sense of social connectedness. Close friends and family members have a better understanding of the patient's individual needs, limitations, and personal challenges. This understanding allows them to provide support that is tailored to the patient's specific circumstances and enables the patient to be more self-expressive. For these reasons, perceived social support from friends and loved ones for people with coronary artery disease is thought to contribute to both the physical and emotional healing process by increasing the overall well-being of the patient.

According to the means of depression, anxiety, and stress in the present study, the presence of depression and anxiety was found to be high in our sample group with CAD. The results are similar to those found in the literature. Erşan et al.[3] reported that patients had high levels of depression and anxiety in their study. According to Chen et al.,[32] anxiety disorders are common in patients with CVD and have a higher prevalence than in the general population. It has been suggested that anxiety disorders may contribute to the onset and development of CVDs. In a study conducted by Upadhyay et al.[33] with 103 acute MI patients, depression was found in 21.36% of patients. It was reported that the risk of new cardiovascular events and mortality increased almost twofold in patients who developed depression after MI. According to Dar et al.,[34] stress is associated with acute coronary events independent of other cardiovascular risk markers. The INTERHEART study, which included a sample of approximately 25,000 participants from more than fifty countries, showed that individuals who had chronic stress had more than double the risk of developing MI compared to individuals without chronic stress.[34] In the meta-analysis of 46 studies by Emdin et al.,[35] anxiety was associated

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with a 35% higher risk of heart failure, 71% higher risk of stroke, and 41% higher risk of cardiovascular mortality and CAD. Cohen et al.[10] stated that one in every 5 patients with CAD or heart failure is depressed, and this prevalence is at least 3 times higher than in the general population. Depression is linked to the development and progression of heart failure and other CVDs. Despite the negative impact of depression, anxiety, and stress on patients with CVD, these disorders are under-diagnosed and undertreated in high-risk populations.[36,37] When the means of depression, anxiety, and stress are considered separately, anxiety was found to be more pronounced in our sample group compared to the other variables. In a meta-analysis of 20 studies examining the association of anxiety with CAD, Roest et al.[38] found that individuals who were initially healthy and had high anxiety were at increased risk for CAD. The prevalence of anxiety disorder was found to be higher in individuals with CVD.[39] In stable coronary heart disease patients, anxiety prevalence rates ranged from 16% to 42%, whereas in patients shortly after MI, these rates ranged from 20% to 50%. Patients were reported to experience anxiety symptoms as severe as those experienced by an inpatient in a psychiatric ward.[40] The experience of the disease in the immediate environment is thought to be an important factor that leads individuals to experience anxiety. According to current research in the literature, the presence of depression, anxiety, and stress can be considered an important predisposing factor for CAD and other chronic diseases. It is believed that close monitoring of markers of depression, anxiety, and stress in individuals hospitalized with CAD will contribute to quality care and effective disease management.

In the present study, as Type-D personality traits and stress increased, the level of social support perceived by the patients decreased. It is well known that perceived social support is closely linked to health outcomes in individuals with CAD.[31] According to Ginting et al.,[41] individuals with Type-D personality tend not to share their feelings in social interactions due to fear of reaction or disapproval, resulting in a lack of perceived social support. It has been shown that CAD patients with Type-D personality perceive less social support compared to patients without Type-D personality.[42] Patients interpret social support more negatively and feel insecure in social interactions.[43] Social support is one of the most reliable predictors of morbidity and mortality, acting as a buffer to avoid or mitigate the detrimental long-term health effects related to traumatic events.[44] High levels of social support are considered a buffer that reduces the negative impacts of stress, with positive impacts on the course of various pathological processes. Social support can improve the prognosis of patients with CAD.[29] According to the study by Upadhyay et al.[33] with 103 patients with acute MI, some of the problems associated with the disease, such as depression and stress, combine to cause a decrease in the level of perceived social support. Due to decreased perception of social support, limited physical and social activity may be observed, and CVD risk may increase. In this context, it is suggested that if the necessary emotional support is provided to patients in a timely manner, the level of perceived social support can be improved, and a healthy lifestyle will be ensured. In the presence of stress, social support mechanisms can have beneficial effects on stressors by responding to the needs of the recipient.[44] Accordingly, it is thought that inadequate emotional and social interaction in individuals with poor perceptions of social support may lead to some psychological symptoms and negative health outcomes, such as negative affection and social introversion.

In the study, depression, anxiety and stress levels increased as negative affection increased in patients. Carney and Freedland[45] stated that depression is a known common risk marker in CVD morbidity and mortality in individuals with CAD and is often associated with Type-D personality. Al-Qezweny et al.[46] associated anxiety symptoms with Type-D personality, depression and poor prognosis in CAD. Socially introverted individuals are more vulnerable to developing anxiety and therefore individuals with Type-D personality are at high risk of experiencing high levels of anxiety symptoms.[47] This suggests that the negative affection that may be experienced during the course of CAD may cause the individual to have negative thoughts and lead to an anxious, stressful, and depressive temperament.

Limitations of the Study

Due to the cross-sectional design of the study, it was not possible to investigate dynamic changes over time. Because of the sample size and limited sample selection, it is not possible to generalize the results. Since a self-reported measure was used, there may have been information bias.

Conclusion

In the sample group diagnosed with coronary artery disease, high levels of Type-D personality traits and perceived social support were found. The levels of depression and anxiety in the patients of the current study were also found to be high. Low perceived social support levels and high depression, anxiety, and stress levels were detected in patients with Type-D personality traits. In line with these results, since it is known that Type-D personality is a negative factor in terms of the occurrence of CAD and the course of the disease, personality traits are too important to be ignored. Therefore, it is recommended that the psychological status must not be overlooked in addition to the medical follow-up of patients, the social support mechanisms provided by family, friends, and private individuals during the treatment process must be maintained, and the current study must be adapted to larger and more diverse sample groups.

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