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The Relationship Between Depression and Sexual Problems in Patients with Peripheral Artery Disease

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ABSTRACT

This study was conducted to determine the relationship between depression and sexual problems in individuals with peripheral arterial disease. The sample of this descriptive study consisted of 122 patients who applied to a University Hospital Cardiovascular Surgery Department with the diagnosis of peripheral artery disease between October 21, 2015, and May 30, 2016. Data were collected using three data collection tools: Personal Information Form, Beck Depression Inventory, and Arizona Sexual Experiences Scale. Clinical depression was found in 13.9% of patients with peripheral artery disease, moderate depression in 48.4% and severe depression in 7.4%. Beck Depression Inventory mean scores of female patients (21.46±7.85) were higher than male patients (22.64±3.77), Arizona Sexual Experiences Scale total score averages of female patients (23.23±3.96) were higher than Arizona Sexual Experiences of male patients included in the study. In addition, it was determined that there was no significant relationship between depression levels and sexual problems of individuals with peripheral artery disease ($p<0.005$). Sexual problems and depression levels that may occur should be evaluated by nurses and psychiatric nurses who care for peripheral arterial patients. It is recommended that more research be conducted to determine the mental and sexual problems that patients may experience.

Keywords: Depression, nursing, peripheral artery disease, sexuality.

Periferik Arter Hastalığı Olan Hastalarda Depresyon ve Cinsel Sorunlar Arasındaki İlişki

ÖZET

Bu çalışma periferik arter hastalığı olan bireylerde depresyon ve cinsel sorunlar arasındaki ilişkiyi belirlemek amacıyla yapılmıştır. Tanımlayıcı tipte olan bu çalışmanın örneklemini, 21 Ekim 2015 ve 30 Mayıs 2016 arasında bir Üniversite Hastanesi Kalp ve Damar Cerrahisi Anabilim Dalı'na periferik arter hastalığı tanısı ile başvuran 122 hasta oluşturmuştur. Veriler, Kişisel Bilgi Formu, Beck Depresyon Envanteri ve Arizona Cinsel Yaşantılar Ölçeği olmak üzere üç veri toplama aracı kullanılarak toplanmıştır. Periferik arter hastalığı olan hastaların %13,9'unda klinik depresyon, %48,4'ünde orta şiddette ve %7,4'ünde şiddetli depresyon saptanmıştır. Çalışmaya alınan kadın hastaların Beck Depresyon Envanteri puan ortalamaları (21.46±7.85), erkek hastalardan (22.64±3.77), kadın hastaların Arizona Cinsel Yaşantılar Ölçeği toplam puan ortalamaları (23.23±3.96) erkek hastaların Arizona Cinsel Yaşantılar Ölçeği toplam puanlarından (22.64±3.77) yüksek bulunmuştur. Ayrıca, periferik arter hastalığı olan bireylerin depresyon düzeyleri ile cinsel sorunları arasında anlamlı bir ilişki olmadığı belirlenmiştir ($p<0.005$). Oluşabilecek cinsel sorunlar ve depresyon düzeyleri periferik arter hastalarına bakım veren hemşire ve psikiyatri hemşireleri tarafından değerlendirilmelidir. Hastaların yaşayabilecekleri ruhsal ve cinsel sorunların belirlenmesine yönelik daha fazla araştırma yapılması önerilmektedir.

Anahtar Kelimeler: Depresyon, hemşirelik, periferik arter hastalığı, cinsellik.

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INTRODUCTION

Peripheral artery disease (PAD) refers to all arterial disease outside of the coronary arteries and the aorta (Aboyans et al., 2018). PAD is a major disease that causes significant health burdens, morbidity, and mortality in the world. This disease affects over 8 million people in the US and more than 200 million people worldwide (Aday & Matsushita, 2021). In cross-sectional studies conducted in our country, PAD has been determined that the prevalence is quite high (Karabay et al., 2012, Önal et al., 2020). PAD is generally caused by structural and functional changes in aortic and visceral branches and the lower extremity arteries as a result of atherosclerosis and thromboembolic physiopathology (Gerhard-Herman et al.,2017). PAD refers to obstructive, narrowing, and aneurysmal diseases of the aorta and its branches outside the coronary arteries (Balkanay & Ömeroğlu, 2017). PAD often starts at the age of 40 years and increases with age (Kara et al., 2016) This disease is seen in 13% of individuals over the age of 50 years, in 17% of women and 20% of men over 65 years of age (Crawford et al., 2016).

Atherosclerosis is critical in the development and progression of peripheral artery disease. Age, family history of coronary artery disease, hypertension, low HDL-cholesterol, high levels of LDL-cholesterol, diabetes mellitus, and smoking are known to be among the major risk factors (Foley et al., 2016; Olinic et al., 2018; Libby et al., 2019). In young women, the vasoprotective property of estrogen and other sexual hormones reduce the prevalence of atherosclerosis. Therefore, PAD is more common in men (Schramm & Rochon, 2018). However, recent studies on women have reported an increase in PAD (Gerhard-Herman et al., 2017; Benjamin et al., 2019; Patel et al., 2020). PAD may be asymptomatic, or it may also be seen with atypical symptoms. The most common symptom of PAD is intermittent claudication (IC). During exercise, the increased need for blood in the lower limb muscles cannot be met, resulting in pain in the form of cramps. Pain and restlessness are seen as a result of accumulation of toxic substances. IC increases with exercise and disappears with rest. Symptoms that may affect the thigh and hip area are seen in the calf area. Resting blood flow is normal in patients with IC and there are no symptoms in the leg. Most individuals with this disease have limited exercise capacity and walking distance. Typical claudication occurs in a third of individuals with PAD. However, it can lead to rest pain and impotence (Marbach et al., 2020). In patients with PAD, pain, disease adaptation, frequent hospitalizations, and inactivity as well as long treatment process and complications occurring during treatment may cause financial problems due to labor losses. Financial problems are overwhelming for the individual and they often cause sadness, anger, helplessness, hopelessness, anxiety, introversion, and loss of self-confidence. In addition, several psychosocial problems may occur in the patient such as fear of death, body image change, social isolation, and depression (Kumsar & Yılmaz, 2014; Ramirez et al., 2018).

Depression may lead to worsening of functional status and deterioration in quality of life and may increase the risk of recurrent hospitalization and morbidity in patients with PAD. Depression is present in up to 22% of individuals with PAD and depressive symptoms are associated with further impairment of lower extremity functions. Depression is a common comorbidity in these patients (McDermott et al., 2016). Depression is present in 11% of women and 13% of men with PAD. In comparison with women without PAD, women with PAD have a similar prevalence of traditional risk factors (e.g., hypertension, hyperlipidemia, and smoking), and depression is more common among women with PAD than women without PAD (Grenon et al., 2014). Depression can cause sexual problems, anxiety disorder, deterioration of interpersonal relationships and deterioration of family relationships. The symptoms experienced by individuals with PAD due to the nature of the disease can significantly affect the sexual life of the person, which is the main component of daily life activities. Sexuality is basically an experience based on sensations and is an important part of the individual's self-perception and concerns not only the genitals but also the whole body and mind (Aksöyek & Canatar, 2015). Sexual problems can lead to depression, anxiety disorder, disruption of interpersonal relationships, and deterioration of intra-family relations. Depression often affects libido, sexual arousal, orgasm, and erectile function (İncesu, 2004; Forbes et al., 2016). In PAD, erectile dysfunction may occur when blood flow is blocked in the aorta or iliac arteries (Blumentals et al., 2003). Polonsky et al. reported that erectile dysfunction (ED) is an independent predictor of PAD and increased ED severity is associated with increased PAD prevalence (Polonsky et al., 2009). McDermott and colleagues stated that the relationship between PAD

and depression can go in either direction, one can affect the other (McDermott et al., 2016). Therefore, it suggests that sexual dysfunction and depression may be related in patients with PAD. The aim of this study is to determine the relationship between depression and sexual problems in individuals diagnosed with peripheral artery disease.

MATERIAL AND METHOD

Study Type

The research design for this study is descriptive research.

Population and Sampling

The population of the study consists of 370 patients hospitalized with the diagnosis of Peripheral Artery Disease between October 21, 2015 and May 30, 2016 in the Cardiovascular Surgery clinic of a university hospital. The sample of the study consisted of 122 patients who met the inclusion criteria by simple random sampling method. It was thought that reaching at least 30% of the population (at least 111 individuals) would be sufficient for the best estimate of the population (Blanche & Durrheim, 2007). Patients over the age of 18, hospitalized with the diagnosis of PAD, without visual and auditory sensory loss, without any psychiatric disease diagnosis, without amputation decision, patients with active sexual life, and volunteering to participate in the study were included in the study.

Data Collection Tools

Personal Information Form: Form the personal information form consists of eight questions based on the literature (Foley et al., 2016; Grenon et al., 2014; Kara et al., 2016; Karabay et al., 2012; Libby et al., 2019) and includes information such as the patient's age, gender, occupation, marital status, educational status, income status, mobility status, smoking, alcohol use of the patient, and socio-demographic characteristics of the disease.

Beck Depression Inventory (BDI): The Beck Depression Inventory (BDI) was developed by Beck. The BDI test includes 21 items for measuring levels of depression (Beck et al.,1961). The validity and reliability of the BDI for use in Turkish was tested by Hisli. The BDI is scored from 0 to 3 for each question. Low scores indicate minimal depression, and higher scores indicate severe depression. The lowest score would be 0, and the highest possible total for the whole test would be 63. According to the BDI table, the scores obtained can be evaluated as normal between 1-10, mild mood disturbance between 11-16, borderline clinical depression between 17-20, moderate depression between 21-30, severe depression of 31-40, and extreme depression between 41-63. The Cronbach's alpha coefficient of reliability is 0.86 (Hisli, 1988). In the sample of this study, the alpha coefficient of reliability was found to be 0.83.

Arizona Sexual Experiences (ASEX): The Arizona Sexual Experiences Scale (ASEX) was developed by McGahuey et al. (McGahuey et al., 2000). It is used to evaluate the 5 main components of sexual function. These are arousal, desire, penile erection or vaginal lubrication, orgasm, and satisfaction. The question about penile erection and vaginal lubrication can be different in the male and female versions of ASEX. This is a Likert type scale that consists of 5 questions. Since there are 5 questions and each is scored from 1 to 6, the total score is from 5 to 30. The validity and reliability of the scale was tested by Soykan in 2004. According to this study, ≥11 scale score is the cut-off point for sexual dysfunction. The Cronbach's alpha value was found to be 0.89 and 0.90. A total score of 11 or more, 5 or more on any item, 4 or more on three items indicate sexual dysfunction and is highly correlated with clinician-defined sexual dysfunctions (Soykan, 2004). In the sample of this study, the alpha coefficient of reliability was found to be 0.93.

Data Collection

The data were collected in the Cardiovascular Surgery clinic of a university hospital between October 21, 2015 and May 30, 2016. It was conducted face-to-face interview with data collection forms.

Data Analysis

Statistical analysis of the data was performed using SPSS 21 software and www.epicos.com program. Frequency and percentage were calculated for the categorical variables, and descriptive statistics (e.g., minimum and maximum values, mean and standard deviation) were calculated for the continuous variables. Data were analyzed using Independent-t test to determine the origins of significance among the variables for values that were significant in several groups. Pearson Correlation test was used for the relationship between the scale sums. The Cronbach's alpha coefficient was calculated for questionnaire test reliability. The statistical significance level (p) for all the comparisons was set at 0.05.

Ethical Committee Approval

Ethics committee approval was obtained from the Clinical Research Ethics Committee of the university (20/08/2015, number: 302.08/824), and institutional permission was obtained from the medical faculty and practice center of the university. Written and verbal informed consent was obtained from all patients included in the study. The data collection process was completed by filling the previously mentioned forms for the patients in the Cardiovascular Surgery Clinic, paying attention to patient privacy. The patients were informed that their information would be kept confidential and that they could stop participating in the study at any time.

RESULTS

Among the participants, 89.3% of them were male, 59.8% of them were 60 years old or over, and the mean age was 60.7±8.5. Also, 63.9% of the individuals with PAD were primary school graduates, 74.6% were retired and 75.4% had enough income vis-à-vis expenditure. It was determined that 40.2% of the individuals with PAD were smokers and 10.7% of them drank alcohol. It was determined that 89.3% of individuals with PAD had another chronic disease, 60.9% had diabetes mellitus, 68% had hypertension, and 27% had hyperlipidemia. Finally, 95.9% of the individuals with PAD experienced limitation of movement due to PAD. It was found that 48.4% of the patients with PAD had moderate depression, 7.4% had severe depression and 0.8% had extreme depression. Moreover, 70.5% of the individuals with PAD received a score of 17 or above, and it was found that they need clinical treatment and 0.8% of them were referred to a psychiatrist for further evaluation (Table 1).

Table 1. Distribution of Beck Depression Inventory Scores of Individuals with PAD (n=122)

Beck Depression Inventory Scores	n	%
1-10: These ups and downs in mental status are normal	12	9.8
11-16: Moderate mood disorders	24	19.7
17-20: Borderline clinical depression	17	13.9
21-30: Moderate depression	59	48.4
31-40: Severe depression	9	7.4
41-63: Extreme depression	1	0.8

The mean scores of women with Beck Depression Scale peripheral arterial disease were higher than men, and no statistically significant difference was found. Individuals aged 60 years and over with peripheral arterial disease had higher Beck Depression Scale mean scores than those aged 40-59 years, and there was no statistically significant difference between them (Table 2).

Table 2. Comparison of Gender and Age Characteristics of Individuals with Peripheral Artery Disease and Beck Depression Scale Mean Scores (n=122)

Variables	n	Beck Depression Total Scale Score Mean±SS
Gender		
Female	13	21.46±7.85
Male	109	20.76±7.29
p		0.75
Age		
40-59 Age	49	19.53±8.01
Age 60 and over	73	21.71±6.74
p		0.12

When the ASEX average scores of patients with peripheral artery disease were examined; women's ASEX total scale score (23.23 ± 3.96) was higher than men's ASEX total scale scores (22.64 ± 3.77). This result suggested that the women with PAD had sexual dysfunction. Looking at the average of ASEX sub-dimensions; Penile erection / vaginal lubricity value was found to be maximum (4.66 ± 0.80). The average scores of ASEX sub-dimensions are as follows; sexual orgasm (4.61 ± 0.84), sexual arousal (4.59 ± 0.88), sexual satisfaction (4.57 ± 0.89) and sexual desire (4.26 ± 0.85). The mean ASEX score was 22.70 ± 3.78 (Table 3).

Table 3. Arizona Sexual Experiences Scale (ASEX) Mean Scores of Individuals with PAD (n=122)

Arizona Sexual Experiences Scale	**n**	**Mean±SS**	**Lower and upper values**
Sexual desire	122	4.26±0.85	1-6
Sexual arousal	122	4.59±0.88	1-6
Penile erection / vaginal lubrication	122	4.66±0.80	2-6
Sexual orgasm	122	4.61±0.84	1-6
Sexual satisfaction	122	4.57±0.89	1-6
Arizona Sexual Experiences Scale (Female)	13	23.23±3.96	15-30
Arizona Sexual Experiences Scale (Male)	109	22.64±3.77	8-30
Total Scale Score of the Arizona Sexual Experiences Scale	122	22.70±3.78	8-30

The gender and age of individuals with peripheral artery disease were compared with the ASEX score averages. Accordingly, in the statistical analysis performed with the significance control test (t-test) of the difference between the means, women with peripheral artery disease had higher sexual desire, sexual arousal, wetting/hardening of the genitals, and ASEX total scale scores compared to men. No statistically significant difference was found (Table 4).

Table 4. Comparison of Arizona Sexual Experiences Scale Scores According to Gender and Age Characteristics of Individuals with Peripheral Artery Disease (n=122)

Variables	**n**	**Sexually eager**	**Sexual arousal**	**Wetting of the genitals/ Hardening state**	**Orgasm status**	**Orgasm satisfaction**	**ASEX Total Scale Score**
		Mean±SS	**Mean±SS**	**Mean±SS**	**Mean±SS**	**Mean±SS**	**Mean±SS**
Gender							
Female	13	4.62±0.87	4.77±0.93	4.77±0.93	4.54±0.96	4.54±1.05	23.23±3.96
Male	109	4.22±0.84	4.57±0.88	4.65±0.79	4.62±0.84	4.58±0.87	22.642±3.77
p		p=0.11	p=0.44	p=0.62	p=0.73	p=0.88	p=0.6
Age							
40-59 Age	49	4.35±0.80	4.59±0.93	4.65±0.83	4.57±0.89	4.57±0.89	22.73±3.86
Age 60 and over	73	4.21±0.81	4.59±0.63	4.67±0.80	4.64±0.82	4.58±0.89	22.68±3.74
p		0.37	0.98	0.9	0.64	0.98	0.94

As can be seen in Table 5, there was a weak, positive, and statistically significant relationship between age and ASEX scale total scale score (r=0.067; p<0.009). This result suggests that the individuals with PAD had increased sexual dysfunction with age. On the other hand, there was no statistically significant relationship between depression and sexual dysfunction of the individuals with PAD. There was also no significant relationship between disease duration and depression and sexual

dysfunction.

Table 5. The Relationship Between Beck Depression Inventory and Arizona Sexual Experiences Scale Scores of the Individuals with PAD

		Arizona Sexual Experiences Scale	Beck Depression Inventory
Beck Depression Inventory	r	0.12	
	p	0.59	
Age	r	0.235	- 0.067
	p	**0.009**	0.463
Disease Duration	r	0.16	-0.158
	p	0.86	0.082

DISCUSSION

The incidence of peripheral arterial disease increases with the increasing age of individuals. The incidence of PAD among patients participating in the study was 40.2% between the ages of 40-59 and 59.8% over 60 years of age. In the study conducted by Karabay et al., the prevalence of PAD was found to increase with age (Karabay et al.,2012). The mean age of the patients with PAD in this study was 80.7 years, and this result is consistent with the relevant literature. The risk factors for PAD are similar to the risk factors in the etiology of coronary artery disease, and atherosclerotic disease is one of the typical risk factors. These risk factors primarily include age, gender, dyslipidemia, hypertension, diabetes mellitus and smoking. In this study, 89.3% of individuals with PAD were determined to have another chronic disease. 89.3% of the individuals with PAD were male. Research suggests that PAD is more common in men (Foley et al. 2016; Wongkongkam et al., 2018). Smoking has been shown to be a strong risk factor for PAD in the lower extremity, and in many studies, it has been demonstrated that patients with claudication have a history of smoking at some time. In the current study, 40.2% of the patients with PAD were found to be smokers. In the study of Alzamora et al., the risk of peripheral vascular disease among smokers was found to be 4 times higher than the risk for non-smokers, and active smokers were found to be at more risk than quitters (Alzamora et al., 2010).

Individuals with PAD may experience many problems such as limping, ischemic rest pain, ischemic ulcers, repeated hospitalizations, revascularization, and limb loss (Gerhard-Herman et al., 2017). This can result in a decrease in quality of life and an increase in depression (Ramirez et al., 2018). Some studies have shown that patients with PAD have a higher prevalence of depression than individuals without PAD (Brostow et al., 2017; McDermott et al., 2016; Smolderen et al.,2008). In a study of depressive symptoms in peripheral arterial disease, Smolderan et al., they found that the prevalence of depression in 166 PAD patients was 16% and a significant proportion of individuals with PAD had depression (Smolderen et al., 2008). In this study, it was found that more than half of the individuals with PAD experienced depression and needed treatment for depression. In our study, in parallel with the literature, the Beck Depression Scale score was 17 and above in 70.5% of individuals with PAD.

Sexuality is an important factor affecting the health quality of life and increasing self-esteem; Although sexuality continues in both genders in terms of quality and quantity in normal healthy conditions, sexual problems can be seen with the advancement of age (Chung, 2019; Şen et al., 2015). In this study, it was found that the sexual problem of the individuals with PAD increased as their age increased. In addition, while sexual desire, sexual arousal, vaginal lubricity, and ASEX total scale scores of women with PAD were higher than men, there was no statistically significant difference between women and men. This result indicates that women with PAD have sexual dysfunction. Psychological factors such as depression, anxiety, self-esteem, changes in body image and stress can negatively affect sexual function in women (Sivrikaya et al., 2014). In addition, sexual dysfunctions are more common in women due to reasons such as restriction of sexuality, lack of sexual education, strict taboo rules regarding sexuality, and overestimation of virginity in Turkish society (Derya et al., 2017; İncesu, 2004). This situation has an important effect on the emergence of sexual dysfunctions such as enlargement in the traditional family structure, lack of sexual knowledge, misconceptions and inexperience, and the fact that individuals do not know much about their own bodies and the body of the opposite sex. Because

sexuality is a subject that cannot be discussed due to cultural structures, it is often ignored by most women and health professionals (Açıkgöz, 2011). The result of our study on the higher prevalence of sexual dysfunction in women is consistent with the literature on this subject. It is predicted that sexual dysfunction and depression may be related in patients with peripheral arterial disease. Sivrikaya et al. found that depression was an important risk factor for the development of sexual dysfunction and there was a significant positive relationship between sexual dysfunction and depression (Sivrikaya et al., 2014). Reddy et al. determined that sexual dysfunction was more common in females with clinical depression than in those without depression (Reddy et al., 2020). Atlantis and Sullivan were reported a strong link between depression and sexual dysfunction in a meta-analysis study between depression and sexual dysfunction (Atlantis & Sullivan, 2012). The literature states that sexual dysfunction and depression may be related, but the findings of this study are not compatible with the literature. Because the results of the current study revealed that there is no significant relationship between depression levels and sexual problems of individuals with PAD. This may be due to the difference in the sample group and the measurement tools used.

CONCLUSIONS

According to the results of the research, it was found that there was no significant relationship between the depression levels of individuals with PAD and their sexual problems. Sexual problems and depression levels that may occur should be evaluated by nurses and psychiatric nurses who care for peripheral arterial patients. It is recommended that more studies be conducted to determine the mental and sexual problems experienced by the patients.

ETHICAL COMMITTEE APPROVAL

Ethics Committee permission was received from a University Clinical Research Ethics Committee and also institution permission dated 20/08/2015 and numbered 302.08/824 was obtained from a University Medical Faculty Research and Application Center.

AUTHOR'S CONTRIBUTION

Idea/concept: FEÖ, MY; Design: FEÖ, MY; Consultancy: FEÖ, MY; Data collection and/or Data Processing: FEÖ; Analysis and/or Interpretation: FEÖ, MY; Literature review: FEÖ; Writing of the article: FEÖ, MY; Critical review: FEÖ, MY.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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