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RESEARCH ARTICLE

THE RELATIONSHIP BETWEEN DEPRESSIVE SYMPTOMS, ANXIETY AND SOCIODEMOGRAPHIC CHARACTERISTICS IN INDIVIDUALS WITH CHRONIC DISEASES

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ABSTRACT

Purpose: This study aims to reveal the relationship between depressive symptoms, anxiety levels, and sociodemographic characteristics of individuals with chronic diseases.
Material and Methods: The study sample consisted of 149 individuals over the age of 18 who agreed to participate in the study and had a chronic disease. Study data were collected via a descriptive information form, the Beck Depression Inventory (BDI), and the Generalized Anxiety Disorder-7 (GAD-7) Scale.
Results: Participants' mean score was 14.56±10.08 on the BDI and 7.40±5.57 on the GAD-7. Of the participants, 34% were at risk of moderate and 8.7% were at risk of severe depression, while 22.8% were under high and 11.4% were under serious anxiety threat. The mean scores on the total BDI and GAD-7 scales were significantly higher in participants with low income than in those with normal or higher income and in participants who were single than those who were married. In addition, the participants who did not comply with treatment had higher mean scores on the total GAD-7 scale. Moreover, a positive linear correlation was found between BDI and GAD-7.
Conclusion: Depression and anxiety levels were significantly higher in participants with chronic disease. It is recommended that individuals at risk for anxiety and depression among those with chronic diseases should be identified and supported psychosocially.

Keywords: Chronic disease, depression, anxiety

INTRODUCTION

Every illness is a state of crisis that disrupts the emotional as well as the physical balance of the person it affects (1). Chronic diseases are long-term conditions, and they usually progress slowly, cannot be treated with medical interventions, and require periodic follow-up and supportive care to reduce the degree of the disease and maximize the functionality and responsibility of the person in self-care (2). Chronic diseases may cause social, mental, and physical problems. Physical symptoms, emotional problems, and social isolation caused by chronic diseases may lead to depression and anxiety in individuals (3).

In addition to the long-term treatment process and the physical symptoms experienced, the mental and social lives of individuals are also significantly affected. Therefore, patients may experience psychiatric and psychosocial problems besides existing pathological conditions (4). Depression and anxiety in more common chronic physical conditions such as coronary heart disease or diabetes can be

associated with increased mortality as well as poor prognosis of physical illness and affect health behaviors such as medical symptom burden and compliance (5-7). According to previous studies, there may be psychosocial problems in many disease groups, such as diabetes, cancer, cardiovascular diseases, osteoarthritis, rheumatoid arthritis, skin diseases, or respiratory system diseases (8-12).

There are studies conducted in Shanghai (13) and Beijing-Tianjin (14) in China and Taiwan (15) on the relationship between chronic diseases and mental health, but no study in this area has been found in Türkiye. We hope that this research will fill this gap and make an important contribution to the field. In addition to sociodemographic characteristics, the determination of the relationship between depression and anxiety will constitute an important data source for the development of protective measures for the risk group. This shows the necessity and importance of the present research.

Therefore, detecting and addressing depression and anxiety in individuals with chronic illness may improve outcomes beyond mental health. Knowing the conditions in which symptoms occur or vice versa, or understanding how patients adapt well to the chronic condition can help provide adequate therapy and prevention. Keeping this in mind, this study was conducted to examine the relationship between depressive symptoms, anxiety, and sociodemographic characteristics in individuals with chronic diseases. We think this study will guide further research on this subject**.**

Research Questions

Research question 1: What are the levels of depression and generalized anxiety disorder in individuals with chronic disease?

Research question 2: Is there a significant relationship between sociodemographic characteristics and depression and generalized anxiety disorder in individuals with chronic disease?

Research question 3: What are the sociodemographic characteristics that affect mean scores on the Generalized Anxiety Disorder-7 (GAD-7) scale and Beck Depression Inventory in individuals with chronic diseases?

MATERIAL AND METHODS

Design, Sample, and Participants

This cross-sectional study was conducted between September and November 2021. Data were collected on online platforms (e.g. Facebook, WhatsApp) via a questionnaire created on Google Forms to minimize face-to-face interaction with participants and reduce the spread of COVID-19. The population of the research consisted of individuals over the age of 18 who volunteered to participate in the study and used social media (Facebook, Instagram, and WhatsApp) and had been diagnosed with a chronic disease for at least six months. In this study, G*Power version 3.1 was used for calculating the sample size. By using the "G*Power-3.1.9.2" software (16), the sample size was calculated at a confidence level of 95%. As a result of the analysis, the minimum sample size was calculated as 149 individuals.

Inclusion criteria for the study were having been diagnosed with a chronic disease (at least 6 months ago), aged >18 years, and accepting to participate in the study.

Data Collection Tools

Data were collected with a descriptive information form, the Beck Depression Inventory, and the Generalized Anxiety Disorder-7 (GAD-7) scale.

Descriptive Information Form

This form, which was prepared by the researchers following a review of the literature, consists of 14 questions about some sociodemographic and disease characteristics of the participants, such as gender, age, marital status, educational status, economic level, presence of concomitant chronic disease (1-4, 7, 11).

The Beck Depression Inventory (BDI)

This is a 21-multiple-choice-item, self-reporting questionnaire for evaluating the severity of depression. It was developed by Beck et al. (1961). Turkish validity and reliability study in university students was performed by Hisli (1989). Each question on the questionnaire is scored between 0 and 3. Individuals are asked to mark the statement that best expresses how they have felt in the past week, including the day of application. Items on the questionnaire are evaluated on a 4-point Likert-type scale. The total score is calculated by summing the score of each item. The total score on the questionnaire is interpreted as follows: 0 - 9, minimal depressive symptoms; 10 - 16, mild depressive symptoms; 17 - 29, moderate depressive symptoms; 30 - 63, severe depressive symptoms. A score of 17 and above indicates the presence of depression (17).

Cronbach's alpha value of the scale in this study was determined as 0.92.

Table 1. Participants' sociodemographic characteristics

Socio-demographic characteristics	n	%
Gender		
Female	112	75.2
Male	37	24.8
Educational Status		
High school	26	17.4
Graduate and post-graduate	123	82.6
Income status		
Income < expenses	58	38.9
Income = expenses	59	39.6
Income > expenses	32	21.5
Marital status		
Married	89	59.7
Single	60	40.3
Chronic diseases		
Diabetes	28	18.8
Hypertension	27	18.1
Cardiac and respiratory system diseases	14	9.4
Other	80	53.7
Occupation		
Unemployed	68	45.6
Civil servant	48	32.2
Retired	23	15.4
Self-employed	10	6.7
Smoking status		
Yes	45	30.2
No	104	69.8
Treatment compliance		
Yes	109	73.2
No	40	26.8

The Generalized Anxiety Disorder-7 (GAD-7) Scale

GAD-7 is a short, self-report test that was developed by Spitzer et al. (2006) in accordance with DSM-IV-TR criteria and is used to evaluate generalized anxiety disorder. Turkish validity and reliability study was performed by Konkan et al. (2013). It is a 7-item, four-point Likert-type scale (0=never, 1=many days, 2=more than half of the days, 3=almost every day). Individuals are asked how often they have been bothered by each symptom during the past 2 weeks. There are three cut-off points for the total scores obtained from the scale: 5, 10, and 15 for mild, moderate, and severe anxiety, respectively (18). Cronbach's alpha value of the scale in this study was determined as 0.93.

Procedure

After ethical approval was obtained for the study, volunteers with chronic diseases using social media (Facebook, Instagram, or WhatsApp) were included in the study (n=149). An online questionnaire was used to minimize face-to-face interaction with all participants and facilitate participation. An informed consent form was placed at the beginning of the questionnaire, and participants were allowed to access the rest of the questionnaire upon giving consent. Individuals who did not complete the questionnaire were not included in the study.

Data Analysis

SPSS 25 (IBM Corp., Armonk, NY, USA) software package was used for data analysis. The level of significance of all results was set at $\alpha = 0.05$. The sociodemographic characteristics of the participants were analyzed using descriptive statistics (frequency, percentage, mean, standard deviation). The Kolmogorov–Smirnov test was used to compare variables that were normally distributed. Parametric test statistics were used for data analysis because the normality assumption was met. Differences between sociodemographic characteristics and total scale and sub-dimension scores were analyzed with independent samples t-test and ANOVA in independent groups. The correlation between the scales was calculated by Pearson correlation analysis. A post-hoc power analysis was performed based on an alpha error level of 0.05 and a medium effect size (d: 0.7) in the single-group sample. The power of the study was found to be 0.96.

Ethical Aspects of the Study

Ethical approval was obtained from the Health Sciences Non-Interventional Clinical Research Ethics Committee of the University (decision number: 2021/07-03; date: 16.06.2021). An informed consent form was placed at the beginning of the questionnaire, and participants were allowed to access the following pages provided that they checked the consent box.

Table 2. Mean Scores of participants on the BDI and GAD-7 Scales (n=149)

Scales	Mean ± SD	Min–Max	Score range	Skewness	Kurtosis
Beck Depression Inventory	14.56±10.08	0-39	0-63	0.26	-0.61
GAD-7 Scales	7.40±5.57	0-21	0-21	0.48	-0.87
SD= standart Deviation; Min=minimum; Max= maximum					

Table 3. Percentages of BDI and GAD-7 Scales)

Scales		n	%
BDI	Minimal depression	56	37
	Mild depression	28	18
	Moderate depression	52	34
	Severe depression	13	8.7
GAD-7 Scale	Mild anxiety	53	35.6
	Moderate anxiety	45	30.2
	Severe anxiety	34	22.8
	Very severe anxiety	17	11.4

RESULTS

Participants' characteristics

Of the participants, 75.2% were female, 82.6% had an undergraduate or postgraduate degree, 39.6% had equal income and expenses, 59.7% were married, 45.6% were unemployed, and 69.8% were nonsmokers. Also, 26.8% stated that they did not comply with their treatment (Table 1).

Participants' scors on the BDI and GAD-7 scales

In this study, participants' mean scores on the Beck Depression Scale and Generalized Anxiety Disorder-7 test were 14.56±10.08 and 7.40±5.57, respectively (Table 2).

Also, 34% of the participants were at risk for moderate and 8.7% were at risk for severe depression, while 22.8% had high and 11.4% had severe anxiety (Table 3).

Comparison of participants' BDI and GAD-7 scores by their sociodemographic characteristics

Participants' demographic characteristics, such as age, gender, and education level, were compared with their depression and anxiety scale scores, and no significant difference was found ($p > 0.05$). Participants' total scores on depression and anxiety scales were significantly higher in single participants than in married ones ($p<0.05$). The mean BDI and GAD-7 scale scores of participants whose income was lower were higher than the scores of those with equal income and expenses and high income ($p<0.05$). The mean Generalized Anxiety Disorder-7 test score of those who did not comply with the treatment was higher ($p<0.05$) (Table 4).

The correlation between the Beck Depression Inventory and the Generalized Anxiety Disorder-7 Test

Table 5 shows that there is a positive linear significant relationship between the Beck Depression Inventory and the Generalized Anxiety Disorder-7 Test. There was a positive linear relationship between age and the number of chronic diseases and anxiety and depression levels ($p<0.001$).

DISCUSSION

In this study, the depression and anxiety levels of individuals with chronic diseases were determined, and the relationship between sociodemographic characteristics and depression and anxiety levels was examined. Participants' mean score on the depression scale was 14.56±10.08. Of the participants, 34% showed signs of moderate and 8.7% severe depression. Acharya et al., in their study with patients who had a chronic pulmonary obstructive disease, demonstrated that 23.7% had moderate, 10.7% had severe, and 5.3% had very severe depression (19,20). Abu Ameerh and Hamad, in their study with diabetes patients, demonstrated that 30.3% had moderate, 14.2% had severe, and 3.2% had very severe depression (21). Albasara et al., in their study with hypertensive patients, demonstrated that 11.69% had moderate and 2.94% had severe depression (22). In a study conducted with patients with heart disease, the mean BDI score

Table 4. Comparison of participants' mean scores on the GAD-7 and BDI by their sociodemographic characteristics

Characteristics	Beck Depression Inventory			Generalised Anxiety Test-7		
	Mean± SD	t / F	p	Mean± SD	t / F	p
Gender						
Female	14.83±10.35	0.579	0.563	7.62±5.63	0.820	0.534
Male	13.72±9.29			6.75±5.42		
Marital status						
Maried	12.60±9.39	-2.961	**0.004***	5.89±4.89	-4.252	**0.000***
Single	17.46±10.43			9.65±5.81		
Educational status						
High school or below	14.76±10.04	0.114	0.909	8.46±5.47	1.059	0.291
Undergraduate and postgraduate	14.52±10.12			7.18±5.59		
Income status						
Income < expenses (1)	17.65±10.45		**0.007***	9.06±5.96		
Income = expenses (2)	13.27±9.68	5.114	1>2, 1>3	6.72±4.93	4.825	**0.009***
Income > expenses (3)	11.34±8.76		2>1	5.65±5.32	1>3	
Treatment compliance						
Yes	13.75±10.33	-1.631	0.105	6.81±5.30	-2.169	**0.032*****
No	16.77±9.09			9.02±6.03		

* p<.001, **p<.01, ***p<.05

Table 5. Correlation analysis of depression and anxiety

		Age	Number of chronic diseases	Level of GAD-7	Level of BDI
Age	Pearson correlation	1	.239	-.180	-.047
	p		.003**	.028*	.572
No of chronic diseases	Pearson correlation	.239	1	.158	.162
	p	.003**		.054	.048*
Level of GAD-7	Pearson correlation	-.180	.158	1	.708
	p	.028*	.054		.000**
Level of BDI	Pearson correlation	-.047	.162	.708	1
	p	.572	.048**	.000**	

* p<.001, **p<.01, ***p<.05

was found to be 7.7±8.7, and 47.2% of the patients had moderate to severe depressive symptoms (23).

In this study, participants' mean score on the GAD-7 was 7.40±5.57, and 22.8% of them had high and 11.4% had severe anxiety. In a study conducted with patients with hypertension, 14.29% showed moderate and 8.16% showed high levels of anxiety (24). In a study conducted with obese patients, 12.4% had moderate and 4% had severe anxiety (25). In a study conducted with patients with chronic renal diseases, the mean GAD score was found to be 7.72±4.66 (26). In another study conducted with patients with inflammatory bowel disease, 21.1% were found to have anxiety (27). Tsaras et al. reported the rate of anxiety as 32.2% in their study with patients who had breast cancer (28).

In this study, the mean depression and anxiety scale scores were significantly higher in single participants than in married ones. Liu et al. found that being a single woman was associated with a high prevalence of depression (13). Although studies with patients with chronic disease are limited, there are studies addressing depression and anxiety in patients with cancer or other specific diseases. Therefore, these research findings can be supported by studies dealing with specific chronic diseases. Tsaras et al. found higher levels of depression and anxiety in single patients with breast cancer than in married individuals, similar to our study (28). In a study conducted with cancer patients, the level of depression was higher in singles; on the other hand, anxiety levels did not differ according to marital status

(29). In a study conducted with individuals with colorectal cancer, the rates of anxiety and depression were found to be lower in married people than in singles (30). Zhong et al., in their study with epilepsy patients, determined that marital status did not affect the level of anxiety (31). Erşan et al. found that the state anxiety scores of single patients with fibromyalgia were significantly higher than the scores of married people (32). The fact that single people had lower social support factors than married people might have had a negative impact on anxiety and depression scores.

In this study, mean BDI and GAD-7 scale scores were significantly higher in individuals with a perceived low-income level. In a study conducted with patients with traumatic spinal cord injury, the levels of anxiety and depression were found to be higher in those with low income than in the healthy group (33). Lan et al. determined that income level did not affect the general anxiety level in patients with breast cancer (34). In a study conducted with chronic hemodialysis patients, depression and anxiety levels were found to be higher in those with low income than in those with high-income levels (35). It is thought that the level of income may cause an additional stress factor for individuals and lead to the idea that the expenses of the disease will not be met. Therefore, mean GAD-7 and BDI scores may be higher in those with low income. In addition, the anxiety scale score was found to be higher in those who did not comply with treatment. Contrary to this finding, in a study conducted with patients with chronic diseases, it was determined that treatment compliance did not affect the level of anxiety (36). It is thought that treatment compliance may increase patients' quality of life and reduce the level of anxiety as it helps control the symptoms of the disease

In our study, it was determined that there was a statistically significant positive correlation between patients' BDI and GAD-7 scores. In a study conducted with patients with stroke, a strong correlation was found between depression and anxiety, and it was stated that depression and anxiety shared many common symptoms, and therefore it was not easy to distinguish between them (37). Çelik and Acar found that there was a moderate, positive, and statistically significant correlation between the dependent variables of the study and the depression and anxiety scale scores of patients with chronic renal failure (35). In a study conducted with liver transplant recipients, a high level of positive correlation was found between patients' anxiety and depression scores (38).

Limitations of the Study

In our country, there is a need for multicenter studies that consist of larger samples and in which patients admitted to primary care and those under hospital treatment can be compared. This is the limitation of the study. Another limitation of this study is that it was not possible to limit chronic diseases in the study.

CONCLUSION

Depression and anxiety levels were significantly higher in participants with chronic disease. It is recommended that individuals who are at risk for depression and anxiety and have chronic diseases should be identified and supported psychosocially. It will be valuable to conduct preventive and curative experimental studies on these risky groups in the future. In addition, it may be recommended to group diseases (neurological diseases, cancer, immune system diseases, etc.) to determine the level of depression and anxiety.

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Ethical approval: Ethical approval was obtained from the Health Sciences Non-Interventional Clinical Research Ethics Committee of İzmir Demokrasi University for the conduct of the study with the decision number 2021/07-03 on 16.06.2021. After obtaining ethical approval for the study, volunteers with chronic diseases using social media were included.
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