

Assessment of Pain Symptoms Experienced in Major Depressive Disorder and Anxiety Disorder

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ABSTRACT

Assessment of pain symptoms experienced in major depressive disorder and anxiety disorder

Objective: Ever since the important role serotonin plays in the mechanism of pain emergence became known, there has been a heightened interest in examining the pain that accompanies psychiatric disorders. However, the relationship between pain and psychiatric disorders remains unclear. In this study, we aimed to obtain information about the frequency and characteristics of pain seen in patients diagnosed with major depressive disorder (MDD) and anxiety disorder (AD).

Method: The Hamilton Rating Scale for Depression (HAM-D), the Hamilton Anxiety Rating Scale (HAM-A), and the "Brief Pain Inventory" (BPI) were administered to 94 patients diagnosed with MDD and 94 patients diagnosed with AD, respectively. Comparisons between the diagnosed groups, pain characteristics and socio-demographic variables were examined using the Chi-square and Mann-Whitney U tests in the statistical software package SPSS 11.0. Spearman's rho test was utilized in order to examine correlation.

Results: Pain complaints in the MDD group were found in 55.3% (n=52), while this figure was 52.1% (n=49) in the AD group. There was no difference in the frequency of experiencing pain between the two groups (p>0.05). Variations of age, gender, and employment status did not correlate to differences in the presence of pain in MDD (p>0.05). In the AD group however, while there were no differences in age and gender regarding the presence of pain, complaints were more frequent in patients who did not work (p<0.05). In both groups, with a longer period of education the patients had received, there was a decrease in pain frequency (p<0.05). There was a positive correlation between HAM-D and HAM-A scores and pain intensity (HAM-D rho=0.217, HAM-A rho=-0.088, p<0.05); however, no correlation was found with the number of pain locations (HAM-D rho=0.165, HAM-A rho=0.105, p>0.05). It was found that pain affected self-care negatively in MDD (p<0.05).

Conclusion: The frequency of pain experienced in MDD and AD patients whom we assessed with the pain survey form was quite high. Additionally, an important finding was that while there was an increase in the intensity of pain with HAM-D, there was no increase in pain locations. It is important that pain is examined and evaluated as a symptom that can emerge in psychiatric disorders and not just a symptom in relation to physical illness.

Keywords: Anxiety disorders, major depressive disorder, mental health, pain

ÖZET

Majör depresif bozukluk ve anksiyete bozukluklarında görülen ağrı semptomunun değerlendirilmesi

Amaç: Serotoninin ağrının ortaya çıkış mekanizmasında önemli etkisi olduğu bilindiğinden bu yana psikiyatrik bozukluklara eşlik eden ağrıya olan ilgi artmıştır. Fakat ağrı ile psikiyatrik bozuklukların ilişkisi henüz net olarak bilinmemektedir. Çalışmamızda majör depresif bozukluk (MDB) ve anksiyete bozukluğu (AB) tanısı olanlarda ağrı sıklığı ve özellikleri konusunda bilgi edinmeyi amaçladık.

Yöntem: Doksan dört MDB 94 AB tanılı hastaya, Hamilton Depresyon Değerlendirme Ölçeği (HAM-D), Hamilton Anksiyete Değerlendirme Ölçeği (HAM-A) ve "Kısa Ağrı Envanteri" uygulandı. Tanı grupları, ağrı özellikleri ve sosyodemografik değişkenler arasındaki karşılaştırmalar SPSS 11.0 istatistik paket programında k-kare ve Mann-Whitney U testi ile incelendi. Korelasyon için Spearman's rho testi uygulandı.

Bulgular: MDB grubunda ağrı yakınmasının sıklığı %55.3 (n=52), AB grubunda ise %52.1 (n=49) olarak bulundu. Her iki grup arasında ağrı görülme sıklığı açısından fark bulunmadı (p>0.05). MDB'de ağrı varlığında yaş, cinsiyet, çalışma durumu ile ilgili değişkenler farklılık göstermedi (p>0.05). AB'de ağrı varlığında yaş ve cinsiyet karşılaştırmalarında fark saptanmadı fakat çalışmayanlarda ağrı daha fazla gözlemlendi (p<0.05). Her iki grupta da eğitim süresi arttıkça ağrı görülme sıklığında azalma vardı (p<0.05). HAM-D ve HAM-A puanları ve ağrı şiddeti arasında pozitif korelasyon mevcuttu (HAM-D rho=0.217, HAM-A rho=-0.088, p<0.05) fakat ağrılı bölge sayısı ile bir ilişki görülmedi (HAM-D rho=0.165, HAM-A rho=0.105, p>0.05). Ağrının MDB'de öz bakımı daha olumsuz etkilediği gözlemlendi (p<0.05).

Sonuç: Ağrı anket formu ile değerlendirdiğimiz MDB ve AB hastalarında ağrı görülme sıklığı oldukça yüksekti. Ayrıca HAM-D ile ağrı şiddetinin artması fakat ağrılı bölge sayısının artmaması önemli bir bulguydu. Ağrının sadece fiziksel hastalıklara bağlı değil, psikiyatrik bozukluklarda da ortaya çıkabilecek bir belirti olarak ele alınıp değerlendirilmesi önemlidir.

Anahtar kelimeler: Anksiyete bozukluğu, majör depresif bozukluk, ruh sağlığı, ağrı



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INTRODUCTION

Pain is an important public health issue that is common throughout society. Studies indicate that one half or at least one third of the population suffers from some kind of pain symptom (1). Pain is among the most common reasons for permanent or temporary loss of labor (2). Despite an increase in number of studies, information on the relationship between depression, anxiety, and pain remains limited, and the multi-dimensional relationship between pain and psychiatric disorders has yet to be clearly defined. While pain itself can cause depression and/or anxiety, it may also emerge at the onset of a psychiatric disorder as a symptom in someone who previously has not suffered from pain. An increase in the perception of the intensity of existent pain that accompanies depression or anxiety is a topic that is frequently discussed in studies (3). Those studies generally emphasize that the emergence of depression in patients already suffering from pain will increase the perceived intensity of pain and that the response to treatment will decrease and the trajectory of the present physical illness's trajectory will take a turn for the worse. However, pain, which we frequently witness both in anxiety disorders and depression, is a symptom we often encounter in our clinical practice; unfortunately, very limited detailed research on this topic has been reported. A few studies showed no physical reason for the pain experienced in major depressive disorder or anxiety, while it is witnessed frequently enough to warrant a discussion on its place among the diagnostic criteria (4). In review articles published recently, the co-occurrence between pain and depression ratings are shown to be up to 60% (5,6).

The pathophysiology of pain found in psychiatric disorders is not clearly understood. It is known that serotonin has an effect on the pain modulation system and that inhibitory neurotransmitters are important antinociceptives. Inhibitory neurotransmitters increase the transmission in descending neural pathways and thereby decrease the feeling of pain. It is claimed that serotonin and

noradrenaline (norepinephrine) increase the activities of these inhibitory neurotransmitters, thus decreasing the sensation of pain; the function of anti-depressants in decreasing pain symptoms supports this view (7-10).

Differential diagnosis of the pain that accompanies psychiatric disorders, measuring of felt intensity and characteristics of pain with reliable, standardized equipment, and determining the difference between the pain that accompanies psychiatric disorders and physical illnesses will allow for a more effective evaluation of this symptom, which is quite detrimental to the quality of life. In this study, we aimed to discover the quality and quantity of pain which we frequently encounter in our clinical practice as experienced in major depressive disorder and anxiety disorder questioning its effect on functioning by utilizing a standardized scale so that we could gather information on the aforementioned topics.

METHOD

The study included patients who presented to the psychiatry outpatient clinic of Mersin University's Faculty of Medicine and were diagnosed with MDD and AD according to the criteria outlined by the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV). The study, which was approved by the Ethics Committee of Mersin University's Faculty of Medicine, was completed with a total of 188 patients. The criteria for their inclusion in the study were: SCID-I (Axis I for Structured Clinical Interview for DSM); having met the diagnostic criteria for MDD (n=94) and AD (n=94; generalized anxiety disorder n=54, panic disorder n=40); being between the ages of 18 and 65; not having used psychotropic medication in the last three months; having no other accompanying psychiatric diagnosis and having no previous diagnosis of chronic physical illness that resulted in pain. Physical illnesses were evaluated based on patients' testimonies, past hospital records, and patient file investigations. In order to be able to claim that the difference between the groups was significant with an 80% power and 5% type I error, at least 94 patients

from every group had to be included. All patients who agreed to participate in the research were administered the HAM-D, HAM-A, and the Pain Survey Form including the "Brief Pain Inventory."

Measures

Hamilton Depression Rating Scale (HAM-D):

The Hamilton Rating Scale for Depression, which is frequently used in the practice of psychiatry, is a measure that determines the intensity and level of depression in a person diagnosed with major depressive disorder. It facilitates monitoring during treatment. It is a Likert-type measure applied by the clinician consisting of 17 questions (11). Its validity and reliability in the Turkish version has been confirmed by Akdemir et al. (12).

Hamilton Anxiety Rating Scale (HAM-A):

While not possessing a diagnostic feature, the HAM-A works to measure the intensity and level of patients' anxiety. The Likert-type scale, which includes 13 questions, is applied by the clinician (13). Its validity and reliability in the Turkish version has been confirmed by Yazici et al. (14).

Pain Survey Form: The pain survey form is a short pain inventory rating the intensity of pain between 0 and 10, including a diagram allowing to establish the location of the pain, and a survey form showing the effect of the pain on everyday functionality.

Brief Pain Inventory: The Brief Pain Inventory (BPI) is a multidimensional scale that is used to evaluate pain composed of 32 questions with rating scales from 0 to 10. The intensity of pain, its character, location, and effects on daily functions (social-emotional) is evaluated based particularly on the past week. The validity and reliability of the scale has been confirmed by Cleland et al. (15). The questionnaire categorizes the patients' "worst," "least," and "average" pain intensity in addition to the pain felt during the interview, recorded as "current pain intensity." The questionnaire looks into the effect pain has on the patient's

functioning by examining the fields of familial-household responsibilities, employment, sexual life, leisure activities, social activities, and personal care.

Statistical Analysis

The patient groups included in the study were analyzed using a trial version of the SPSS11.0 statistical software package. The research data were initially evaluated with descriptive analyses (numbers, percentages). In addition, the relations between categorical variables were examined utilizing the Chi-square test. The Shapiro-Wilks test was used to determine the normal distribution of numerical variables. In situations where numerical variables did not have normal distribution, nonparametric tests were used. Spearman's rho test was used for the correlation between variables. The difference was considered to be statistically significant if $p < 0.05$.

RESULTS

The study was conducted with 188 individuals: 94 diagnosed with MDD and 94 with AD. Of the sample, 81.9% were women and 18.1% were men. The average age of the entire sample was 41.80 years (± 14.65). While the age average in the MDD group was 41.50 (± 14.58), it was 42.10 (± 14.78) in the AD group ($p > 0.05$). The frequency of pain complaints was found to be 55.3% ($n=52$) in MDD and 52.1% ($n=49$) in AD; no significant difference was determined between the two groups ($p > 0.05$). A comparison of the sociodemographic features of the sample according to diagnosis groups is shown in Table 1.

The two groups were similar in terms of age, gender, employment status, presence of pain, and number of pain locations ($p > 0.05$). While the average period of illness in the MDD group was 11.54 (± 13.42) years, this number was 14.36 (± 20.30) years in the AD group ($p > 0.05$). The difference in marital status between MDD and AD was significant ($p < 0.05$). While MDD was more frequent among widowed and divorced patients, AD was more frequent among the married.

Table 1: Sociodemographic and pain characteristics of the diagnostic groups

	MDD		AD		χ^2	df	p
	n	%	n	%			
Sex							
Male	14	7.4	20	10.6	1	1	0.343
Female	80	42.6	74	39.4			
Marital Status							
Single	18	9.6	21	11.2	10	3	0.022*
Married	57	30.3	66	35.1			
Widow/widower/divorced	19	10.1	7	3.7			
Employment status							
Working	35	18.6	31	16.5	4.227	5	0.517
Unemployed	59	31.3	63	33.6			
Pain							
Existent	52	27.7	49	26.1	193	1	0.661
Non-existent	42	22.3	45	23.9			
Reason for pain							
Existent	18	17.8	14	13.9	192	1	0.661
Non-existent	34	33.7	35	34.7			
Pain location							
Head-neck	16	15.8	21	20.8	2.757	1	0.431
Waist-back	24	23.8	20	19.8			
Joints	11	10.9	6	5.9			
Other	1	1.0	2	2.0			
	Mean	SD	Mean	SD	z		
Age	41.50	14.58	42.10	14.78	2.734	2	0.255
Duration of education	9.43	4.30	9.24	4.480	6.038	2	0.490
Duration of illness	11.54	13.42	14.36	20.39	4.833	2	0.890
Number of pain locations	2.83	2.12	2.22	1.29	2.236	2	0.327

MDD: Major depressive disorder, AD: Anxiety disorder, n: Sample size, SD: Standard deviation, χ^2 : Chi-square, z: Mann-Whitney U, *p<0.05

Table 2: Comparison of sociodemographic characteristics according to presence of pain the diagnostic groups

	Major Depressive Disorder						Anxiety Disorder							
	Pain present		Pain not present		χ^2	df	p	Pain present		Pain not present		χ^2	df	p
	n	%	n	%				n	%	n	%			
Sex														
Male	7	7.4	7	7.4	0.188	1	0.664	7	7.4	13	13.8	2.987	1	0.084
Female	45	6.9	35	37.2				42	44.7	32	34.0			
Marital Status														
Single	7	7.4	11	11.7	3.869	2	0.145	7	7.4	14	14.9	4.427	2	0.109
Married	36	38.3	21	22.3				37	39.4	29	30.9			
Widowed/Widow-er/Divorced			10	10.7				5	5.4	2	2.1			
Employment status														
Employed	21	22.3	31	33.0	0.869	1	0.351	11	11.7	20	21.3	12.185	1	<0.001
Unemployed	14	14.9	28	29.8				38	40.4	25	26.6			
	Mean	SD	Mean	SD	z	p		Mean	SD	Mean	SD	z	p	
Age (years)	43.00	15.40	42.10	2.40	2.011	0.259		44.50	12.10	37.40	15.10	1.931		0.060
Duration of education	7.63	4.10	11.36	4.00	4.386	0.026*		8.47	3.97	10.33	4.39	-3.739		<0.001
HAM-D	24.70	4.24	21.79	4.25	0.75	0.008*		13.98	3.70	11.60	3.95	5.358		0.003*
HAM-A	15.83	4.28	12.98	4.09	2.454	0.003*		27.47	5.35	17.30	3.76	3.013		<0.001

n: Sample size, SD: Standard deviation, z: Mann-Whitney U, χ^2 : Chi-square, *p<0.01

A comparison of the sociodemographic characteristics and the existence of pain in MDD and AD is shown in Table 2. No significant difference between the two groups was found when comparing the age, gender, and marital status among those with

and without pain (p>0.05); however, the length of education (time spent in schooling) was significant for both groups (p<0.05). In the AD group, the unemployed experienced more frequent pain (p<0.05). In both diagnosed groups, the HAM-D and HAM-A

scores were notably higher among those with pain compared to those with no pain ($p < 0.05$).

When we examine the characteristics of pain, no difference was determined between MDD and AD in terms of the “worst pain” rating ($p > 0.05$); however, “the least pain felt” and “the average scale of pain” were significantly higher in the MDD group compared to the AD group ($p < 0.05$). The “current pain felt” score was once again higher in MDD in comparison to AD; however, the difference was not significant ($p > 0.05$). When we examined the effect of pain on functioning, the average score of

family-household responsibilities, spending leisure time, social activities, sexual life, and employment status scores were all found to be higher in the MDD group than in the AD group; however, the difference was not significant ($p > 0.05$). The effect of pain on personal grooming was significantly higher in the MDD group than in the AD group ($p < 0.05$). The negative effect that pain had on personal grooming was higher in women than men, and the difference was statistically significant ($p < 0.01$). The effect of pain on functioning in the diagnosed groups can be seen in Table 3.

Table 3: Pain intensity ratings in diagnoses according to the Brief Pain Inventory and the effects of pain on functioning

	MDD		AD		z	p
	Mean	SD	Mean	SD		
Pain characteristics						
Worst pain	6.7	1.8	6.4	1.8	-1.032	0.302
Least pain	1.1	1.2	0.6	0.9	-2.301	0.021*
Currently experienced pain	2.5	2.0	1.8	1.6	-1.910	0.056
Average pain intensity	3.9	1.5	3.2	1.3	-2.413	0.016*
The effect of pain on functioning						
Family-home responsibilities	4.6	2.0	3.8	2.4	-1.597	0.110
Free time activity	4.5	2.0	3.7	2.4	-1.763	0.078
Social activity	4.2	2.3	3.6	2.4	-1.374	0.169
Profession	4.6	2.1	3.8	2.4	-1.678	0.093
Sexual life	0.5	1.5	0.2	0.8	-1.390	0.165
Personal grooming	2.0	2.3	1.2	2.3	-2.672	0.008*

MDD: Major depressive disorder, AD: Anxiety disorder, SD: Standard deviation, z: Mann-Whitney U, * $p < 0.05$

Table 4: HAM-D, HAM-A, correlation coefficients between the localization and intensity of pain

	HAM-D	HAM-A	Number of pain locations	Worst pain intensity	Least pain intensity	Current pain intensity	Average pain intensity
HAM-D	-	$r = -0.088$ $p = 0.227$	$r = 0.165$ $p = 0.980$	$r = 0.093$ $p = 0.355$	$r = 0.276$ $p = 0.005*$	$r = 0.235$ $p = 0.018*$	$r = 0.217$ $p = 0.030*$
HAM-A	$r = -0.088$ $p = 0.227$	-	$r = 0.105$ $p = 0.296$	$r = -0.048$ $p = 0.636$	$r = 0.077$ $p = 0.445$	$r = 0.092$ $p = 0.360$	$r = -0.088$ $p = 0.380$
Number of pain locations	$r = 0.165$ $p = 0.98$	$r = 0.105$ $p = 0.296$	-	$r = 0.108$ $p = 0.284$	$r = 0.311$ $p = 0.020*$	$r = 0.342$ $p < 0.001*$	$r = 0.266$ $p = 0.007*$
Worst pain intensity	$r = 0.093$ $p = 0.355$	$r = -0.048$ $p = 0.638$	$r = 0.108$ $p = 0.284$	-	$r = 0.507$ $p < 0.001*$	$r = 0.505$ $p < 0.001*$	$r = 0.863$ $p < 0.001*$
Least pain intensity	$r = 0.276$ $p = 0.005*$	$r = 0.077$ $p = 0.445$	$r = 0.311$ $p = 0.002*$	$r = 0.507$ $p < 0.001*$	-	$r = 0.613$ $p < 0.001*$	$r = 0.685$ $p < 0.001*$
Current pain intensity	$r = 0.235$ $p = 0.018*$	$r = 0.092$ $p = 0.360$	$r = 0.342$ $p < 0.001*$	$r = 0.505$ $p < 0.001*$	$r = 0.613$ $p < 0.001*$	-	$r = 0.596$ $p < 0.001*$
Average pain intensity	$r = 0.217$ $p = 0.030*$	$r = -0.088$ $p = 0.380$	$r = 0.266$ $p = 0.007*$	$r = 0.863$ $p < 0.001*$	$r = 0.685$ $p < 0.001*$	$r = 0.596$ $p < 0.001*$	-

HAM-D: Hamilton Depression Rating Scale, HAM-A: Hamilton Anxiety Rating Scale, r: Spearman's rho correlation coefficient, * $p < 0.05$

No statistically significant correlation was found between the number of pain locations and the “worst pain” felt and HAM-D and HAM-A scores ($p>0.05$); however, there was a positive correlation between “intensity of least pain” felt, “current intensity of pain” and “average intensity of pain” and HAM-D scores ($p<0.05$). The correlation coefficients and p-values can be found in Table 4.

DISCUSSION

The findings of our study demonstrate that pain symptoms are quite frequently experienced by patients with MDD and MDD (53.8%) and that this pain is generally (68.3%) classed as “unknown pain.” It was found that the frequency of experiencing pain is similar in the MDD and AD groups and that with both diagnoses, pain is mostly experienced in the head and neck region. In one study, the pain frequency in MBB was determined to be 11.6%, being more frequent in AD, and in another study, it was found that pain was more frequently experienced in the AD group with 35.1% ($n=52$) as compared to the MDD group (20.2%) (4,16). In our study, the rate of pain was found to be 55.3% in MDD ($n=52$) and 52.1% in AD ($n=49$); in the light of the literature, the difference in the rate of pain is noteworthy. This difference could be attributed to the difference in the sample group featured in the study. For example, in the study finding an 11.6% pain ratio, the normal population was scanned, whereas in the other study, diagnosed patients made up the participants, but different pain scales were used. In yet another study, the BPI was used in AD and MDD, similar to our study; however, patients with additional psychiatric diagnoses were also included in the research. Here, the frequency of pain in the co-existence of MDD and AD was 78%, while this figure was 59% in MDD-only cases (17). In a study conducted on patients who feel pain due to physical illnesses, the MDD and AD rates were examined as additional diagnosis, and it was found that the frequency of MDD along with pain was 31.5%, a higher figure than that of AD and pain (8.9%) (3). The Absence of a standardized pain scale and the

difference in research patterns generally appear to be the reasons behind the different rates. However, in most of the studies, the common result is that a pain symptom is frequently experienced in both MDD and AD.

The significant rise in the HAM-D and HAM-A scores in the presence of pain and the linear relationship between score levels in HAM-D, which evaluates the intensity of depression in particular, and those of “the worst pain,” “the least pain,” and “average pain” and “current pain” indicate that, as the intensity of depression and anxiety increase, the intensity of pain also grows. The significant increase in the intensity of depression both in pain disorder as a primary illness and in depression appears to support our transition from the axis approach to the spectrum approach in the diagnosis of the relationship between physical illnesses and mental disorders in the DSM-5.

There was no correlation between HAM-D and HAM-A and the number of pain locations; based on this finding, one can arrive at the opinion that it is the intensity of pain that increases and not the number of pain locations in MDD and AD; and this finding appears to be compatible with the role of serotonin in the neuronal pain pathways.

In the evaluation of the intensity of pain, the rating for “least pain” and “worst pain” were higher in MDD as compared to AD; however, there was no difference in MDD and AD in terms of “worst pain.” In this case, we can say that in both disorders the ratings given to the worst felt pain in both groups are close; however, the higher scores found in MDD as compared to AD for brief pain and general pain may allow us to assume that pain is felt more intensely in MDD. In the relevant literature, we did not come across any study conducted with a design that categorizes the pain in MBB and AD. In one study, the “BPI inventory” and questioned “average pain” intensity were found to be highest in the joint diagnosis of MBB and AD; however, the lack of assessment under “least pain,” “average pain,” and “worst pain” has led to restrictions in terms of comparing our findings (17).

In 36.2% of the MDD group and in 37.2% of the AD group, there was no known reason for pain. In one study, the frequency of pain whose reason was

unknown is given as 28.8% in MDD, while this figure was 51.8% in the AD group (18). However, for the purposes of this study, all disorders in the spectrum of anxiety disorders were included in the research and the sample group size and study pattern were considerably different. The high rates of unknown pain in both MDD and AD promote the idea of adding this symptom to the diagnostic criteria of MDD and AD.

Different results can be found in research that examines the relationship between sociodemographic characteristics and pain, and there is no clear opinion on this topic. In one study, the level of education of those who have been diagnosed with MDD and AD and complain of pain has been found to be lower than in those who do not complain of pain, and women were found to have complaints about multiple pain locations (4). It has been established that a low level of education and being of the female sex are a risk factor in both depression and somatoform disorders (19-22). In our study, the frequency of pain was higher among those with a low level of education in the depression and anxiety disorder group, which is an important finding that is compatible with studies conducted in the past. However, in terms of the frequency of pain, number of pain locations, and intensity of pain, there was no difference found between the sexes. There may be many reasons for the variance in the results; psychodynamic reasons aside, learning, sociocultural differences, and the more frequent use of body language in societies where verbal communication is limited in particular may be among the reasons for this variance (23). With age, there is an increase in physical illnesses, and thus it may be thought that somatic complaints too will rise in number. Furthermore, it has been noted that psychological disorders are more frequent in the unemployed (24,25). In our study, the age average and employment status were similar among the MDD with pain and those without, but in AD, pain was more frequently found in the unemployed group.

Loss of functioning is a leading finding in the MDD group and pain increases this loss (26). In our study, the effect of pain on self-care was more

negative in MDD than in AD. It is known that self-care diminishes in both disorders; however, the fact that the "effect of pain on self-care" score, listed among the ratings, was higher in MDD, leads us to believe that in the decrease of self-care, it is not just motivation, lack of desire or deficient energy that play a role, but pain may do so, too.

The most important limitation of our study was the size of our sample group and the imbalance between the sexes. The presence of an item of pain in the HAM-D rating leads to a problem in clearly interpreting the relationship between the intensity of depression and the intensity of pain. Another limitation of the study was the lack of differentiation between patients from towns versus those living in the countryside. The evaluation of pain based solely on the statement of the patient, as well as the fact that physically ill patients should not be inconvenienced through detailed physical examinations and required laboratory tests, have been detrimental to clearly describing the connection between pain and psychiatric disorders.

In conclusion, the number of studies evaluating the intensity of pain and pain locations in MDD and AD is limited, and we are of the opinion that the findings from our study will provide valuable contributions to the existing literature. Pain symptoms are frequently found in MDD and AD and pain increases the loss of functioning caused by the psychiatric disorders themselves. As patients generally tend to evaluate this finding as a physical symptom and not a psychiatric one, they may not speak of these symptoms to clinicians. However, bearing in mind the effect of serotonin on pain pathways, it is foreseeable that pain would accompany psychiatric disorders. Even though the MDD and pain relationship has been frequently studied in the past, pain in AD has been an area of interest as of late and as is evident from our study, the pain symptom is frequently found in AD. The relationship between pain and psychiatric disorders is multifaceted and it is evident that there is a need for much more work on this topic. We are of the opinion that through the use of standardized scales in studies conducted on sample groups from every diagnostic

group in psychiatry we will be able to shed more light on the relationship between pain and psychiatric disorders, thereby offering patients better options during the treatment process.

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Contributions category	Authors name
Development of study idea	R.K., M.K.Y.
Methodological design of the study	R.K., M.K.Y., E.A.
Data acquisition and process	R.K., E.A.
Data analysis and interpretation	E.A., R.K., M.K.Y.
Literature review	R.K., M.K.Y., E.A.
Manuscript writing	R.K., M.K.Y., E.A.
Manuscript review and revision	R.K., M.K.Y., E.A.

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