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The Role of Anxiety Sensitivity in the Comorbidity of Anxiety Disorder and Depression

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Abstract

The role of anxiety sensitivity in the development and treatment of psychiatric disorders is an issue that should receive attention. In this study, it was aimed to examine the existence of cognitive concerns in patients diagnosed with Anxiety Disorder and comorbid Depression in the light of the literature. A total of 112 patients diagnosed with Generalized Anxiety Disorder (n:50), Panic Disorder (n:50), Social Anxiety (n:9) and Post-Traumatic Stress Disorder (n:3) upon referral to the psychiatry outpatient clinic were included in study. Because of their small numbers, the Social Anxiety and Post-Traumatic Stress Disorder patients were excluded from the study. The patients involved in the study were divided into two groups. Those patients diagnosed with Anxiety Disorder without comorbid Depression generated one of the groups and those patients diagnosed with both Anxiety Disorder and Depression generated the other group. While the patients diagnosed with Panic Disorder were assessed by the Panic and Agoraphobia Scale in terms of the severity of the symptoms, the patients diagnosed with Generalized Anxiety Disorder were assessed by the Generalized Anxiety Disorder-7 Scale. The Hamilton Depression Rating Scale and Anxiety Sensitivity Index-3 were applied to all patients. The patients diagnosed with both Anxiety Disorder and Depression had higher cognitive concerns than the other group, and further, a correlation between the severity of depression and cognitive concerns was observed. This correlation revealed the importance of especially the cognitive aspect of anxiety sensitivity in the development and treatment of depression comorbid with anxiety disorders.

Keywords: Anxiety sensitivity; Depression; Anxiety disorder; Comorbidity

1. Introduction

1.2 Anxiety sensitivity

Anxiety sensitivity is fear from symptoms and sensations of autonomic arousal with the belief that these symptoms or sensations may lead to harm [1]. Cognitive misappraisal is believed to take a critic role in the development of anxiety according to the anxiety sensitivity concept. Anxiety sensitivity is distinguished from other cognitive conceptualizations in terms of the stable trait-like characteristic of anxiety sensitivity [2]. Genetic factors and life experiences are asserted as the mechanisms that take part in the evolution of anxiety sensitivity [3]. Life experiences also consist of information about the harmfulness of sensations aroused from anxiety, witnessing someone's medical problem and hearing about the fearful experiences of others. Anxiety sensitivity does not require individual anxiety experiences [2].

1.3 Anxiety sensitivity assessment

Assessment of anxiety sensitivity started with the Anxiety Sensitivity Index (ASI) composed of 16 items [3]. Psychometric experiments revealed the multifactor construct of anxiety sensitivity. The most permanent results of factor analysis suggested that anxiety sensitivity had three dimensions about physical, cognitive and social concerns [4]. The Anxiety Sensitivity Index - 3 (ASI-3) was created by Taylor et al. in 2007 [5]. It has been evidenced that the ASI-3 is more effective in reflecting physical, cognitive and social factors than the original ASI [6].

1.4 Anxiety sensitivity and psychiatric disorders

Clinical and non-clinical studies detected relations between different Anxiety Disorders (Panic Disorder, Generalized Anxiety Disorder, Social Phobia), Depressive Disorders, Post-Traumatic Stress Disorder and anxiety sensitivity [7, 8]. The 3-factor structure of anxiety sensitivity and special relations of these factors with psychiatric disorders have been studied. It is suggested that the physical dimension of anxiety sensitivity is related to Panic Disorder whereas the cognitive dimension correlates with Generalized Anxiety Disorder and Depression. Studies also demonstrate connections between social dimensions and Social Phobia [6, 9, 10]. Comorbidity is one of the problems in psychiatric disorders. The comorbidity of anxiety and depression is widely observed in clinical practice which complicates treatment and long-term follow-up. Anxiety sensitivity with its dimensions may serve a perspective for overcoming the difficulties in treatment. As our knowledge about anxiety sensitivity grows, the role of anxiety sensitivity in different psychiatric disorders is revealed.

1.5 Current study

Although an increased number of studies have begun to use the ASI-3 for measurement, the number of studies with the original ASI is still greater which causes limitations in evaluating the dimensions of anxiety sensitivity [6, 10]. As our study was designed with the ASI-3, we gained an advantage in reflecting the anxiety sensitivity dimensions. Our knowledge about the role of anxiety sensitivity in the development and maintenance of psychiatric disorders leads to investigations especially on clinical samples. Comorbidity complicates treatment and long-term follow-up, thus constitutes one of the problems in psychiatric disorders. The comorbidity of anxiety and depression has been

widely observed in clinical practice, and anxiety sensitivity with its dimensions may serve as a perspective in overcoming the difficulties in treatment. In this context, it was planned to assess anxiety sensitivity and the entirety of its dimensions in Anxiety Disorder patients with comorbid Depression. In parallel with the literature data, those patient groups with comorbid anxiety and depression were expected to have greater cognitive anxiety.

2. Method

2.1 Participants

The study sample was composed of patients who referred to the Balıkesir University Psychiatry outpatient clinic between January 2017 and July 2017. Our study received the approval of the local ethics committee. The patients were informed about the study, and those who accepted to take part in the study were examined by clinicians. Those patients who fulfilled the age (ages between 18-65) and education (at least primary school) criteria were selected to minimize the effects of marginal samples. Patients with comorbid psychiatric or neurological disorders other than depressive symptoms were not involved in the study. The patients who met the study criteria and gave written consent consisted of 50 Panic Disorder, 50 Generalized Anxiety Disorder, 9 Social Anxiety and 3 Post-Traumatic Stress Disorder patients. The Social Anxiety Disorder and Post-Traumatic Stress Disorder patients who constituted a small number of the sample group were excluded from the study in order to obtain a homogeneous sample group. The Panic Disorder (n:50) and Generalized Anxiety Disorder (n:50) patients were included in study. While 24 Panic Disorder patients were determined to have Depressive Disorder, the number of Generalized Anxiety Disorder patients who had Depressive Disorder comorbidity was 29. The patients were grouped according to their diagnosis. The first group consisted of 47 patients diagnosed with only Anxiety Disorder (Group A). The number of patients diagnosed with both Anxiety and Depressive Disorder was 53 (Group A+D) and they generated the second group. Socio-demographic data such as age, marital status and educational status was collected from all participants. The participants were diagnosed with Generalized Anxiety Disorder and Panic Disorder via the DSM 5 criteria by the clinicians. Depressive Disorder comorbid with these Anxiety Disorders was also diagnosed according to the DSM 5 criteria by the clinicians.

2.2 Measures

2.2.1 Generalized anxiety disorder-7: In order to assess symptom severity, the Generalized Anxiety Disorder-7-item Scale (GAD-7) was performed on the Generalized Anxiety Disorder patients. The GAD-7 developed by Spitzer et al. in accordance with the DSM-IV-TR criteria is a self-report measure in which experiences in a 2-week period are assessed by the items in the scale. The Turkish validity and reliability analyses were performed by Konkan et al. [11, 12].

2.2.2 Panic and agoraphobia scale: Those patients with Panic Disorder were assessed by the Panic and Agoraphobia Scale (PAS) which was developed by Bandelow and the Turkish validity and reliability analyses were performed by Tural et al. [13, 14]. The scores acquired in the PAS indicated the symptom severity of Panic Disorder.

2.2.3 Hamilton depression scale: The Hamilton Depression Scale (HAM-D) was applied to all participants in this study. The HAM-D was published in 1960 by Max Hamilton, and the Turkish validity and reliability was conducted by Akdemir et al. [15, 16]. The HAM-D provided the opportunity to assess the severity of the Depression symptoms in the past one week by the clinicians.

2.2.4 Anxiety sensitivity index-3: The anxiety sensitivity levels of the participants were evaluated via the Anxiety Sensitivity Index-3 (ASI-3). The ASI-3 was developed by Taylor et al. in order to consider anxiety sensitivity with physical, cognitive and social dimensions. The ASI-3 was adapted to Turkish and analyzed for validity and reliability by Mantar et al. [5, 17].

2.3 Analyses

The statistical analyses were performed by using the SPSS Statistics 15.0 Program. The Pearson Chi Square test was used for testing the relationship between categorical (gender, educational status, marital status, employment status) variables. The Mann-Whitney U test was used to answer the question concerning the difference of scale scores between Group A and Group A+D. The next step of the analyses was assessing the correlation between the ADI total, ADI subscales and HAM-D scores in both groups. The Spearman Rank Correlation was used to measure the degree of association between the scales. For all analyses, $p<0.05$ was accepted as the cutoff for statistical significance.

2.4 Ethical standards

All procedures contributing to this work complied with the ethical standards of the relevant national and institutional committees on human experimentation as well as the Helsinki Declaration of 1975, as revised in 2008.

3. Results

3.1 Demographic data

Demographic data (gender, educational status, marital status, employment status) collected from all patients are presented in Table 1 and Table 2. The median age was determined as 39 (minimum 19, maximum 64) for the Group A patients and as 38 (minimum 20, maximum 63) for the Group A+D patients. There was no significant difference between the two groups in terms of age distribution (Table 1).

	Group A				**Group A+D**					
	N	Median	Min	Maks	N	Median	Min	Maks	Z	p
Age	47	39,00	19,0	64,00	53	38,00	20,00	63,00	-0,605	0,545

Table 1: Age distribution.

While Group A was composed of 63.8% (n:30) females and 36.2% (n:17) males, Group A+D consisted of 67.9% (n:36) females and 32.1% (n:17) males. (p:0.66) As we analyzed the two groups for education, it was determined that 40.4% of the Group A patients (n:19) and 39.6% of the Group A+D patients (n:21) were primary school graduates, and 59.6% of the Group A patients (n:28) and 60.4% of the Group A+D patients (n:32) were high school or university graduates. (p:0.935) According to the demographic data collected from the patients, 70.2% of the Group A patients (n:33) and 75.5% of the Group A+D patients (n:40) were married whereas 29.8% of the Group A patients (n:14) and 24.5% of the Group A+D patients (n:13) were single. (p:0.554) In Group A, 46.8% of the patients (n:22) declared that they were employed and 53.2% of the patients (n:25) declared that they were not. In Group A+D, 56.6% of the patients (n:30) were employed and 43.4% (n:23) were not. (p:0.328) The sociodemographic valuables (gender, educational status, marital status, employment status) revealed no significant difference between the two groups (Table 2).

	Group A	**Group A+D**	**Total**	
Gender				
Female	30(%63,8)	36(%67,9)	66(%66,0)	p 0,666
Male	17(%36,2)	17(%32,1)	34(%34,0)	
Educational Status				
Primary School	19(%40,4)	21(%39,6)	40(%40,0)	p 0,935
High School Or University	28(%59,6)	32(%60,4)	60(%60,0)	
Marital Status				
Married	33(%70,2)	40(%75,5)	73(%73,0)	p 0,554
Single	14(%29,8)	13(%24,5)	27(%27,0)	
Employment Status				
Employed	22(%46,8)	30(%56,6)	52(%52,0)	p 0,328
Unemployed	25(%53,2)	23(%43,4)	48(%48,0)	

Table 2: Sociodemographic characteristics.

3.2 Scale data

The scale data collected from all patients is provided in (Table 3). The GAD-7, PAS and ASI-3 scale scores were compared between the two groups. The median GAD-7 score was 13 (minimum 10, maximum 20) in Group A and 16 (minimum 10, maximum 21) in Group A+D. The median PAS score was 26 (minimum 16, maximum 35) in Group A and 29 (minimum 18, maximum 50) in Group A+D . As we evaluated the GAD-7 and PAS scores in the two groups, neither GAD-7 (p:0.206) nor PAS (p: 0.347) revealed any significant difference (Table 3).

	Group A				Group A+D					
	N	**Median**	**Min**	**Max**	**N**	**Median**	**Min**	**Max**	**Z**	**p**
YAB-7	21	13.00	10,00	20,00	29	16.00	10,00	21,00	-1,265	0,206
PAS	26	26,00	16,00	35,00	24	29,00	18,00	50,00	-0,940	0,347
HAM-D	47	11	3,00	13,00	53	18,00	14,00	30,00	-8,626	<0,001
ASI Total	47	37,00	13,00	57,00	53	45,00	10,00	69,00	-2,284	0,022
ASI Physical	47	16,00	2,00	23,00	53	17,00	3,00	24,00	-1,651	0,099
ASI Cognitive	47	12,00	3,00	23,00	53	16,00	3,00	27,00	-2,697	0,007
ASI Social	47	9,00	0,00	20,00	53	11,00	0,00	20,00	-0,841	0,400

Table 3: Scale scores.

The median value of ASI-3 was 37 (minimum 13, maximum 57) in Group A and 45 (minimum 10, maximum 69) in Group A+D. The scores of Group A+D were determined to be significantly higher. (p: 0.022) The physical, social and cognitive factors of the ASI-3 were also determined. The median value of the ASI-3 physical factor was 16 (minimum 2, maximum 23) in Group A and 17 (minimum 3, maximum 24) in Group A+D. It was observed that the median score for social factor was 9 (minimum 0, maximum 20) in Group A and 11 (minimum 0, maximum 20) in Group A+D. No difference was detected between the two groups in terms of the physical factor and social factor of the ASI-3. The cognitive factor had a different pattern from the other factors as the median value of Group A was 12 (minimum 3, maximum 23) and the median value of Group A+D was 16 (minimum 3, maximum 27). The cognitive factor rendered a significant difference between the groups in that Group A+D had significantly higher scores (p: 0.007) (Table 3).

3.3 Correlation between the scales

The correlation between the ASI-3 in all factors and the HAM-D was determined as shown in Tables 4 and 5. Firstly, the correlation analyses between the total ASI-3 score and the factors showed that the total ASI-3 score was highly correlated with the physical, social and cognitive factors. (ASI-total and ASI-physical: Group A rs: 0.737, p<0.001, Group A+D rs: 0.711, p<0.001; ASI-total and ASI-social: Group A rs:0.792, p<0.001, Group A+D rs: 0.795, p<0.001; ASI-total and ASI-cognitive: Group A rs: 0.797, p<0.001, Group A+D rs: 0.889, p<0.001). In both groups, the ADI-3 physical factor and social factor presented a low correlation. (Group A rs: 0.317, p: 0.030; Group A+D rs: 0.334, p:0.014) In Group A, the physical and cognitive factors demonstrated a low correlation (rs: 0.334, p: 0.022) but in Group A+D, the correlation was moderate. (Group A+D rs: 0.493, p<0.001) The correlation between the cognitive and social factors in the two patient groups was moderate either. (Group A rs: 0.601, p<0.001, Group A+D rs: 0.629, p<0.001 (Tables 4 and Table 5).

		ASI Total	ASI Physical	ASI Cognitive	ASI Social
ASI Physical	rs	0,737**	-	-	-
	P	<0.001	-	-	-
ASI Cognitive	rs	0,797**	0,334*	-	-
	P	<0.001	0,022	-	-
ASI Social	rs	0,792**	0,317*	0,601**	-
	P	<0.001	0,030	<0.001	-
HAM-D	rs	0,108	0,177	0,141	-0,011
	P	0,469	0,234	0,344	0,940

Table 4: Scale correlation Group A.

		ASI Total	ASI Physical	ASI Cognitive	ASI Social
ASI Physical	rs	0,711**	-	-	-
	P	<0.001	-	-	-
ASI Cognitive	rs	0,889**	0,493**	-	-
	P	<0.001	<0.001	-	-
ASI Social	rs	0,795**	0,334*	0,629**	-
	P	<0.001	0,014	<0.001	-
HAM-D	rs	0,187	0,085	0,272*	0,087
	P	0,180	0,543	0,049	0,536

Table 5: Scale correlation Group A+D.

The correlation analyses for depression assessment showed that the HAM-D scores had no correlation with the ASI-total, ASI-social or ASI-physical scores. Also, the ASI-cognitive score was not correlated with the HAM-D score in Group A. On the other hand, the ASI- cognitive score demonstrated a low correlation with the HAM-D score in Group A+D. (rs: 0.272, p: 0.049) (Table 4 and Table 5).

4. Discussion

Our study consists of two groups with similar demographic qualities in that gender, age, educational status, marital status and employment status were not statistically different in the two patient groups. The GAD-7 which was used to detect the severity of Generalized Anxiety Disorder and the PAS which provided information about the severity of Panic Disorder revealed no significant difference between Group A and Group A+D. The similarity of anxiety symptoms supported our aim to compare depression between the groups. Thus, we were able to take depression as the main variable. The physical, cognitive and social factors of anxiety sensitivity are important in reflecting as to how anxiety sensitivity plays a part in psychiatric problems. High scores in the physical dimension indicate concerns about the negative results of physical anxiety symptoms (e.g. palpitation may cause a heart attack). Concerns about social exclusion arising from anxiety symptoms witnessed by other people constitute the social dimension of anxiety sensitivity. The cognitive dimension defines concerns about cognitive results such as the concern that concentration difficulties may cause mental illness [18]. The association between anxiety sensitivity and depression has been demonstrated in different studies. Moreover, a longitudinal study showed that anxiety sensitivity predicted depressive symptoms after 5 weeks [2]. Consistently with the literature, our study detected that the anxiety sensitivity scores were significantly higher in the depressive group. Also, our data supported that the cognitive factor of anxiety sensitivity predicts depressive symptoms unlike physical and social factors [19, 20, 21]. Our study examined depression comorbid with anxiety disorders by comparing individuals diagnosed with Generalized Anxiety Disorder or Panic Disorder and individuals diagnosed with Depression comorbid with either Generalized Anxiety Disorder or Panic Disorder. In the case of Depression comorbid with Anxiety Disorders, physical and social factors of anxiety sensitivity revealed no difference but the cognitive factor scores were found to be higher. This result is parallel with the previous findings about high cognitive concerns among patients with comorbid depression and anxiety. Also, in our study, severity of anxiety was evaluated and the similarity of the anxiety levels between the groups minimized the effect of anxiety severity. Thus, we found that cognitive dimension of anxiety sensitivity did not vary in terms of severity of anxiety [18, 19, 21, 22].

The role of cognitive dimension in depression has been studied, and as such, different approaches for its mechanism exist in the literature. The cognitive dimension of anxiety sensitivity overlaps with negative metacognitions about danger perception and concerns about cognitive processes [23]. Negative metacognitions about cognitive processes (i.e., perceived uncontrollability) have been found to be related with depression [24]. It is also reported that fear about losing control which is a part of the cognitive dimension may increase depressive symptoms [25]. Moreover, cognitive concern is defined as a depression-specific form of anxiety sensitivity [6, 19]. The scale correlations detected in our study were in parallel with our expectations in that the HAM-D scores revealed a correlation with the cognitive dimension but not with the physical and social dimensions. The correlation of the HAM-D and ADI-3 cognitive scores supported the relation between depression and the cognitive dimension of anxiety sensitivity. The ASI-3 was used in our study which provided a suitable base for assessing the subfactors of anxiety sensitivity. Anxiety and depression usually exist together in clinical practice and this association was considered while we

constituted the structure which enhanced the strength of our study. The correlation analyses of the ASI-3 and the ASI-3 factors with the HAM-D performed in the patient groups revealing no difference in the severity of anxiety and the significant correlation detected between the cognitive dimension of anxiety sensitivity and depression were the strengths of this study. However, the limitations arising from the cross-sectional nature of this study should be considered. The data collected from the patients about the severity of depression, anxiety and anxiety sensitivity in a single interview causes limitations in evaluating causal relations. Prospective researches investigating the relationship of anxiety sensitivity and the anxiety sensitivity dimensions with depression may provide wider knowledge.

5. Conclusion

The cognitive component of anxiety sensitivity which is related to the fear about 'inability to perform tasks' due to concentration and attention deficit, has been later expanded to include 'fear of losing control over emotions' [26]. Studies have shown that anxiety sensitivity is not an accompanying condition but a predictor variable for depression in patients diagnosed with comorbid depression and anxiety [6, 18]. We think that our study contributes to the idea that the cognitive dimension is a depression-specific factor of anxiety sensitivity. It is widely observed that in clinical practice, the comorbidity of anxiety and depression causes difficulties in treatment and clinic follow-up. Current data has shown that it is important to consider cognitive concerns while performing Cognitive and Behavioral Therapy for the treatment of patients diagnosed with comorbid depression and anxiety [27]. According to the literature and our results, we think that the cognitive concerns dimension of anxiety sensitivity plays an important role in predicting and treating depressive symptoms.

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