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Evaluation of Early Maladaptive Schemas and Adult Attachment Profiles in Patients with Major Depressive Disorder

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Abstract: Objective: This study aimed to compare the early maladaptive schemas and adult attachment profiles of patients with major depressive disorder with healthy controls and to determine their relationships with disease variables. Method: The study included 118 patients with major depressive disorder and 92 healthy volunteers, and the Sociodemographic and Clinical Data Form, Young Schema Scale Short Form-3, Inventory of Experiences in Close Relationships II and Beck Depression Inventory were administered. Results: The patient group had higher scores than the control group for all schema subtypes and attachment scores. Significant differences were found for some schemas between patients with chronic depression and patients with recurrent depressive episodes, between patients with a history of one hospitalization and patients with a history of multiple hospitalizations, and between patients with suicide attempts and patients with no suicidal ideation attempts. Significant positive correlations were found between the attachment scores, schema scores and depression severity of the patients and the control group. Conclusion: Further research is needed to determine the role of schemas and attachment styles in the development of depression in more detail and to focus on schema and attachment-based therapies in treatment.

Keywords: Attachment; depression; early maladaptive schemas; suicide

1. Introduction and Objective

Major depressive disorder (MDD) is one of the common mental disorders leading to significant loss of functionality. It is known that interpersonal relationships play a role in its etiology and many other factors (Hammen 2018). Schemas are cognitive structures acquired in early relationships and effectively regulate emotions, thoughts and behaviors in the following period; the dysfunctional ones in meeting basic core needs are called early maladaptive schemas (Bach et al 2018). According to attachment theory, recording the emotional tones of the relationships established with the caregiver determines the quality of the relationship in close relationships (Cosolino 2014). Young et al. defined 14 early maladaptive schemas (Rafaeli et al. 2013), and Ainsworth et al. defined various attachment styles, especially secure and insecure attachment styles (Cosolino 2014).

There are publications that various attachment types are more common in patients with depression (Dagan et al. 2018, Özer et al. 2015) and that some attachment types may be associated with suicide risk (Grunebaum et al. 2010, Lizardi et al. 2011). In addition, there are studies that various schema subtypes may be more common in depressed patients (Tariq et al. 2021, Cormier et al. 2011), some schemas may be associated with the risk of suicide attempt (Ahmadpanah et al. 2017), and schemas may be associated with depression severity and chronicization of depression (Chen et al. 2019).

In our study, we aimed to determine how patients diagnosed with MDD in a university hospital differ from the control group without a previous psychiatric diagnosis in terms of their schemas and attachment measures, as well as to investigate the possible relationship between the type of depression, number of depressive episodes, hospitalization status, suicidal ideation-attempt in the patient group with schema and attachment characteristics and to determine whether there are correlations between schema measures and attachment measures.

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2. Method

Domain and Sample of the Study: The study was conducted with 118 patients diagnosed with MDD according to DSM-5 diagnostic criteria and 92 healthy volunteers without psychiatric disorders (control group) who applied to the Psychiatry Outpatient Clinic of XXX Hospital between 01/04/2021-01/09/2021. Participants were informed about the study and obtained their written informed consent. Approval for the study was obtained from the XXX Clinical Research Ethics Committee dated 31.03.2021 and numbered 2021/274.

3. Data Collection Tools

Sociodemographic and Clinical Data Form: Characteristics such as age, gender, marital status and the type of depression in the patient group, whether it was accompanied by anxiety symptoms, suicidal thoughts and attempts, number of depressive episodes, and whether inpatient treatment was received were evaluated.

Inventory of Experiences in Close Relationships II (IECR): It is a 7-point Likert-type scale developed by Fraley and colleagues that evaluates the sub-dimensions of anxious and avoidant attachment with 18 items each (Fraley et al. 2000). Turkish validity and reliability study was conducted by Selçuk et al. in 2005 (Selçuk et al. 2005).

Young Schema Scale Short Form III (YSSSF): Developed by Jeffrey Young (Young 2003), it is a 6-point Likert-type scale consisting of 90 questions. The Turkish validity and reliability study was conducted by Soygüt et al. (2009), and it was found to be valid and reliable in terms of 14 schema dimensions belonging to 5 schema domains. It is thought that the higher the scores obtained in the related schema domains, the higher the related schema characteristics of the individuals. These schema dimensions are pessimism, emotional deprivation, failure, social isolation, approval seeking, suppression of emotions, inadequate self-control, interdependence-dependence, imperfection, vulnerability, punishment, high standards, abandonment, and self-sacrifice.

Beck Depression Inventory (BDI): The validity and reliability study of the scale developed by Aaron Beck to determine the severity of depression in MDD patients (Beck and Steer 1984) was conducted by Hisli (1989). Consisting of 21 questions, the scale is a 4-point Likert scale, and scores between 0 and 63 points are obtained; higher scores indicate more severe depression levels.

Statistical Analysis: The normal distribution of the data was checked using the Shapiro-Wilk test. Continuous variables with normal distribution were summarized with mean and standard deviation, and those that did not conform to normal distribution were summarized with median, 1st quartile (Q1) and 3rd quartile (Q3) values. Frequency (n) and percentage (%) were descriptive statistics for categorical variables. Comparisons of the means of two independent groups were made with the Student t-test, a parametric test. In comparison, comparisons of the medians of two independent groups were evaluated with the Mann-Whitney U test, a non-parametric test. The medians of more than two independent groups were compared using the Kruskal-Walis test, a non-parametric test. Bonferroni corrected post hoc test was used to determine the groups that caused statistical differences due to the Kruskal-Walis test. The relationship between categorical variables was analyzed using a Chi-square analysis, and the relationship between continuous variables was analyzed using correlation analysis. For the interpretation of the correlation coefficient obtained; "correlation coefficient = 0.00-0.49 is weak, 0.50-0.69 is moderate, 0.70-0.89 is high, 0.90-1.00 is very strong correlation". $P \leq 0.05$ was taken as the statistical significance level for all comparisons.

4. Findings

In our study, 118 patients diagnosed with MDD according to DSM 5 criteria and 92 healthy volunteers without a psychiatric diagnosis were included. The mean age of the patient group was 41.97 ± 13.28 years; the mean age of the control group was 40.86 ± 11.94 years. Other sociodemographic data of the participants are shown in Table 1.

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Table 1. Sociodemographic characteristics of all participants.

Sociodemographic Variables	Patient group n (%)	Control group n (%)	p	Sociodemographic Variables	Patient group n (%)	Control group n (%)	p
Gender				**Place of residence**			
Male	34 (28.8)	32 (34.8)	0.355	Rural	22 (18.6)	29 (31.5)	**0.031**
Female	84 (71.2)	60 (65.2)		Urban center	96 (81.4)	63 (68.5)	
Marital status				**Family history of psychiatric illness**			
Married	73 (61.9)	69 (75)		None	62 (52.5)	84 (91.3)	**<0.0001**
Single	33 (28)	20 (21.7)	0.062	MDD	42 (35.6)	2 (2.2)	
Divorced	12 (10.2)	3 (3.3)		Other	14 (11.9)	6 (6.5)	
Employment status				**Substance use**			
Actively working	48 (40.7)	64 (69.6)		None	65 (55.1)	57 (62.0)	
Student	12 (10.2)	9 (9.8)		Cigarette	33 (28.0)	15 (16.3)	
Housewife	31 (26.3)	11 (12)	**<0.0001**	Alcohol	4 (3.4)	10 (10.9)	**0.043**
Retired	13 (11)	8 (8.7)		Cigarette+alcohol	16 (13.6)	10 (10.9)	
Unemployed	14 (11.9)	0 (0)					

In the MDD group, the type of depression, whether it was accompanied by anxiety symptoms, the number of depressive episodes, the presence of suicidal thoughts, and the number of hospitalizations were evaluated, and the relevant findings are summarized in Table 2.

Table 2. Disease-specific variables in the patient group.

Disease-specific variables	n (%)	Disease-specific variables	n (%)
Form of depression		**Number of attacks**	
First episode	40 (33.9)	Single attack	40 (38.8)
Recurrent episodes	64 (54.2)	Two attacks	39 (37.9)
Chronic depression	14 (11.9)	Three or more attacks	24 (23.3)
Concomitant anxiety symptoms		**Inpatient treatment**	
No	27 (22.9)	No	95 (80.5)
Yes	91 (77.1)	Yes	23 (19.5)
Suicidal thoughts/attempts		**Number of hospitalizations (n=23)**	
None	58 (49.2)	**One hospitalization**	12 (52.2)
Only thoughts	33 (28.0)	**Two or more hospitalizations**	11 (47.8)
Attempted	27 (22.9)		

When we compared the attachment, schema and BDI scores of the patient group and the control group, we found that the patient group's GAD avoidance and GAD anxiety scores, all schema subscales and BDI scores were significantly higher. Related variables are given in Table 3.

Table 3. Median / Mean Values of Attachment, Schema and BDI of Patient and Control Group.

	Patient (n=118)			Control (n=92)			
	Median	Q1	Q3	Median	Q1	Q3	p
IECR Avoidance	63.5000	48.7500	76.2500	46.5000	35.0000	61.7500	**<0.0001**
Emotional deprivation	14.5000	9.0000	21.0000	7.5000	5.0000	10.7500	**<0.0001**
Failure	14.0000	9.0000	20.2500	10.0000	7.0000	12.7500	**<0.0001**
Pessimism	17.0000	11.0000	22.0000	9.0000	6.0000	14.0000	**<0.0001**
Social isolation	24.0000	18.0000	29.2500	13.5000	11.0000	17.0000	**<0.0001**
Suppressing emotions	14.0000	9.7500	19.0000	9.0000	6.0000	13.0000	**<0.0001**
Nesting	21.5000	15.0000	30.0000	9.0000	6.0000	13.0000	**<0.0001**
Self-sacrifice	21.0000	15.0000	25.0000	16.0000	11.0000	21.0000	**<0.0001**
Abandonment	10.5000	7.0000	16.0000	7.0000	5.0000	10.0000	**<0.0001**
Punishment	25.0000	20.0000	29.0000	19.0000	16.0000	26.0000	**<0.0001**

Imperfection	12.5000	8.0000	18.2500	7.0000	6.0000	10.0000	**<0.0001**
Vulnerability to threats	14.0000	11.0000	19.0000	10.0000	8.0000	14.0000	**<0.0001**
High standards	11.0000	7.0000	14.0000	8.0000	5.0000	12.0000	**<0.0001**
BDE	23.00	14.00	32.25	9.00	6.00	14.00	**<0.0001**

	Patient (n=118)			**Control (n=92)**			
	Mean	**±**	**St.dv**	**Mean**	**±**	**St.dv**	**p**
IECR anxiety	69.4831	±	17.98039	54.5652	±	18.654	**<0.0001**
Seeking approval	22.8729	±	6.57052	18.7717	±	6.3108	**<0.0001**
Privilege Insufficient self-regulation	25.6949	±	7.54531	22.2717	±	7.291	**0.001**

There was no significant difference in attachment scores between inpatients and outpatients in the patient group. In contrast, the median scores of the schema subscales of intertwining-dependency and defectiveness schema were significantly higher in the inpatient group (p values 0.023 and 0.035, respectively). Among the inpatients, no significant difference was found in the attachment scores of those with a history of multiple hospitalizations compared to those with only one hospitalization. In contrast, an important difference was found between the failure, privilege-insufficient self-control and approval-seeking schema score medians (p values 0.011, 0.032 and 0.027, respectively). The pessimism score median was significantly higher in the group accompanied by anxiety symptoms (p=0.015).

Patients with chronic depression scored higher on the GAD anxiety score than those with recurrent depression (p<0.05). Likewise, BDI scores were higher in those who experienced their first episode (p=0.013) and those with recurrent depression (p=0.005). In the schema subscales, defectiveness (p= 0.014), abandonment (p= 0.044) and failure (p= 0.007) were higher in those with chronic depression compared to those with recurrent depression. Suicide attempters had significantly higher scores in emotional deprivation, social isolation, abandonment and defectiveness (p<0.05) compared to those who did not have suicidal ideation or attempt; however, there was no difference in attachment scores.

The correlations between attachment styles, schema subscales and BDI scores of the patient and the control groups are shown in Table 4. Accordingly, a moderate positive correlation was found between GI avoidance and suppression of emotions in both patient and control groups. A moderate positive correlation was found between anxious attachment and social isolation and abandonment in the patient group and between pessimism and abandonment in the control group. In addition, all schema scores except approval seeking in both the patient and control groups showed a positive, weakly significant difference with the BDI scores.

Table 4. Attachment-schema-BDI correlation analysis of the control group and patient group.

		Control Group N=92		**Patient Group N=118**	
		IECR Anxiety Score	**IECR Avoidance Score**	**IECR Anxiety Score**	**IECR Avoidance Score**
Emotional Deprivation	r	**.419**	**.470**	**.352**	**.295**
	p	**0.00**	**0.00**	**0.00**	**0.001**
Failure	r	**.439**	**.244**	**.364**	**.274**
	p	**0.00**	**0.019**	**0.00**	**0.003**
Pessimism	r	**.527**	0.186	**.469**	**.302**
	p	**0.00**	0.075	**0.00**	**0.001**
Social Isolation Insecurity	r	**.471**	**.343**	**.513**	**.300**
	p	**0.00**	**0.001**	**0.00**	**0.001**
Suppressing Emotions	r	**.429**	**.501**	**.325**	**.544**
	p	**0.00**	**0.00**	**0.00**	**0.00**
Seeking Approval	r	**.457**	-0.034	**.484**	**.274**
	p	**0.00**	0.748	**0.00**	**0.003**
Nesting Dependency	r	**.457**	**.424**	**.408**	**.303**
	p	**0.00**	**0.00**	**0.00**	**0.001**
Privilege Insufficient Self-control	r	**.257**	0.133	**.325**	**.208**

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	p	**0.014**	0.206	**0.00**	**0.024**
Self Sacrifice	r	**.351**	0.118	**.221**	0.075
	p	**0.001**	0.263	**0.016**	0.421
Abandonment	r	**.578**	**.308**	**.573**	**.284**
	p	**0.00**	**0.003**	**0.00**	**0.002**
Punishment	r	**.268**	0.001	**.302**	**.251**
	p	**0.01**	0.996	**0.001**	**0.006**
Imperfection	r	**.391**	**.388**	**.446**	**.390**
	p	**0.00**	**0.00**	**0.00**	**0.00**
Lack of Resilience in the Face of Threats	r	**.480**	**.260**	**.428**	**.338**
	p	**0.00**	**0.012**	**0.00**	**0.00**
High Standards	r	**.473**	0.137	**.226**	**.218**
	p	**0.00**	0.191	**0.014**	**0.018**
BDE Score	r	**.269**	**.273**	**.365**	**.350**
	p	**0.01**	**0.008**	**0.00**	**0.00**

r: correlation coefficient; p: p-value for statistical significance of correlation coefficient

5. Discussion

In our study, anxious and avoidant attachment scores were significantly higher in patients compared to the control group. This finding is in line with publications indicating that anxious and avoidant attachment, which are insecure attachment styles, are higher in MDD patients compared to the general population (Özer et al. 2015; Golshani et al. 2021; Fuhr et al. 2017). In a study conducted with university students in China, it was stated that participants with anxious and avoidant types of insecure attachment had more depressive and anxious symptoms at 6-month follow-up (Jinyao et al. 2012).

In our study, the median value for anxious attachment in the patient group was statistically significantly higher in the group with chronic depression than in the group with recurrent depression. In a seven-year prospective follow-up study, it was reported that depressive patients with both anxious and avoidant attachment had shorter symptom-free periods, and insecure attachment increased the risk of relapse and was associated with unfavorable prognosis (Conradi et al. 2018). There is also a study reporting that both types of insecure attachment are risk factors for the chronicization of depression (Brown et al. 2019).

In our patient group, we did not find a significant difference in attachment scores between those who had suicidal thoughts or attempts and those who had no suicidal thoughts or attempts. Similar to our finding, in the study conducted by Özer et al. (2015) in depressive patients, no significant difference was found between both anxious and avoidant attachment scores of depressive patients with and without suicidal thoughts, but unlike our study, when they compared the study design with the control group, they found a higher rate of suicide attempts in insecurely attached patients compared to the control group. Studies show that insecure attachment style, mostly anxious attachment, is associated with increased suicide risk (Miniati et al. 2017). There is a study that explains the high rate of suicidal ideation-behavior in anxious attachment in the context of interpersonal relationships, lack of sociability in people with this attachment style, being more sensitive, and social isolation, and suggests that social isolation mediates (Stepp et al. 2008). This finding is consistent with the finding that the social isolation schema score was higher in our group of patients with suicide attempts compared to the group without suicide attempts.

When we looked at the correlation of anxious or avoidant attachment scores with BDI scores, we found a positive, weakly significant correlation between attachment score and BDI score in the patient group for both anxious and avoidant attachment. There is a study reporting a correlation between depression severity and insecure attachment in depressive patients admitted to primary care (Runkewitz et al. 2006). In a sample of approximately seven hundred people who applied for psychiatric treatment, anxious and avoidant attachment styles showed a moderate positive correlation with depression severity in those who reported being exposed to interpersonal trauma

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(Fowler et al. 2013). Although we do not have information about other possible factors affecting the severity of depression in our study, the higher correlation between insecure attachment scores and depression severity in our patient group compared to the control group may raise the possibility of the contribution of insecure attachment or other related factors to the stress diathesis model in the etiology of depression.

When the participants were evaluated for early maladaptive schemas, we found that the scores for all 14 schemas were significantly higher in our patients than in the control group. In terms of the five main schema domains, similar to our study, there is a study (Ahmadpanah et al. 2017) that found the overall schema scores high in depressive patients, as well as studies that found some sub-schema scores high. By comparing depressive patients with healthy controls, it was found that depressive patients were higher in schemas such as failure, social isolation, pessimism, abandonment, defectiveness, and vulnerability to harm (Özdin et al. 2018) and in thirteen other schema domains except for the justification-aggrandizement schema (Wang et al. 2010), Some of the studies that found high scores in most schema areas such as insecurity, abandonment, defectiveness, social isolation, emotional deprivation, resilience, failure, addiction, approval seeking, submissiveness, and altruism (Atalay et al. 2011). In a 2021 meta-analysis, fourteen schema dimensions were reported to be associated with depression (Bishop et al 2021).

In a study comparing five core schema domains in patients with chronic depression and patients with single-episode depression, higher schema scores were found in patients with persistent depression for the schema domains of rejection, separation, hyper-vigilance-suppression and impaired autonomy (Chen et al. 2019). In addition, in the same study, separation-rejection and hyper-vigilance-abstinence domains were found to be the two best predictors of depression severity, and both of the schema subtypes with high scores in our study (defectiveness, abandonment) belong to these domains. Our patient group found weak, statistically significant positive correlations between the BDI score and all other schemas except the approval-seeking schema. In addition to a study reporting a correlation between schema scores of depressed participants and depression severity in a general sample (Cormier et al. 2011), there are also publications reporting a relationship with depressive symptom severity specific to some schemas (abandonment, emotional deprivation, failure) (Renner et al. 2012).

In our patient group, we found significantly higher scores for four schemas (emotional deprivation, social isolation, abandonment, failure), all of which belong to the dissociation-rejection schema domain, in patients with suicide attempts compared to those with no suicidal thoughts or attempts. Another study revealed that patients with MDD who had suicide attempts scored higher for the same four schema subtypes compared to depressed patients without suicide attempts and healthy controls (Ahmadpanah et al. 2017). In a study comparing a group of suicide attempt patients with depression and anxiety symptoms with controls without suicide attempts, it was stated that emotional deprivation and defectiveness schemas were associated with both negativity in parental attachment style and recurrent suicide risk (Dale et al. 2010). Social isolation schema has been reported to be related to suicidal ideation-behavior in our study, in some studies conducted with depressive patients and in some studies conducted with bipolar patients (Leppänen et al 2016, Nilsson 2016, Khosravani et al 2019). In a study reporting that social isolation mediates suicidal ideation behavior in insecurely attached patients, it was emphasized that social isolation might be important for suicide (Stepp et al. 2008).

The suppression of emotions schema score showed a moderate positive and statistically significant correlation with avoidant attachment score in the patient and control groups. Emotional deprivation, social isolation, failure, interdependence-dependence, abandonment, vulnerability to threats, and defectiveness schema scores were positively, weakly and significantly correlated with avoidant attachment scores in both groups. In the patient group, pessimism, approval seeking, privilege-insufficient self-control, punitiveness, and high standards schema scores showed a weak, positive, significant correlation with avoidant attachment scores.

In a group of participants who were followed up for 15 years from early childhood to adulthood, the group with insecure attachment in childhood had high scores in many schema areas in adulthood.

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Still, no difference was found between the scores of insecure attachment subtypes (Simard et al. 2011). A study stated that those with parental separation in childhood had high insecure attachment scores in adulthood and that the abandonment schema mediated the anxious and avoidant attachment styles in adulthood (D'Rozario and Pilkington, 2022).

6. Conclusions and Recommendations

Higher insecure attachment scores and significantly higher scores in 14 subtypes of early maladaptive schemas were found in adult attachment measures in the patient group diagnosed with Major Depressive Disorder compared to the control group.

Our study contributed to a cross-sectional study of the existing schemas and attachment characteristics in patients with depression. Descriptive findings were obtained for the schemas and attachment characteristics that are more prominent in depressed patients or for the schemas and attachment characteristics that have a possible effect on the course of the disease or suicidal thoughts and behaviors. High scores were found in different schema domains for depression type or different depression-related features. Although it was impossible to establish causal correlations between the findings and the current situation due to the cross-sectional design, our study may guide in-depth studies on some theoretical possibilities with its findings supporting previous studies. A more in-depth investigation of the effects of schema and attachment in the etiology of depression and other possible etiological factors may further clarify the areas to focus on in schema and attachment-based therapies.

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