ORIGINAL ARTICLE

DOI: 10.4274/nkmj.galenos.2023.42204
Nam Kem Med J 2023;11(3):294-300

Suicidal Attempt in Adolescents with Major Depressive Disorder

Majör Depresif Bozukluğu Olan Ergenlerde İntihar Girişimi

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ABSTRACT

Aim: In this study, we aimed to assess the sociodemographic and clinical characteristics of adolescents diagnosed with major depressive disorder (MDD), with and without suicide attempts, as well as to investigate the factors predicting suicide attempts.

Materials and Methods: This study included 151 adolescents aged between 12 and 18 years, who were diagnosed with MDD between January 2021 and June 2022. This study has a retrospective design, and data including family sociodemographic characteristics, suicide attempts and characteristics, non-suicidal self-injury (NSSI) attempts, history of abuse, comorbid psychiatric disorders, and scores on depression and anxiety scales were extracted from the cases' polyclinic records. The participants were divided into two groups as those with suicide attempts (n=40) and those without suicide attempts (NSSI n=111), and the sociodemographic and clinical data were compared between the groups. In addition, a binary logistic regression analysis was performed to identify the predictors for suicide attempts.

Results: The results of the study revealed that the suicide attempt group had a higher age (p=0.023), less maternal years of education (p=0.026), higher rates of self-injurious behavior (p<0.001), more severe depression (p=0.021) and anxiety (p=0.018) symptoms, and higher rates of history of childhood abuse (p=0.001). The binary logistic regression analysis performed to predict suicide attempts in those with an MDD diagnosis determined NSSI and history of abuse to be predictors.

Conclusion: A better understanding of predictive factors of suicide attempts in adolescents with depression may help establish targets for early intervention and inform more effective prevention strategies. Particularly, the presence of self-injurious behaviors and history of childhood abuse should be warning for suicide attempts.

Keywords: Major depressive disorder, adolescents, suicide attempt, non-suicidal self-injury, childhood abuse

ÖZ

Amaç: Çalışmamızda intihar girişimi olan ve olmayan majör depresif bozukluk (MDB) tanılı ergenlerin sosyodemografik ve klinik özelliklerini değerlendirmeyi ve intihar girişimini yordayan faktörleri araştırmayı amaçladık.

Gereç ve Yöntem: Çalışmaya Ocak 2021-Haziran 2022 tarihleri arasında MDB tanısı alan 12-18 yaş aralığında 151 ergen dahil edildi. Çalışmamız retrospektif dizaynda olup olgu ve ailesine ait sosyodemografik özellikler, intihar girişimi ve niteliği, intihar dışı kendine zarar verme (NSSI) girişimi, istismar öyküsü, eşlik eden komorbid psikiyatrik bozukluklar, depresyon ve anksiyete ölçek skorları gibi tüm veriler olguların poliklinik dosyalarından kaydedildi. Katılımcılar intihar girişimi olan (n=40) ve olmayan (n=111) olarak iki gruba ayrılarak gruplar arası sosyodemografik ve klinik özellikler karşılaştırıldı. Ayrıca intihar girişimini yordayan faktörleri belirlemek için iki boyutlu lojistik regresyon analizi yapıldı.

Bulgular: Çalışmanın sonuçları suisidal girişimi olan grubun daha büyük yaşta (p=0,023), anne eğitim süresinin daha düşük (p=0,026), kendine zarar verme davranışının daha fazla (p<0,001), depresyon (p=0,021) ve anksiyete semptom şiddetinin (p=0,018) daha yüksek, çocukluk çağı istismar öyküsünün daha fazla (p=0,001) olduğunu gösterdi. MDB tanısında intihar girişimini yordamak için yapılan iki boyutlu regresyon analizinde ise NSSI ve istismar öyküsünün yordayıcı olduğu tespit edildi.

Sonuç: Depresyonu olan ergenlerde intihar girişimini yordayan faktörlerin daha iyi anlaşılması, erken müdahale için hedeflerin belirlenmesine yardımcı olabilir ve daha etkili önleme stratejileri konusunda bilgi sağlayabilir. Özellikle kendine zarar verme davranışının olması ve çocukluk çağı istismar öyküsü, intihar girişimleri için uyarıcı olmalıdır.

Anahtar Kelimeler: Majör depresif bozukluk, ergenler, intihar girişimi, intihar dışı kendine zarar verme davranışı, çocukluk çağı istismar öyküsü

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Received: 13.04.2023 **Accepted**: 05.07.2023

INTRODUCTION

Major depressive disorder (MDD) is a psychiatric disorder affecting the social adaptation, cognitive and emotional development of children and adolescents and resulting in a significant loss of functioning in their daily lives. It is characterized by a persistent and repetitive depressed or irritable mood along with diminished interest in pleasurable activities as well as symptoms in domains including attention, sleep, and appetite[1]. The lifetime prevalence of adolescent depression is 11%[2]. Depressive episodes during this period are associated with poor psychosocial functioning (e.g., more conflict with parents, poorer academic performance) and more frequent risk-taking behaviors (e.g., substance abuse, early onset sexual behaviors, suicide attempts)[3,4].

Adolescent depression and suicide are serious public health problems. Previous studies have indicated a strong relationship between adolescent depression and suicide attempts. Patients experiencing depression are under a higher risk for suicidal behaviors including ideation, planning and attempts compared to those without depression[5]. Parallel to the literature on adults, MDD is a well-known risk factor for suicide attempts in adolescents, and adolescents with depression have a six-times higher risk of attempting suicide compared to adolescents without depression[6]. Nearly 30% of adolescents diagnosed with depression were shown to attempt suicide[7].

The high risk of suicide attempts in depressed adolescents emphasizes the importance of identifying the other associated risk factors in this population. Factors such as a low socioeconomic level, history of parental divorce, parental psychiatric illness, and problematic familial relationships were reported to have significant influence on suicide attempts in depressed adolescents[8,9]. Adolescents and young adults who experienced sexual abuse are under a higher risk for suicide[10]. In a review of the factors associated with suicide attempts in young individuals with depression, depression characteristics (type and severity), psychiatric comorbidities (particularly, anxiety and substance abuse disorders), and neurological characteristics (structural and functional changes in prefrontal, subcortical and cerebellar regions) were shown to be associated with suicide outcomes[11]. A history of non-suicidal self-injury (NSSI) was also described to be a clinical indicator of future suicide attempts[12,13].

A better understanding of factors increasing the related factors associated with suicide attempts in adolescents with depression may help establish targets for early intervention and inform more effective prevention strategies. Thus, we aimed to assess the sociodemographic and clinical characteristics of adolescents diagnosed with MDD with and without suicide attempts, and to investigate the relationship between these characteristics and suicide attempts.

MATERIALS AND METHODS

This study included 151 adolescents aged between 12 and 18 years, who were diagnosed with MDD in the Child and Adolescent Psychiatry Clinic of Atatürk University, Faculty of Medicine between January 2021 and June 2022. This study has a retrospective design and data including family sociodemographic characteristics, suicide attempts and characteristics, NSSI attempts, history of abuse, comorbid psychiatric disorders, scores on depression and anxiety scales were extracted from the cases' polyclinic records. The authors, who are child and adolescent psychiatrists, and who were responsible for data collection, evaluated the patients' files and reached consensus on all cases. The inclusion criteria were as follows: (I) patients aged between 12 and 18 years; (II) patients meeting the diagnostic criteria for depression in the Diagnostic and Statistic Manual of Mental Disorders-5th edition (DSM-5). Meanwhile, the exclusion criteria were as follows: (I) patients with other mental disorders such as schizophrenia, bipolar disorder, intellectual disability, autism spectrum disorder, etc.; (II) patients with serious organic disorders; (III) patients with files that were missing the data to be recorded for the present study.

This study was approved by Atatürk University, Faculty of Medicine, Clinical Research Ethics Committee (approval number: B.30.2.ATA.0.01.00/506, date: 30/06/2022). After receiving approval, files of the cases from the specified dates were inspected and a data set was constructed based on the inclusion and exclusion criteria. The participants were divided into two groups as those with and without previous suicide attempts, and statistical analyses were performed.

Data Collection Tools

Children's Depression Inventory (CDI): The scale developed by Kovacs[14] to assess depression in children aged between 6 and 17 years consists of 27 items[14]. Each item receives a score of 0, 1, or 2 according to symptom severity. High scores indicate a high level of depression. The Turkish validity and reliability study established the scale's Cronbach's α internal consistency coefficient as 0.80[15].

Beck Anxiety Inventory (BAI): The scale adapted to Turkish by Ulusoy et al.[16] assesses certain attitudes and symptoms related to anxiety. The scale is composed of 21 items and one of four statements is chosen for each item. The highest possible score is 84, while the lowest possible score is 21. The scale's internal consistency coefficient is between 0.92 and 0.94.

Sociodemographic and Clinical Characteristics Data Form: This is a form constructed by the authors based on the data from the polyclinic files. It includes data such as the child's age and gender, parental age, level of education, status of

employment, history of mental illness, history of NSSI/suicide, family economic status, problems in familial relationships, problems in peer relationships, psychiatric and medical comorbidities, history of abuse, NSSI/suicide patterns.

Statistical Analysis

All statistical analyses were performed using the Statistical Package for Social Sciences) version 22.0. The Kolmogorov-Smirnov test was used to assess data for normal distribution. Descriptive analyses were used to summarize sociodemographic and clinical data. Descriptive statistics were presented as mean, standard deviation values and percentages. Categorical variables were compared using the chi-square test. Numeric variables were compared using the independent samples t-test or Mann-Whitney U test based on whether the groups had a normal distribution. A binary logistic regression analysis was conducted to identify the predictors of suicide attempts. P<0.05 was considered statistically significant.

RESULTS

This study included 151 adolescents aged between 12 and 18 years. Forty individuals (33 girls, 7 boys) had previous suicide attempts, while 111 (77 girls, 34 boys) did not have a history of suicide attempts. The groups were not significantly different with regard to gender (p=0.079). The mean age of the suicide attempt group was (15.05±1.7), which was significantly higher than the mean age of the non-suicide attempt group (14.23±2.3) (p=0.023). The suicide attempt group had significantly less maternal years of education (suicide attempt=5.6±3.5, non-suicide attempt=7.62±4.8; p=0.026). The groups were not significantly different in terms of the other sociodemographic characteristics. Sociodemographic characteristics of the cases are shown in Table 1.

Upon the examination of suicidal patterns in the suicide attempt group, it was found that 69.2% of the cases attempted suicide by taking drugs or chemicals, 12.7% by jumping from a height, 10.3% by cutting, and 7.7% by hanging. When the

Table 1. Sociodemographic characteristics of adolescents and their parents

	SA (n=40) Mean±SD/%	Non-SA (n=111) Mean±SD/%	t/z/χ^2	p
Age	15.05±1.7	14.23±2.3	2.307	0.023
Gender				0.079
Female	82.5%	69.4%	2.563	
Male	26.5%	30.6%		
Chronic physical illness	2.6%	9.9%	2.025	0.297
Mothers' age (years)	42.00±5.71	41.65±6.25	0.286	0.776
Fathers' age (years)	46.34±6.04	45.92±6.159	0.338	0.737
Mother's education (years)	5.6±3.5	7.62±4.8	-2.289	0.026
Father's education (%) (years)	8.65±4.64	9.43±4.48	-0.741	0.463
Mother employed	14.7%	25.3%	1.612	0.204
Father employed	88.2%	90.8%	0.189	0.663
Mother's psychiatric disorder	17.6%	19.8%	0.076	0.783
Father's psychiatric disorder	11.4%	9.3%	0.134	0.714
Mother's physical illness	23.5%	24.8%	0.021	0.886
Father's physical illness	27.8%	19.0%	0.134	0.714
Family type Nuclear family Extended family Fragmented family	 79.5% 12.8% 7.7%	 74.3% 16.5% 9.2%	1.406	0.495
Family income				0.563
Low	44.7%	35.8%		
Middle	47.4%	52.3%	1.148	
High	7.9%	11.9%		
Family history of NSSI/suicide attempt	7.7%	4.6%	0.542	0.435

SA: Suicidal attempt, Non-SA: Non-suicidal attempt, non-NSSI: Non-suicidal self injury, SD: Standard deviation

Table 2. Clinical characteristics of adolescents

	SA (n=40) Mean±SD/%	Non-SA (n=111) Mean±SD/%	t/z/χ2	p
Problems in familial relationships	72.5%	68.2%	0.257	0.612
Problems in peer relationships	68.4%	62.4%	0.445	0.505
NSSI	67.5%	22.3%	26.729	**<0.001**
CDI total score	29.67±10.03	23.44±9.7	2.405	**0.021**
BAI total score	36.1±13	21.89±13.29	2.730	**0.018**
Psychiatric comorbidity	50%	43.6%	4.108	0.579
Childhood abuse	37.5%	13.5%	10.626	**0.001**

SA: Suicidal attempt, Non-SA: Non-suicidal attempt, Non-NSSI: Non-suicidal self-injury, CDI: Child Depression Inventory, BAI: Beck Anxiety Inventory, SD: Standard deviation

Table 3. Predictors of suicide attempts in adolescents diagnosed with major depressive disorder

	β	S.E.	p	Exp(B)	95% CI for EXP(B)	
					Lower	Upper
Constant	-1.988	1.971	0.313	0.137		
Age	0.117	0.134	0.381	1.124	0.865	1.461
Gender	-0.579	0.601	0.336	0.561	0.173	1.821
Problems in familial relationships	0.797	0.556	0.151	2.219	0.747	6.596
Problems in peer relationships	0.183	0.487	0.708	1.200	0.462	3.119
Psychiatric Comorbidity	0.017	0.456	0.971	0.983	0.402	2.404
Childhood abuse	1.159	0.533	**0.030**	0.314	0.110	0.892
Family History of NSSI/Suicide Attempt	0.790	1.065	0.458	0.454	0.056	3.661
NSSI	2.085	0.501	**<0.001**	0.124	0.047	0.332

SA: Suicidal attempt, Non-SA: Non-suicidal attempt, Non-NSSI: Non-suicidal self-injury, CI: Confidence interval

groups were compared with regard to NSSI, the rate of NSSI was found to be 67.5% in the suicide attempt group compared to 22.3% in the non-suicide attempt group (p<0.001). The suicide attempt group had significantly higher scores on CDI (suicide attempt CDI total score=29.67±10.03; non-suicide attempt CDI total score=23.44±9.7 p=0.021) and the BAI (suicide attempt total score=36.1±13.32 non-suicide attempt total score=21.89±13.29 p=0.018). Regarding psychiatric comorbidities, a rate of 50% was found in the suicide attempt group and a rate of 43.6% was found in the non-suicide attempt group, with no statistically significant difference between the groups in this regard (p=0.579). The comorbidities of the suicide attempt group included anxiety disorder (17.5%), post-traumatic stress disorder (PTSD) (12.5%), attention deficit hyperactivity disorder (7.5%), obsessive compulsive disorder (7.5%), and conversion disorder (5%). For the non-suicide attempt group, the comorbidities were anxiety disorder (12.7%), attention deficit hyperactivity disorder (12.7%), PTSD (10.9%), obsessive compulsive disorder (3.7%), and conversion disorder (3.6%). History of childhood abuse was positive at a rate of 37.5% in the suicide attempt group compared to 13.5% in the non-suicide attempt group (p=0.001). Clinical data of the groups are summarized in Table 2.

The binary logistic regression analysis performed to predict suicide attempts in the presence of a depression diagnosis revealed NSSI and history of abuse to be predictors. The results are summarized in Table 3.

DISCUSSION

In this study, we aimed to compare the sociodemographic and clinical characteristics of adolescents diagnosed with MDD with and without suicide attempts, and to investigate the factors predicting suicide attempts. The results of our study showed that the suicide attempt group had a higher age, less maternal years of education, higher rates of self-injurious behavior, more severe depression and anxiety symptoms, and higher rates of history of childhood abuse. In addition, the presence of NSSI and history of childhood trauma were found to be predictors of suicide attempts in adolescents diagnosed with MDD.

The investigation of the factors associated with suicidal behavior, a risk factor for completed suicide, which is among the leading causes of death among youth, the identification of individuals under risk in order to prevent suicidal behavior; and the development of appropriate intervention programs for these individuals are of major importance[17]. The reduction

of suicide attempts, especially among individuals with psychiatric disorders, is an important public health goal in various countries[18]. Considering that MDD is the most common psychiatric disorder that has a relationship with suicide attempts, the investigation of the factors associated with suicide attempts in adolescents diagnosed with MDD should be a focus of studies concerning suicide prevention[19].

The comparison of the sociodemographic characteristics of adolescents diagnosed with MDD with and without suicide attempts revealed differences regarding age and maternal years of education. The suicide attempt group had a higher mean age. Studies have shown that suicide attempts are more common in older adolescents due to the increase in stressors related to academic and interpersonal relationships that increase with age in both MDD and community samples, increase in comorbid psychiatric disorders and more severe depressive symptoms[20-22]. This result is consistent with evidence from the literature suggesting that suicide attempts are more common among older adolescents. A low parental education level was shown to be associated with the suicide attempts in adolescents both in a population sample and in a clinical sample, and it was suggested that the effects of parental education on the mental states and suicide risk in adolescents were considered seriously. Moreover, it was described that this relationship could vary across different geographical and economic contexts depending on cultural, psychosocial and/or biological factors and the importance of considering cultural and familial contexts in the clinical management of adolescent suicidal behaviors was stressed[23,24]. In a study conducted in Turkey to evaluate the severity of suicidal behavior in depressed female adolescents, maternal perception of social gender inequality, which was the only factor that predicted suicide severity, was found to be related to the mother's level of education[25]. Our result that the level of parental education is lower in the suicide attempt group corroborates the results reported in the literature. The fact that only the maternal educational status differed between the groups may be attributed to the effects of cultural and familial contexts.

An important finding of our study was that the suicide attempt group had higher rates of NSSI behavior. Previous studies have also shown that a significant suicide risk followed self-injury in adolescents[26]. NSSI was shown to be associated with suicide attempts in depressed adolescents. In the Treatment of SSRI-resistant Depression in Adolescents (TORDIA) study, a history of NSSI (but not suicide attempt) was found to be an important indicator of suicide attempt over a period of 28 weeks[27]. In the Adolescent Depression, Antidepressant and Psychotherapy (ADAPT) study, NSSI predicted suicide attempt over a follow-up period of 28 weeks[13]. In a longitudinal study that monitored depressed adolescents for 8 years, NSSI was determined to be a strong predictor of suicidal behavior[12]. Our result, which is consistent with the literature, emphasizes the need for comprehensive assessment and treatment of NSSI in depressed adolescents. Improved assessment and intervention strategies for NSSI may facilitate the prevention of suicidal behavior.

Regarding the severity of depression, symptom severity was determined to be significantly higher in the suicide attempt group. The results on depression severity and suicidality vary in the literature. Although some studies show a relationship between depression severity and suicidality[12,28], others suggest that these are not related[29]. These different results from the studies are attributed to the fact that the relationship between depression severity and suicidal tendencies in young individuals is affected by a multitude of psychological and social factors. The higher depression severity in the suicide attempt group highlights the critical importance of understanding the severity of depressive disorder symptoms from the perspectives of adolescents in recognizing the risk of suicide attempt. These results may help guide the interventions that will target these clinical risk factors.

The suicide attempt group had significantly more severe anxiety symptoms. However, the two groups were not significantly different in terms of comorbid anxiety disorder. In young individuals with depression, psychiatric comorbidities, particularly comorbid anxiety disorder, have been associated with suicidality. However, it has not been clarified whether the higher suicidality associated with comorbid anxiety disorder is related to the specific characteristics of anxiety or to a general increase in psychiatric illness burden. Some studies have even suggested that this relationship could arise from the specific symptoms of anxiety rather than categorical anxiety disorder diagnoses[30]. In a study that investigated the relationship between suicide attempts, anxiety and poor treatment in childhood in adolescents and young adults experiencing their first depressive episodes, anxiety symptoms were shown to predict suicide attempts as well as serve as a mediator in the relationship between poor treatment in childhood and suicide attempts[10]. This result suggests that anxiety symptoms should be a therapeutic target in suicide prevention strategies even when comorbid anxiety disorder is not present.

Another important result of our study is that the suicide attempt group had higher rates of history of childhood abuse. Results from previous studies are generally in line with this result. These studies have reported that those with a history of childhood abuse could have a greater suicide risk due to factors such as a heightened susceptibility to psychosocial stress resulting from the negative effect of trauma on the HPA axis, as well as the presence of negative familial and environmental conditions that hamper the development of appropriate emotional regulation and coping abilities[10,31-33]. In addition to these causes, PTSD may also have considerable effects. In our

study, the groups were not significantly different with regard to comorbid PTSD. However, as is the case in anxiety disorder, an effect through specific symptoms may be possible despite the absence of a diagnosis. Therefore, further studies that will include PTSD symptoms along with a history of abuse are needed.

Finally, we investigated the predictors of suicide attempts in adolescents with MDD. We found that NSSI and childhood abuse history predicted suicide attempt. In a follow-up study examining the predictors of suicide attempt in adolescents with MDD, similar to our results, a history of NSSI and a history of physical and/or sexual abuse were found as important predictors[27]. In addition, previous studies have shown that these two predictive factors (NSSI and history of childhood abuse) often coexist, and a history of abuse poses a risk for NSSI[34]. Childhood abuse may adversely affect the development of emotion regulation strategies, followed by poor emotion regulation strategies may increase the risk of using the NSSI as a form of emotion coping behavior[35]. This result should warn that NSSI and history of abuse may require urgent evaluation and treatment in adolescents with MDD. In addition, the consideration of common risk and protective factors for these closely related conditions points to the necessity of including interventions for common underlying mechanisms (such as difficulties in emotion regulation) into the treatment plan.

Study Limitations

The results of our study should be interpreted in consideration of certain limitations. Due to the cross-sectional design of our study, it could not be determined whether a longitudinal relationship between sociodemographic-clinical characteristics and suicide attempts exists. Our study did not use structured interview tools, and DSM-5-based clinical interviews were employed. The assessment of suicide did not use a scale and relied on information from patient files. Therefore, suicidal ideation could not be clearly isolated and no specific data in this regard could be presented. Lastly, the absence of a PTSD scale is a major limitation. For this reason, we could not evaluate the relationship between suicide attempts in MDD and PTSD symptoms, which are closely related to a history of childhood abuse.

CONCLUSION

Suicide attempts constitute an important problem for adolescents diagnosed with MDD. A better understanding of the factors associated with the suicide attempts in these young individuals may help identify targets for early intervention and inform more effective prevention strategies. Especially, the presence of self-injurious behaviors and a history of childhood abuse should be a warning sign for suicide attempts and need to be addressed in order to prevent suicide attempts. Longitudinal studies are needed to increase our understanding of the causation of suicidal attempts and actionable strategies for clinical prediction and prevention of these behaviors in adolescents with MDD. Future research, especially involving analysis of specific psychiatric symptoms or symptom networks, may help us better understand suicidality among adolescents with MDD.

Ethics

Ethics Committee Approval: The study approval was obtained from the Atatürk University Faculty of Medicine of Clinical Research Ethics Committee and was conducted in accordance with the Declaration of Helsinki and Good Clinical Practices (decision number: B.30.2.ATA.0.01.00/506, date: 30.06.2022).

Informed Consent: Retrospective study.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: E.Y.D., M.A.A., A.B., H.D., Concept: E.Y.D., M.A.A., H.D., Design: E.Y.D., M.A.A., H.D., Data Collection or Processing: E.Y.D., M.A.A., A.B., H.D., Analysis or Interpretation: E.Y.D., M.A.A., A.B., H.D., Literature Search: E.Y.D., M.A.A., A.B., Writing: E.Y.D., M.A.A., A.B.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

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