

Suicide attempts and related factors in schizophrenia patients

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ABSTRACT

الأهداف: التحقيق في العلاقة بين محاولات الانتحار والمتغيرات الديموغرافية السريرية وتقييم الأساليب المستخدمة في محاولات الانتحار من خلال مقارنة مرضى الفصام مع أو بدون محاولات الانتحار.

الطريقة: اشتملت الدراسة على مجموعه 223 مريض بالفصام تتراوح أعمارهم بين 18-65 عام تم قبولهم في قسم الطب النفسي، كلية الطب، جامعة سلجوق ومستشفى بيخيم للطب النفسي في مستشفى قونيا للتدريب والبحث خلال الفترة من يناير 2014م و 2018م في الدراسة. أجريت الدراسة بأثر رجعي حيث تم ملء نماذج جمع البيانات التي أنشأها الباحثون باستخدام السجلات الطبية في المستشفى.

النتائج: وجدنا أن 40.8% من مرضى الفصام حاولوا الانتحار مرة واحدة على الأقل وأن 39.6% من مرضى الفصام الذين حاولوا الانتحار قد حاولوا محاولات انتحار متكررة. كان لدى المرضى الذين حاولوا الانتحار مدة الذهان غير المعالج لديهم أطول وفترة التنويم لديهم أكثر بالمقارنة مع أولئك الذين لم يحاولوا الانتحار. بالإضافة إلى ذلك، كان استخدام الأدوية المضادة للذهان أقل بكثير في أولئك الذين يعانون من محاولات الانتحار. كان هناك فرق ذو دلالة إحصائية في وجود أحداث الحياة المؤلمة بين أولئك الذين لديهم محاولات انتحارية أو بدونها.

الخلاصة: السلوك الانتحاري هو مشكلة مهمة في مرض انفصام الشخصية. تحديد عوامل الخطر والأفراد المعرضين لمخاطر عالية سيرشدنا في تطوير التدخلات الوقائية.

Objectives: To investigate the relationship between suicide attempts and demographic-clinical variables and to assess the methods used in suicide attempts by comparing schizophrenia patients with and without suicide attempts.

Methods: A retrospective study with a total of 223 schizophrenia patients aged 18-65 years that were admitted to the Department of Psychiatry, Selçuk University and the Beyhekim Psychiatric Clinic Konya Training and Research Hospital, Konya,

Turkey, between January 2014 and January 2018. The data collection forms created by researchers were completed using hospital medical records.

Results: It was determined that 40.8% of schizophrenia patients attempted suicide at least once and that 39.6% of schizophrenia patients who attempted suicide had recurrent suicide attempts. Those with suicide attempts had a significantly longer mean duration of untreated psychosis and a higher total number of hospitalizations compared to those without suicide attempts. In addition, the use of depot antipsychotic drugs was significantly lower in those with suicide attempts. There was a statistically significant difference in the presence of traumatic life events between those with and without suicide attempts.

Conclusion: Suicidal behavior is an important problem in schizophrenia. Identifying risk factors and high-risk individuals will guide us in the development of preventive interventions.

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Schizophrenia is a major mental disorder with a high risk of suicide, which is one of the leading causes of early death in schizophrenia patients. It is known that suicidal behavior is 20-50 times higher in schizophrenia patients compared to the general population.^{1,2} It has been reported among schizophrenia patients that the lifelong risk of suicide is 5%, the rate of suicide attempt

is 25-50%, and the rate of suicidal ideation at least once is 43-79%.²⁻⁵ The higher rate of suicide seen among schizophrenia patients reveals that it is necessary to evaluate suicidal ideation and attempts and to identify risky individuals. However, the fact that suicide has a multi-faceted nature and that schizophrenia has a heterogeneous clinical appearance in terms of its onset, course, and clinical features makes it difficult to determine the risk of suicide in this patient group.⁶

In many studies investigating suicidal behaviors in schizophrenia, researchers have tried to determine several factors predicting the risk of suicide by examining many patient-related and disease-related features. These include sociodemographic characteristics (such as age, gender, and marital status), premorbid functioning, onset and course of the disease, previously received medications, patient adherence to treatment, disease insight, and previous suicidal ideation and attempts.⁷⁻⁹ Recent studies have found that the increased risk for suicidal behavior is associated with the male gender, unemployment, a family history of psychiatric disorder, higher number of hospitalizations, lack of social support, higher level of insight, higher education level, presence of a previous suicide attempt, family history of suicidal behavior, concomitant hallucinations and delusions, depression, and hopelessness.¹⁰⁻¹⁵ Some studies have also reported that there is a relationship between suicidal behavior and antipsychotic-induced extrapyramidal side effects (such as akathisia) from among treatment-related factors.^{16,17} Traumatic life events are considered to be another risk factor associated with suicidal behavior in schizophrenia.^{18,19} Although many risk factors for schizophrenia-related suicidal behavior have been described in recent years, it seems difficult to say that these factors are useful in predicting and preventing suicide.

On the other hand, it has been reported that schizophrenia patients use more serious suicide methods, such as jumping in front of a train and jumping from a high place, compared to patients with other psychiatric disorders.^{8,20-22} The fact that schizophrenia patients have more lethal suicide intent and use more serious suicide methods shows that the risk of death by suicide is higher in schizophrenia. However, the number of studies evaluating suicide intent, attempts, and methods of schizophrenia patients

is not considered sufficient to understand the dynamics of suicide in these patients. Moreover, the fact that some findings from studies conducted in Turkey differ from international literature indicates that it is necessary to investigate the effect of sociocultural factors on suicidal ideation and suicide method.¹³⁻¹⁵ Therefore, there is a need for studies evaluating disease-related factors and sociocultural factors for the improved identification of risk factors and for the development of preventive interventions.

In light of this information, we aimed to compare sociodemographic, clinical, and treatment features of schizophrenia patients with and without a history of suicide attempts and to contribute to increasing knowledge relating to suicidal behavior in schizophrenia patients by evaluating the methods used to attempt suicide.

Methods. The descriptive retrospective study population consisted of 223 patients between the ages of 18-65 years who were admitted to the inpatient clinic of Department of Psychiatry at the Medical Faculty of Selcuk University, Konya and to the inpatient clinic of Beyhekim Psychiatric Clinic of Konya Training and Research Hospital, Konya, Turkey between January 2014 and January 2018, who were diagnosed with schizophrenia according to the DSM-IV-TR²³ and who had medical records stating whether they had previously attempted suicide. The “questionnaire on sociodemographic and clinical features” and “questionnaire on family/caregiver features,” which were prepared by the researchers, were used in data collection. The data were obtained from medical records when filling in the questionnaires. Patients who had sufficient and reliable information regarding suicidal behavior on their medical records were included in the study. The study was approved by the Non-invasive Clinical Research Ethics Committee of Medicine Faculty, Selcuk University, Konya, Turkey (No: 2018/175) and adhered to the tenets of the Declaration of Helsinki.

A statistical analysis was performed by Statistical Package for Social Science Version 20.0 (IBM Corp, Armonk, NY, USA). The sociodemographic and clinical features of the sample were determined with descriptive statistical methods. The Kolmogorov-Smirnov test and Histogram were used to determine whether continuous variables were normally distributed. Descriptive statistics were presented as the mean \pm SD for normally distributed variables (such as age) and as the median and minimum-maximum for non-normally distributed variables (such as disease duration, duration of untreated psychosis, number of hospitalizations).

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The independent samples t-test was used to compare normally distributed parameters between groups. The Mann-Whitney U test was used to compare non-normally distributed parameters between groups. Categorical variables (sociodemographic and clinical features such as gender, marital status, educational and employment characteristics, treatment, and trauma history) were presented as number and percentage (%). The Pearson's Chi-square and Fisher's exact tests were used to compare categorical parameters between groups. Since there was no hypothesis Bonferroni correction was not applied. The confidence level was set at 95%. A $p < 0.05$ was considered statistically significant.

Results. The medical reports of 820 (438 female, 382 male) patients who were treated in the inpatient clinics of the 2 hospitals and were diagnosed with psychotic disorder were screened. After the exclusion of schizoaffective disorder and other psychotic disorders, 312 patients with schizophrenia were examined for

eligibility. Thirty-eight patients were excluded because there was no information regarding suicide attempt; 33 patients were excluded because they did not have enough sociodemographic and clinical information to complete the data form; 18 patients were excluded because of unreliable data due to the short duration of inpatient treatment (<3 days). After 89 patients with schizophrenia were excluded, 223 patients were included in the study.

Evaluation of the relationship between sociodemographic features and suicide. The sociodemographic features of patients with and without suicide attempts are summarized in Table 1. The study population (100%, n=223) consisted of approximately equal numbers of males (49.8%, n=111) and females (50.2%, n=112). The mean age of the sample was 41.0 ± 10.6 years. There was no statistically significant ($p=0.67$) difference in the mean age between males (40.7 ± 10.5) and females (41.3 ± 10.7). Nearly half

Table 1 - Comparison of sociodemographic features of schizophrenia patients with and without suicide attempts. (N=223)

Features	Suicide group (n=91)	Non-suicide group (n=132)	χ^2	T test	P-value
Age (mean \pm SD)	41.0 \pm 10.6	40.9 \pm 10.1		t -0.067	0.946
Gender [n (%)]					
Female	49 (53.8)	63 (47.7)	χ^2 0.807		0.369
Male	42 (46.2)	69 (52.3)			
Marital status [n (%)]					
Single	43 (47.3)	72 (54.5)	χ^2 1.951		0.377
Married	32 (35.2)	35 (26.5)			
Widowed/divorced	16 (17.6)	25 (18.9)			
Education level [n (%)]					
\leq 8 years	54 (59.3)	79 (59.8)	χ^2 0.006		0.939
>8 years	37 (40.7)	53 (40.2)			
Employment status [n (%)]					
Unemployed	73 (80.2)	113 (85.6)	χ^2 2.985		0.394
Student	3 (3.3)	4 (3.0)			
Employed	10 (11.0)	13 (9.8)			
Retired	5 (5.5)	2 (1.5)			
Co-inhabitants [n (%)]					
Alone	8 (8.8)	8 (6.1)	χ^2 6.083		0.108
Parents	41 (45.1)	81 (61.4)			
Spouse-children	27 (29.7)	30 (22.8)			
Nursing home	15 (16.5)	13 (9.8)			
Family history [n (%)]					
Yes	43 (47.3)	57 (43.5)	χ^2 0.304		0.582
No	48 (52.7)	74 (56.5)			
Comorbidity [n (%)]					
Yes	25 (27.5)	32 (24.2)	χ^2 0.295		0.587
No	66 (72.5)	100 (75.8)			
Smoking [n (%)]					
Yes	47 (51.6)	69 (52.3)	χ^2 0.008		0.927
No	44 (48.4)	63 (47.7)			

of patients (51.6%, n=115) were single. More than half of patients (59.6%, n=113) were primary school graduates. Most patients were living with their family. While 54.7% (n=122) were living with their parents, 25.6% (n=57) were living with their spouses and children. Almost half of the patients (47.1%, n=105) had a family history of psychotic disorder. Most of the patients (83.4%, n=186) were unemployed. Approximately one-quarter of patients (25.6%, n=57) had at least one additional disorder. More than half of patients (52%, n=116) smoked cigarettes, 40.8% (n=91) of patients had attempted suicide at least once.

Evaluation of the relationship between clinical features and suicide. The mean age at disease onset was 23.4 ± 7.5 years (median=22, min-max=10-49). The mean duration of untreated psychosis was 1.4 ± 2.3 years (median=0, min-max=0-10). The mean duration of disease was 16.3 ± 9.4 years (median=15, min-max=2-44). Nearly one-third of patients (35.9%, n=80) had been hospitalized more than 5 times. The mean number of hospitalizations was 4.5 ± 2.8 (median=4, min-max=1-13). There was a statistically significant difference between patients with and without suicide attempt in terms of duration of untreated psychosis ($p=0.001$) and number of hospitalizations ($p<0.001$).

Eighty-six (38.6%) patients were exposed to traumatic life events, 40 (17.9%) experienced emotional trauma, 36 (16.1%) experienced physical trauma, and 10 (4.5%) experienced sexual trauma. There was a statistically significant difference between patients with and without suicide attempt in terms of trauma types ($p=0.015$).

We also evaluated treatment-related factors. When treatment histories of patients were examined, 28.7% (n=64) received electroconvulsive therapy, 59.2% (n=132) did not receive clozapine, 21.5% (n=48) received depot antipsychotic treatment for more than one year, and 48.9% (n=109) received oral antipsychotic treatment for more than one year. There was a statistically significant difference between patients with and without suicide attempts in terms of regular use of depot antipsychotic treatment for more than one year ($p=0.034$) and regular use of oral antipsychotic treatment for more than one year ($p<0.02$). The clinical and treatment-related features of patients with and without suicide attempts are summarized in Table 2.

Evaluation of suicide methods and related factors. Thirty-six (39.6%) patients with a history of suicide attempt made multiple suicide attempts. Fifty-five (60.4%) attempted suicide once, more than one-third (39.6%, n=36) attempted suicide twice, and

Table 2 - Comparison of clinical features of schizophrenia patients with and without suicide attempts (N=223).

Features	Suicide group (n=91)	Non-suicide group (n=132)	χ^2	Z	P-value
Age at disease onset - median (min-max)	21 (12-49)	22 (10-48)		z -1.179	0.238
Disease duration - median (min-max)	15 (2-39)	15 (3-44)		z -0.556	0.578
Duration of untreated psychosis - median (min-max)	1 (0 -10)	0 (0-9)		z -3.216	0.001*
Total number of hospitalizations - median (min-max)	5 (1-13)	3 (1-12)		z -3.957	<0.001*
Trauma [n (%)]					
No	50 (54.9)	87 (65.9)			
Physical	12 (13.2)	24 (18.2)	χ^2 10.510		0.015*
Emotional	21 (23.1)	19 (14.4)			
Sexual	8 (8.8)	2 (1.5)			
Treatment features					
Electroconvulsive therapy					
Yes	31 (34.1)	33 (25)	χ^2 2.164		0.141
No	60 (65.9)	99 (75)			
Clozapine use					
Current	7 (7.7)	9 (6.8)	χ^2 0.274		0.872
Previous	32 (35.2)	43 (32.6)			
No	52 (57.1)	80 (60.6)			
Depot antipsychotic use (previous)					
No/less than 1 year	65 (71.4)	110 (83.3)	χ^2 4.519		0.034*
More than 1 year	26 (28.6)	22 (16.7)			
Oral antipsychotic use (previous)					
No/less than 1 year	38 (41.8)	76 (57.6)	χ^2 5.393		0.02*
More than 1 year	53 (58.2)	56 (42.4)			

Values are presented as number and percentage (%), * $p<0.05$, Z - Mann Whitney U test

Table 3 - The classification of suicide methods used by schizophrenia patients according to Asberg's criteria (N=223).

Classification according to Asberg's criteria	1 st suicide attempt	2 nd suicide attempt	3 rd suicide attempt	4 th suicide attempt	≥5 th suicide attempt
<i>Non-violent</i>					
Medication	49 (53.8)	11 (12.1)	8 (8.8)	2 (2.2)	-
<i>Violent</i>					
Toxic substance	7 (7.7)	12 (13.2)	7 (7.7)	1 (1.1)	1 (1.1)
Jumping from a high place	14 (15.4)	3 (3.3)	1 (1.1)	1 (1.1)	1 (1.1)
Hanging	4 (4.4)	5 (5.5)	2 (2.2)	1 (1.1)	-
Drilling/cutting tool	13 (14.3)	4 (4.4)	4 (4.4)	1 (1.1)	-
Others	4 (4.4)	1 (1.1)	1 (1.1)	-	-
Violent (total)	42 (46.2)	25 (69.4)	15 (65.2)	4 (66.7)	2 (100)
Overall total	91 (100)	36 (39.6)	23 (25.3)	6 (6.6)	2 (2.2)

Values are presented as number and percentage (%)

approximately one-quarter (25.3%, n=23) attempted suicide thrice. When the methods used in the first suicide attempt were examined, 49 (53.8%) attempted suicide by taking medication, 14 (15.4%) attempted suicide by jumping from a high place, and 13 (14.3%) attempted suicide by using a drilling or cutting tool. Suicide methods are summarized in Table 3.

Suicide methods were classified as non-violent (taking medication) and violent (all suicide methods other than taking medication) according to Asberg's criteria.²⁴ The use of violent suicide methods by patients increased in repeated suicide attempts. The usage rate of violent suicide methods was 53.8% for the first suicide attempt, 69.4% for the second suicide attempt, and 65.2% for the third suicide attempt. The classification of suicide methods according to Asberg's criteria is presented in Table 3.

Discussion. Our study revealed that 40.8% of schizophrenia patients attempted suicide at least once and that 39.6% of schizophrenia patients who attempted suicide had recurrent suicide attempts. Studies on suicidal behavior in schizophrenia have reported that approximately 25-50% of schizophrenia patients attempt suicide at least once during their lifetime.^{2,5,13} Ozturk et al¹⁵ recently found that 42% of patients attempted suicide and that 42.9% of patients with a history of suicide attempt made multiple suicide attempts. In our study, the presence of past suicidal behavior that is considered one of the most important risk indicators for future suicidal behavior was found to be similar to rates reported in many studies.²⁵⁻²⁷

It is well known that there are differences in suicidal behavior between men and women in the general population based on studies evaluating the relationship between gender and suicide. Besides studies indicating that suicide rates are higher in schizophrenic men than in schizophrenic women,⁵ there are few studies

suggesting that schizophrenic women have a higher risk of suicide compared to schizophrenic men.²⁸ Togay et al³⁰ showed that suicide attempts were more common in women than in men, especially in patients with first-episode schizophrenia. In our study, no difference was found between the genders in suicide attempt rates. Similar to the findings of the present study, there are studies reporting that there is no significant difference between men and women in terms of suicide attempts in schizophrenia patients.²⁵

The other sociodemographic variables whose relationships with suicide have been assessed are marriage, education, employment status, family features, and living conditions. When studies published in the international literature are examined, many studies show that being single and unemployed, having a higher level of education, presence of a family history of psychiatric illness, positive family history of suicide attempts, presence of depressive symptoms (particularly hopelessness), and lack of social support increased the risk of suicide in individuals with schizophrenia.²⁷ However, there are also studies reporting different results on the importance of these variables in determining the risk of suicide. Our study found that marital status, employment, and education level were not associated with suicide attempt. Similarly, no significant difference was found between 2 groups in terms of family history of psychiatric illness, co-inhabitants, and living place from among social support and family-related factors. As shown, there are controversial findings on the relationship between suicide and sociodemographic variables in schizophrenia patients. Although our study is important for reflecting the Turkish population, the generalization of our results is difficult because it was conducted in only 2 centers.

When the factors related to the history of disease affecting suicidal behavior in schizophrenia are examined, age at disease onset, duration of untreated

illness, and number of hospitalizations are associated with the risk of suicidal behavior.^{7-9,29} An earlier age onset and poor functioning are risk factors for suicide in patients with schizophrenia. The early phase and active phases of illness are times of increased risk, although suicide can occur throughout the course of the illness.²⁹ Our study found that there was no significant difference in age at disease onset between those with and without a history of suicide attempt. Besides studies reporting that early age at onset may be a factor increasing the risk of suicidal behavior,³⁰ there are some studies suggesting that late age at onset may further increase this risk.³¹ The relationship between age at disease onset and the risk of suicidal behavior continues to be discussed. Studies have reported similar results for the effect of prolonged duration of untreated illness on the course of schizophrenia and the risk of suicidal behavior.^{32,33} The fact that our study found that the duration of untreated psychosis was longer in those with a history of attempting suicide supports the existing literature. In a meta-analysis, Challis et al³³ reported that prolonged duration of untreated illness was associated with suicide attempts and deliberate self-injury in psychosis and claimed that earlier treatment of first-episode psychosis and treatment of related factors as depression, substance use could reduce suicide attempts and deliberate self-injury behaviours. Melle et al³⁴ found that the risk of suicidal behavior was lower in communities with early diagnosis program implementation. They also suggested that early diagnosis program implementation both had a positive effect on the course of schizophrenia and reduced the risk of suicide by shortening the duration of untreated illness. Another factor associated with suicide risk in schizophrenia is the high number of hospitalizations. Hospitalization can maintain safety with monitoring, structure, and support adjustment of psychopharmacological treatments. However, discharge from the hospital can lead social isolation, increased stress, and higher suicide risk. The fact that our study found that the number of hospitalizations was higher in those with a history of suicide attempts is consistent with the existing literature. Studies from Turkey found that the number of hospitalizations was higher in those with suicide attempts.^{13,14} The high number of hospitalizations can be related to many clinical conditions such as disease course, patient adherence to treatment, and frequency of psychotic exacerbations. All these factors contribute to increasing the risk of suicide.

One of the factors affecting suicidal behavior in schizophrenia patients is medications. Adequate psychopharmacological treatment of psychosis is essential. Inadequate doses of antipsychotic medication, being non-compliant with treatment and being

non-responsive to medication treatment are crucial factors in suicidal behavior in patients with schizophrenia. The treatment adherence of patients and their families and the suitability and sustainability of medications used can reduce the risk of suicidal behavior by preventing psychotic exacerbations as much as possible. It has been reported that most patients commit suicide during a psychotic episode and that higher levels of positive symptoms increase the risk of suicide.³⁵ Patients with prominent negative symptoms may have a somewhat reduced risk for suicide as compared with patients with mostly positive symptoms. Since clozapine is the only FDA-approved antipsychotic that reduces the risk of suicide in schizophrenia,³⁶ previous clozapine use of patients was evaluated in our study. Our study found that there was no significant difference in the rates of current and previous clozapine use between those with and without a history of suicide attempts. However, when considering that 40.8% of schizophrenia patients attempted suicide at least once and that 39.6% of schizophrenia patients who attempted suicide had recurrent suicide attempts, the rates of clozapine prescription for patients by clinicians were considered low. Another issue related to treatment is the use of antipsychotics. Our study found that the use of depot antipsychotic drugs was lower in those with suicide attempts. This finding supports the idea that sufficient use of depot antipsychotic drugs in the treatment of schizophrenia may reduce the risk of suicide. Our study also revealed that the usage rate of oral antipsychotic treatment for more than one year was higher than the usage rate for less than one year (insufficient use) in those with suicide attempts. However, the lack of knowledge regarding the dose, regular use, and types of oral antipsychotics makes it difficult to interpret this finding. On the other hand, the fact that most suicide attempts occur by taking medication also raises the idea that the use of oral therapy may be related to an increased risk of suicide attempts through facilitating access to drugs.

It is suggested that traumatic life events increase the tendency for many psychiatric disorders such as anxiety, depression, and psychosis.³⁷ Conus et al³⁸ investigated the effects of stressful life events on patients and their diseases. They found that 83% of patients experienced at least one stressful life event and that 34% of these individuals were physically or sexually abused. The fact that our study found that the rate of traumatic life events was higher in those with a history of suicide attempts is consistent with the existing literature indicating that traumatic life events increase the risk of suicide. This information highlights that careful evaluation of childhood traumatic experiences during the psychiatric

examination of schizophrenia patients is critical.

The most frequently used suicide methods among schizophrenia patients are reported to be taking medication (the most commonly used method in the general population), followed by ingestion of toxic substances, jumping in front of a vehicle, and use of a drilling or cutting tool.^{14,39} Similar to the existing literature, our study found that the most common suicide methods were taking medication, jumping from a high place, and use of a drilling or cutting tool. Although the frequency of suicide attempts by taking medication among schizophrenia patients is in parallel with the general population, it has been reported that schizophrenia patients use more violent methods to commit suicide when compared with the general population and patients with other psychiatric disorders.²⁰⁻²² All suicide methods other than taking medication are classified as violent according to Asberg's criteria.²⁴ In our study, when suicidal attempts in schizophrenia patients were evaluated according to the use of violent and non-violent methods, it was determined that the use of violent methods increased as the number of suicide attempts increased in those with multiple suicide attempts. The fact that the use of lethal methods increases concurrently with the number of suicide attempts underlines that we are responsible for thoroughly questioning patients with a history of suicide attempts.

Study limitations. Although our study has a larger sample size than other studies conducted in our country, it is relatively small to use in making a general judgment on suicidal behavior in schizophrenia. This makes it difficult to generalize our results. Another limitation is that suicidal attempts and self-injury behaviors are not differentiated clearly in hospital records. The fact that self-injury is not always performed with suicidal intent and not all suicide attempts cause injury can lead to conceptual confusion. Data obtained from hospital medical records was a limitation in this study. Finally, our study has a retrospective design. Long-term follow-up studies will be more useful in identifying possible predictors of suicidal behavior.

In conclusion, the heterogeneous appearance of schizophrenia, the complex nature of suicidal behavior, and a lower rate of seeking help in patients with schizophrenia make it difficult to detect the risk of suicide early in schizophrenia. The results of our study emphasize that suicidal behavior should be questioned in all patients with schizophrenia; high-risk individuals should be determined and measures should be taken to prevent possible suicidal behavior. The fact that suicidal behavior is one of the most common causes of

death among individuals with schizophrenia reveals the importance of this issue. Therefore, there is a need for large-scale longitudinal studies evaluating interrelated factors.

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