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Evaluation of Suicidal Behaviour, Depression, Insight and Disease Charasteristics in Schizophrenia

Şizofrenide İntihar Davranışı ile Depresyon, İçgörü ve Hastalık Özelliklerinin Değerlendirilmesi

ABSTRACT

Objective:

Suicide is a severe public health issue with high rates of morbidity and mortality. Schizophrenia also has a high suicide incidence, which is one of the main factors contributing to rising morbidity and mortality. For strategies to lower suicide rates, it is essential to understand the risk factors for suicide in people with schizophrenia. This study aimed to contribute to the reduction of suicide in schizophrenia and to set an example for future studies by evaluating the relationship between the risk of suicidal behavior and demographic variables and disease characteristics, depression and insight in schizophrenia patients, in the light of literature information.

Material and Methods:

This study included 103 schizophrenia patients who underwent follow-up for at least 4 years in a community mental health center (CMHC). The study included patients who had the mental capacity to understand and complete the questionnaires, were not experiencing an acute psychotic attack, and gave their consent to participate. The patients were given the Three Components of Insight Scale (TCIS), Scale for Evaluation of Positive Symptoms in Schizophrenia (SAPS), Scale for Evaluation of Negative Symptoms in Schizophrenia (SANS), Calgary Depression Inventory in Schizophrenia (CDIS), and Suicide Behavior Scale (SBS).

Results:

47% of patients demonstrated suicidal behavior, and 69% of patients were men. 46% of the group demonstrating suicidal behavior had severe or very severe suicidal ideation. Age and disease duration were revealed to be significant risk factors for suicidal behavior (p=0.033 and p=0.004, respectively), but gender, SBS, CDIS, SANS, SAPS, and TCIS scores had no significant effect. Age and suicidal behavior risk were found to be inversely correlated, with each unit of age increase reducing the risk of suicidal behavior by 0.929 times. The risk of suicidal behavior rises along with the duration of disease. With every one unit increase in the duration of disease,

the risk of suicidal behavior increases by 1.133 times. Additionally, the group with severe-very severe suicidal ideation had significantly more severe depression scores than the group with mild-moderate (p=0.01).

Conclusion:
Suicide and suicide attempt are important morbidity and mortality factors in schizophrenia, and it is of great importance to determine suicide risk factors and protective factors in schizophrenia patients and to create interventions for them.

Key Words:
Schizophrenia, Suicide, Suicidal behavior, Depression

ÖZ
Amaç:
İntihar önemli morbidite ve mortalite oranlarına sahip ciddi bir halk sağlığı sorunudur. Şizofrenide de intihar oranları yüksek olup, morbidite ve mortaliteyi artıran en önemli sebeplerden biridir. Şizofrenide intihar risk faktörlerinin anlaşılması, intihar insidansını azaltmaya yönelik yaklaşımları geliştirmek için hayati önem taşımaktadır. Bu çalışmada şizofreni hastalarında intihar davranışı riski ile demografik değişkenler ve hastalık özellikleri, depresyon ve içgörü ilişkisinin literatür bilgileri eşliğinde değerlendirilerek, şizofrenide intiharın azaltılmasına katkı sağlamak ve ileriki çalışmalara örnek oluşturmak amaçlanmıştır.

Gereç ve Yöntemler:
Araştırmaya toplum ruh sağlığı merkezinde (TRSM) şizofreni tanısı ile en az 4 yıldır takipli 103 hasta dahil edilmiştir. Çalışmaya akut psikotik atak döneminde olmayan, ölçekleri anlayabilecek ve doldurabilecek zihinsel kapasiteye sahip olan ve çalışmaya katılmayı onaylayan hastalar dahil edilmiştir. Hastalara sosyodemografik veri formu, Şizofrenide Pozitif Belirtileri Değerlendirme Ölçeği (SAPS), Şizofrenide Negatif Belirtileri Değerlendirme Ölçeği (SANS) Calgary Şizofrenide Depresyon Ölçeği (CŞDÖ), İçgörünün Üç Bileşenini Değerlendirme Ölçeği (İÜBDÖ) ve İntihar Davranış Ölçeği (İDÖ) uygulanmıştır.

Bulgular:
Hastaların % 69' u erkek olup, % 47' sinde intihar düşüncesi saptanmış; intihar düşüncesi bulunan grubun ise % 46' sında ciddi düzeyde intihar düşüncesi (şiddetli ve çok şiddetli) tespit edilmiştir. Şizofrenide intihar düşüncesinin üzerine cinsiyet, İDÖ, CŞDÖ, SANS ve SAPS puanlarının anlamlı bir etkisi bulunmazken; yaş ve hastalık süresi intihar riski üzerine etkili faktörler olarak bulunmuştur (sırasıyla p=0.033, p=0.004). Yaşla intihar riski arasında ters bir ilişkinin olduğu ve yaştaki her bir birimlik artışın, intihar riskini 0,929 kat azalttığı bulunmuştur. Hastalık süresi uzadıkça da intihar riski artmaktadır. Hastalık süresindeki her bir birimlik artış ile intihar riski 1,133 kat artmaktadır. Ayrıca intihar düşüncesi şiddetli-çok şiddetli olan grubun depresyon şiddeti, hafif-orta olan gruptan anlamlı olarak yüksek çıkmıştır (p=0.01).

Sonuç:
Şizofrenide intihar ve intihar girişimi önemli bir morbidite ve mortalite faktörü olup, şizofreni hastalarında intihar risk faktörleri ve koruyucu faktörlerin saptanması ve bunlara dönük müdahelelerin oluşturulması büyük önem arz etmektedir.

Anahtar Kelimeler:
Şizofreni, İntihar, İntihar davranışı, Depresyon

INTRODUCTION
Suicide is an important global health problem with high rates of morbidity and mortality. According to the World Health Organization (WHO), there were more than 700.000 suicide deaths worldwide in 2019 with a suicide rate of 9.0 per 100.000 people during the previous year (1). One in every 135 suicide attempts, according to estimates, ends in death. By 2030, the World Health Organization (WHO) aims to have reduced the global suicide death rate by one-third (2).

The existence of mental illness is one of the main factors that lead to suicide around the world, and individuals who have mental illness are more likely to attempt suicide than those who don't (3). Studies indicate that individuals with psychotic disorders have a higher risk of suicide than those with depressive disorder, bipolar disorder, or substance use disorders (4). Patients with schizophrenia experience death 14.5 years earlier than the general population, have a suicide risk that is almost 4.5 times higher, and 40% of deaths are suicide-related (5-7). According to meta-analyses, schizophrenia patients had a lifetime prevalence of suicide thoughts, intentions, and attempts of 34.5%, 44.3%, and 26.8%, respectively (8, 9). For people with schizophrenia, it is crucial to identify suicide risk factors and create intervention programs in accordance with those findings (10). Age, gender, race, social isolation, trauma, recent hospital discharge, emotional personality or temperament, family history of suicide, and prior suicide attempt are suicide risk factors in schizophrenia (3, 10-12). In addition to being a significant risk factor for suicide, schizophrenia is frequently accompanied with depressive symptoms (13, 14). Additionally, it has been demonstrated that positive symptoms of schizophrenia are linked to an increase in suicide thoughts and behaviors (15, 16).

Understanding schizophrenia as an illness, characterizing psychotic experiences as abnormal, and adhering to therapy are just a few of the many facets of insight (17). Low insight is a trait of schizophrenia that is present throughout every phase of the illness (18). According to studies on schizophrenia, there is a 50%–80% impairment in insight (19, 20). According to Lysaker et al. (2018), poor clinical insight in schizophrenia has been linked to worse medication adherence, a higher incidence of positive symptoms

and relapse (18). Low insight and depression, suicidal ideation, and act in schizophrenia have also been linked in a minor but significant way (21, 22). Additionally, analyses of more complex relationships between insight and suicidal thoughts or behaviors across the course of schizophrenia have been conducted (23, 24). In fact, schizophrenia exhibits a dual nature of insight, known as the "insight paradox" (25). Less depressed symptoms in schizophrenia may be linked to less insight. Being more conscious of the issues and effects of the disorder may raise the risk of depression and suicide, especially in the early stages of the illness (18, 25).

MATERIALS and METHODS

The study comprised 103 patients with a diagnosis of schizophrenia who had been registered at the Rize State Hospital Community Mental Health Unit (CMHU) for at least 4 years. Patients who voluntarily agreed to participate in the study gave their verbal and written agreement, as well as the consent of their legal guardians. During the clinical interview, the patients were given the Sociodemographic Data Form created by the researchers, the Positive (SAPS) and Negative (SANS) Symptom Scales, Three Components of Insight Scale, Calgary Depression Scale in Schizophrenia, and Suicidal Behavior Scale. Patients with schizophrenia aged 18 to 65 who were literate, not experiencing an acute psychotic episode that prevented them from being questioned, had enough cognitive ability to adjust to the scales, and did not have any additional chronic illnesses or co-occurring mental diagnoses were included in the study. The study was conducted in accordance with the Research and Publication Ethics, written Informed Consent was obtained from the patients and their guardians, and the study design was created in accordance with the Declaration of Helsinki. Ethics Committee approval of the study was obtained from the Recep Tayyip Erdogan University Non-Interventional Research Ethics Committee (Ethics Committee Decision Approval Date: 21.06.2017 Decision No: 2017/125).

Sociodemographic Data Form: The researchers created the sociodemographic form. It is a multiple-choice questionnaire that assesses a person's demographic data, living situation, income, employment status, family status, degree of education, and suicidal thoughts.

The Positive Symptoms Evaluation Scale (SAPS): It is a scale with 34 items and four subscales that was created to assess positive symptoms in schizophrenia (26). The 6-point Likert scale yields a score that goes from 0 to 170. Erkoç et al. (1991) carried out the validity and reliability analysis of the scale in Turkey (27).

Negative Symptoms Evaluation Scale (SANS): This scale was created by Andreasen in 1983 to assess negative symptoms in schizophrenia (28). It has 25 questions and 5 subscales. Erkoç et al. (1991) evaluated the scale's validity and reliability in Turkish (29).

The Three Components of Insight Scale: It is a scale with eight questions that evaluates insight quantitatively. The patient's insight is found to grow when the scale score does as well. The clinician applies it. Arslan et al. completed the validity and reliability analysis in Turkish (30).

Calgary Depression Scale in Schizophrenia (CDSS): It is a scale that Addington and colleagues created (31). Aydemir et al. conducted the reliability and validity analysis of this scale in Turkish (32). The scale, which has nine items and a four-point Likert type, is reviewed by the interviewer. Depressed mood, hopelessness, feeling unworthy, guilt-related apologies, pathological guilt, morning depression, early waking, suicide, and noticed depressive symptoms are some of these items. Studies have shown that the CDSS achieves its goal of being unaffected by extrapyramidal side effects or the positive and negative symptoms of schizophrenia, which were goals when the scale was being developed.The CDS cut-off point for schizophrenia and depressive illness in the Turkish version was 11/12. The cut-off point was used in our investigation.

Suicidal Behavior Scale: Four items constitute the scale that Linehan and Nielsen created in 1981 (33). Item 1: "Suicide plan and attempt" has six alternatives and refers to prior suicide attempts. Between 0 and 5 points are used to evaluate the Likert technique. The alternatives for item 2's "suicidal ideation" are 5, and it deals with the topic. It is rated on a Likert scale from 0 to 4. Item 3 is titled "threat of suicide" and has two possible answers. It is graded as No 0 and Yes 1. Item 4: "The repetition of suicide is assessed using the Likert scale from 0 to 4 for each of the five possibilities. The suicidal behavior scale ranges from 0 to 14, with 14 being the highest possible score. The results of questions 1 and 2 can be examined separately, with the highest score indicating the most severe suicidal behavior. In our study, the first question was used to assess the presence of suicidal thoughts, while the second question measured how severe it was.

Statistical analysis

The patient data were entered into a computer environment and statistically analyzed using SPSS.25. The frequency, percentage, and mean/standard deviation of the data are presented as descriptive statistics. Using the Kolmogorov-Smirnov and Shapiro-Wilk tests and visually inspecting histogram graphs, the normality of the data was assessed. The differences between the groups of the data that did not exhibit a normal distribution were examined using the Mann Whitney U test. The categorical dependent variable was explained by a binary logistic regression model. The cut off point for statistical significance was established at p 0.05.

RESULTS

The study comprised 103 participants in all with a diagnosis of schizophrenia. The youngest patient was 18 years old, and the oldest was 64 (mean±SD=39.50±10.102). Seventy-one (68.9%) of the patients included in the study were male. Thirty-four (33%) were married, whereas 69 (67%) were single. Of the 65 (63.1%) with primary education, 29 (28.2%) graduated from high school, and 9 (8.7%) from a university (Table I).

Table I. Sociodemographic Data of Patients

		Patients(n=103)	
		min-max	Mean (SD)
	Age	18-64	39.50(10.102)
	Insight	0-18	8.37(3.835)
		min-max	med(IQR)
	Duration of ilness	2-35	15.00(11.00)
	SANS	6-79	29.00(20.00)
	SAPS	2-90	23.00(35.00)
	CDSS	0-25	4.00(9.00)
		n	%
Gender	Male	71	68.9
	Female	32	31.1
Education	Primary school	65	63.1
	High school	29	28.2
	University	9	8.7
Marriage status	Married	34	33
	Single	69	67
Suicidal ideation	No	54	52.4
	Yes	49	47.6
Severity of suicidal thoughts	Mild	15	14.6
	Moderate	11	10.7
	Severe	10	9.7
	Very severe	13	12.6

SD: standart deviation, IQR:interquartile range
SANS: positive symptom scale, SANS: negative symptom scale
CDSS: Calgary Depression Scale in Schizophrenia

The following characteristics have been identified as independent risk factors for suicidal behavior: age, gender, disease duration, level of insight, calgary depression scale score, positive symptoms, and negative symptoms.

Age and the duration of the disease were found to be significant predictors of suicide behavior (p=0.033 and p=0.004, respectively). The risk of engaging in suicidal behavior declines with age. The risk of suicidal behavior decreases by 0.929 times for every unit of age increase. Suicidal behavior is more likely as the disease's duration lengthens. Suicidal behavior is 1.133 times more likely for every unit longer the disease continues. Suicidal behavior wasn't influenced by other independent variables in the model (Table II).

Table II. Logistic Regression Analysis of Suicide Risk Factors

	Univariate		Multivariate	
	OR (95%CI)	p	OR (95%CI)	p
Age	1.005(0.967-1.045)	0.788	0.929(0.869-0.994)	**0.033***
Gender (female)	0.960(0.416-2.215)	0.924	0.885(0.348-2.255)	0.799
Duration of ilness	1.050(1.002-1.100)	0.041	1.133(1.041-1.233)	**0.004****
Insight	0.971(0.877-1.075)	0.567	0.902(0.798-1.019)	0.098
CDSS	1.079(1.004-1.160)	0.038	1.097(1.000-1.203)	0.051
SAPS	1.012(0.995-1.030)	0.151	0.998(0.974-1.024)	0.902
SANS	1.011(0.983-1.039)	0.442	0.982(0.946-1.020)	0.343

SAPS: positive symptom scale, SANS: negative symptom scale,*p<0,05, **p<0.01
CDSS: Calgary Depression Scale in Schizophrenia

Suicidal ideation was categorized into two levels of severity: mild-moderate and severe-very severe. Between these groups, there was a substantial difference in CDSS scores (p=0.01) (Table III).

Table III. Scale Scores for the Mild/moderate-Severe/very severe Suicidal Ideation

	Mild/moderate	Severe/very severe	Test statistic	p[1]
	med(min-max)	med(min-max)		
CDSS	**4,5**(0-19) /20.06	**10**(0-25) /30,59	170.500	**0,010***
SAPS	24(4-73) /21,27	42(3-90) /29,22	202.000	0,052
SANS	25,5(7-79) /22,15	35(7-54) /28,22	225.000	0,138
Insight	7(2-13) /22,46	9(1-18) /27,87	233.000	0,184

[1]mann whitney U, med(min-max)/mean rank
SAPS: positive symptom scale, SANS: negative symptom scale
CDSS: Calgary Depression Scale in Schizophrenia

In comparison to the groups with mild-moderate suicidal ideation and severe-very severe suicidal ideation; the scale scores of severe-very severe group were statistically significantly higher (respectively med=4.5 and med=10.00). The scores on the SAPS, SANS, and insight scales did not significantly differ between the groups (p=0.052, p=0.138, and p=0.184, respectively) (Table IV).

Table IV. Scale Scores for the Severity of Suicidal Ideation

	Severity of suicidal thoughts					
	Mild	Moderate	Severe	Very severe	Test statistic	p
	med(min-max)	med(min-max)	med(min-max)	med(min-max)		
Insight	7(2-13)	7(3-12)	10(3-18)	8(1-14)	4,072	0,254
CDSS	4(0-11)	5(0-19)	11(1-22)	10(0-25)	6,990	0,072
SANS	29(7-39)	25(14-79)	40(7-50)	34(14-54)	3,473	0,324
SAPS	21(4-63)	25(9-73)	35(3-90)	42(9-82)	4,516	0,211

kruskal wallis, p<0.05, SAPS: positive symptom scale, SANS: negative symptom scale
CDSS: Calgary Depression Scale in Schizophrenia

DISCUSSION

Suicide is one of the major causes of morbidity and mortality in schizophrenia, which is a chronic psychiatric illness with significant suicidal behavior (34). The rates of suicide attempts (26.8%) and suicide-related deaths in schizophrenia are significantly higher than the rates of the general population (2.7%), and even close to the rates of major depressive disorder, one of the most significant causes of suicide (9, 35-37).

The lifetime prevalence of suicidal ideation and suicide plan was reported to be 34.5% and 44.3%, respectively, in a recent meta-analysis assessing suicide in schizophrenia. The same meta-analysis found a negative correlation between mean age and a positive correlation between male gender (8). In a different meta-analysis, men were found to be more protective against suicidal ideation. The high rate of suicidal thoughts and attempt in women and the prevalence of completed suicide rather than attempted suicide in men were the researchers' explanations for this outcome, which is opposite with the literature (38). In this study, severe-very severe thoughts were reported in almost half of the cases (47%), while suicidal behavior was found in about half of the cases (47%). The majority of the sample was male, which may be connected to the general characteristics of this study population and explain why no gender-related association was found. Additionally, a study done in our country indicated that 40.8% of schizophrenia patients attempted suicide, with no significant gender disparity (39).

In this study, a significant negative relationship between age and suicidal behavior was found. Suicidal behavior declines with age. Young people's suicidality may rise as a result of their increased social and survival stress as well as their understanding of the negative consequences of their illness. In fact, meta-analyses have shown that effective suicide and suicide attempts are linked to younger ages and higher IQs (8, 38, 40, 41). According to studies, there is a substantial correlation between suicidal attempts and thoughts in schizophrenia and the prevalence of depressive symptoms (38, 42, 43). In this study, 27% of patients had co-occurring depression and suicidal ideation, and after dividing the degree of suicidal behavior into two groups (mild-moderate and severe-very severe), a substantial difference in CDSS scores was discovered between the groups. In comparison to the group with mild-moderate suicidal ideation, the group with severe-very severe scale scores were statistically significantly higher. In other words, suicidal behavior increases along with the severity of depression.

According to this study, the risk of engaging in suicidal behavior increases with the duration of the disease. The duration of the illness and suicidal behavior in schizophrenia have not been evaluated in any studies in the literature. However, other findings suggest that suicidal thoughts increase as the duration of the disease without treatment increases (44, 45). The burden of the illness, the loss of functionality caused by the illness, and the risk of stigmatization and social exclusion may all rise as the course of schizophrenia is prolonged. In fact, these can raise the risk of engaging in suicidal behavior.

There are conflicting data regarding the link between schizophrenia's positive and negative symptoms and the risk of suicide. While it has been demonstrated that someone's tendency toward suicide is higher when experiencing negative symptoms, other research have found a link between heightened positive symptoms and a higher risk of suicide (46). In a recent meta-analysis, it was found that schizophrenia patients with suicidal ideation had a significantly higher presence of both positive and negative symptoms (38).

In schizophrenia, there is some disagreement on the relationship between insight and suicide. Both high and low insight levels were considered as risk factors. High insight may result in a suicide attempt with awareness of the stress, embarrassment, and stigma associated with the diagnosis, whereas patients with low insight may try suicide with positive psychotic symptoms (47, 48). However, no significant association between positive-negative symptoms or insight and suicidal behavior was discovered in this study. The patients' regular follow-up and treatment, 4-year CMHU follow-up, and their relatively strong social support may be the causes of this.

CONCLUSION

In this study, the presence of severe-very severe suicidal thoughts was identified in approximately half of the patients with schizophrenia who had been diagnosed for at least 4 years and were receiving regular follow-up and treatment. These patients also had a higher risk of engaging in suicidal behavior. In fact, it is crucial to note the high rate of suicidal ideation found in the patient group who are receiving regular follow-up and therapy and whose social support may be considered to be of high quality. Additionally, it was discovered that depression co-occurred in over 25% of the individuals. It was discovered that the severity of suicidal behavior increased along with the severity of depression. Age and the degree of suicidal ideation were found to have an inverse association in this study. In this study, it was discovered that there was a negative correlation between age and the degree of suicidal ideation, and that suicidal ideation reduced with age. Similar findings can be found in the literature. Additionally, it was shown that there was a considerable increase in suicidal ideation as the disease's duration increased. There are results indicating suicidal ideation increases as the period of the illness without treatment grows, despite the fact that there is no study in the literature that specifically compares the duration of the illness. Once more, there was no relationship between suicide behavior and the degree of positive-negative symptoms or insight. In the literature, there are contradictory results in relation to these.

In summary, one of the major causes of morbidity and mortality in schizophrenia is suicide. This research is crucial in order to identify the schizophrenia suicide predic-

tors, take appropriate action, and reduce the rate of suicide in this population. Studies with larger samples and more detailed statistical analyses are needed in order to determine suicide risks in schizophrenia and develop intervention options.

The small sample size, the single center setting, the cross-sectional design, the study's focus on the group receiving follow-up and treatment, the inclusion of only cases during the follow-up period, and the lack of evaluation of some variables, such as completed suicide data, are some of the study's limitations. It's also beneficial because it had schizophrenia patients, a difficult population to investigate, and a significant sample size.

Ethics Committee Approval:
This research complies with all the relevant national regulations, institutional policies and is in accordance with the tenets of the Helsinki Declaration, and has been approved by the Recep Tayyip Erdogan University Non-Interventional Research Ethics Committee (Ethics Committee Decision Approval Date: 21.06.2017 Decision No: 2017/125).

Informed Consent:
All the participants' and their guardians' rights were protected and written informed consents were obtained before the procedures according to the Helsinki Declaration.

Conflict of Interest:
The authors have no conflict of interest to declare.

Financial Disclosure:
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