

Violent Behavior Variables Among Patients with Schizophrenia Under Forensic Psychiatric Process: A Case-Control Study



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SUMMARY

Objective: The aim of this study is to investigate the patterns of offense and treatment outcomes in patients with schizophrenia who have exhibited violent behavior and to provide data for mental health professionals to aid in the treatment and therapeutic support of schizophrenia patients.

Methods: The subjects included in this study include a total of 52 patients with schizophrenia who had committed violent crime and who were under observation or mandatory treatment, and a control group of 31 subjects who assumed full responsibility for the crime they were accused of. Patients with schizophrenia and control subjects were examined based on the assumption that prior exhibition of violent behavior may be a determining factor for socio-demographic characteristics and the early identification of violent crime. Life-long aggressive behavior was also examined using the Overt Aggression Scale (OAS).

Results: A total of 80.7% of the patients with schizophrenia were found to be paranoid subtype. The mean age of schizophrenia, the age for the first criminal behavior and the mean age at the time of crime were significantly higher in the schizophrenic group, compared to controls. Previous criminal history, self-injurious behavior before the violent crime, and alcohol and substance use at the time of crime were found to be significantly lower in the schizophrenia group. It was found that more crimes were committed during the daytime in the schizophrenia group, in comparison to the control group. It was also observed that patients with schizophrenia primarily targeted the people around them.

Conclusion: Investigation into the behavior patterns of patients with schizophrenia exhibiting violent behavior and taking measures to manage the potential risks in these individuals may help to reduce the incidence of future violent behavior. Studies such as this one can aid in improving a patient's social measures and in protecting the people around these individuals.

Key Words: Schizophrenia, crime, violence.

INTRODUCTION

Psychiatrists often encounter the problem of potential risk for the violent behavior among patients in both the clinical and emergency setting. The vague association between mental diseases and violence has always attracted attention. This association has a specific meaning in individuals with schizophrenia.

Recent studies have shown an increased risk of violence among patients with schizophrenia. Although the increase in risk is moderate, it is statistically significant (Schanda *et al* 2010, Gu and Hu 2009). However, it is still unknown why some patients with mental disease commit violent acts while others do not. It has been reported that the incidence of violent

behavior is increased 6-8 fold in male patients with schizophrenia and 8-10 fold in female patients (Richard-Devantoy *et al* 2009). However, several studies have suggested that mental disease is not the only determining factor in violent behavior (Elbogen and Johnson 2009). A review of the literature reported that the incidence of murder in the patients with schizophrenia was 6% (Richard-Devantov *et al* 2009). The incidence of personality disorder and substance abuse or addiction among these patients was 10% and 38%, respectively (Richard-Devantov *et al* 2009).

There are several factors affecting individuals who commit murder which are related to treatable and therapeutic processes in patients with schizophrenia and other psychoses. As suggested by other studies, comorbid substance use and patient

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noncompliance may be the leading factors with respect to therapeutic intervention (Fazel *et al* 2010, Lamb *et al* 1999). Is violent behavior associated with other psychopathological factors in patients with schizophrenia? Unfortunately, there are no certain descriptive answers for this question (Swanson *et al* 2006).

There are a number of limitations in the risk management and categorization of patients with schizophrenia. The majority of patients in the highest-risk category are not associated with any damaging action (Large *et al* 2011). Inaccurate risk categorization carried out unintentionally may lead to false (unlawful) arrest for some patients and interruption in treatment for others, as well as false allocation of limited health resources (Large *et al* 2011).

In this study, we aimed to investigate the patterns of offense and treatment outcomes in among patients with schizophrenia who exhibited violent behavior, to provide data to aid mental health professionals in the treatment and therapeutic support of these patients. The results of this study may suggest novel measures to reduce the rate of violence among schizophrenia patients in the long-term.

PATIENTS and METHODS

Male patients at two of six inpatient clinics (observation service and mandatory-treatment service for male patients) in Bakirkoy Research and Training Hospital for Psychiatry, Neurology and Neurosurgery, Department of Forensic Psychiatry between March 2006 and May 2006 were included in this study. The study group included only male patients, as the number of female patients who were hospitalized was not statistically significant.

A total of 86 (54+32) of the 314 male patients in the clinics at the time were included in the study. The Department of Forensic Psychiatry, which is capable of providing service in 17 cities for 25 million people, is responsible for the mandatory treatment of all psychiatric patients. The Department also provides expertise in forensic cases in near cities as well as across the country to identify responsibility for the crime among the subjects. During the study year, a total of 757 patients in two clinics were provided mandatory treatment services to identify their responsibility for the crime. A total of 131 men (100 patients with no responsibility for the crime; 31 subjects with full responsibility for the crime) who exhibited violent crime and were under observation or mandatory treatment were assessed over a three month period. Patients without full responsibility for the crime, but with cognitive disorders including dementia, mental retardation, and amnesic disorder, and who failed to communicate verbally due to psychopathological factors or inability to speak were excluded.

Of 100 patients, 52 were diagnosed with schizophrenia, 20 with delusional disorder, 13 with bipolar disorder, nine with psychotic disorder not otherwise specified, one with alcohol-induced psychotic disorder, one with major depression (psychotic type), two with drug-induced psychotic disorder, and two with mood disorder not otherwise specified.

In the study, 52 male patients with schizophrenia who exhibited violent crime and were under observation or mandatory treatment and 30 male subjects with full responsibility for the crime and who were under observation due to having committed violent crime in the prior three month period were compared. Missing and indefinite data were excluded. Informed consent was obtained from all patients and subjects. The results were also discussed with the subjects in the context of the current literature.

The patients were diagnosed by a minimum two psychiatrists within three weeks based on the DSM-IV diagnostic criteria (American Psychiatric Association 1994). The diagnoses were confirmed by a health council consisting of five psychiatrists.

The data of this research were collected from a 73 question questionnaire regarding socio-demographic characteristics and descriptive information of the violent crime.

Life-long aggressive behavior was also examined using the Overt Aggression Scale (OAS). The scale is used to assess mild aggressions and define the type of the aggressive behavior (Yudofsky *et al* (1986), as well as to establish statistical data. It is often used to determine the extent of the spatial aggressive behavior or to compare patient groups with or without aggression. The scale is assessed by the interviewer. The interview was performed by face-to-face interview, in the presence of relatives of the patient and under clinical observation. Although validity and reliability studies have not been formally carried out in Turkey yet, many authors have conducted such studies in other countries (Kırkpınar *et al* 1995, Çetin *et al* 1999, Turan *et al* 1998, Erkıran *et al* 2001, Böke *et al* 2008).

The scale has four main categories including (i) verbal aggression, (ii) physical aggression against objects, (iii) physical aggression against self, and (iv) physical aggression against others. Each category has four groups in it ranging from mild to severe. Scoring is from 1 to 4 points. The total scores of the four categories are calculated from the sum of the scores in each group. In this study, life-long aggressive behavior was included.

Statistical analysis was performed using SPSS 11 software (Statistical Package for Social Science). The data were analyzed parametrically and non-parametrically. Student's t-test was used for the quantitative analysis, while Chi-square test was used for qualitative analysis. A *p* value of <0.05 was considered significant.

RESULTS

In the study group, of 52 male schizophrenic patients who exhibited violent crime and with no responsibility for the crime, 42 (80.7%) were diagnosed with paranoid schizophrenia, eight (15.5%) with undifferentiated schizophrenia and two (3.8%) with disorganized schizophrenia. Of 31 control subjects with full responsibility for the crime, seven subjects were diagnosed with alcohol abuse, four with substance abuse, two with alcohol and substance abuse based on the first axis of the DSM-IV. In the assessment of the second axis of the DSM-IV, 19 were diagnosed with antisocial personality disorder, one with histrionic personality disorder and one with borderline personality disorder.

The mean age at the time of study (schizophrenia group:38,17 years old), the age for the first criminal behavior (schizophrenia group:31,43 years old) and the mean age at the time of crime (schizophrenia group:34,31 years old) were higher in the patient group, compared to the controls (control group:30,58; 21,47; 28,26 years old). Highly significant differences between schizophrenia patients and controls were found in the mean age at the time of study and the mean age at the time of crime ($p<0.01$). The differences between schizophrenia patients and controls in mean age at the time of study and the age for the first criminal behavior were very highly statistically significant ($p<0.001$) (Table 1). No significant difference was found between the groups in terms of the length of education and the number of victims ($p>0.05$) (Table 1). The number of victims was one for 46 patients (88.5%), two for five patients (9.65%) and three for one patient (1.9%) in the patient group. On the other hand, the number of the victims was one

for 26 patients (83.9%), two for four patients (12.9%) and six for one patient (3.2%).

The rate of crime brought to court before violence was 32.7% in the patient group, while it was 58.1% in the controls. The difference between the groups was statistically significant ($p<0.05$) (Table 2).

The rate of self-injurious behavior before the violent crime was 38.5% in the patient group, while it was 74.2% in the controls. The difference between the groups was statistically significant ($p<0.05$) (Table 2). The OAS score in terms of life-long aggressive behavior was 11.7 in the controls, while it was 10.79 in the patient group, indicating no statistically significant difference ($p>0.05$) (Table 1). The scores of physical aggression against self were significantly higher in the control group compared to the patient group ($p<0.01$) (Table 1).

The rate of alcohol and substance abuse was 33.5% in the controls, while it was 10% in the patient group. The difference between the groups was statistically significant ($p<0.05$) (Table 2).

The rate of admission to a psychiatric institution before the violent crime was 88.5% in the patient group, while it was 54.8% in the controls. The difference between the groups was statistically significant ($p<0.001$) (Table 2).

With respect to the symptoms including delusion and hallucination at the time of crime, most of the patients (70.9%) experienced persecutory delusion, while four had delusional jealousy and four had reference delusion in this patient group. In addition, nine patients had persecutory delusion combined with auditory hallucination (Table 3).

Table 1. A comparison of the mean age, the length of education, the age at the time of crime, the age for the first crime, the age for the first hospitalization, the number of hospitalization, the length of hospitalization and OAS scores¹ in the patient and control group

	Schizophrenia group Mean±SD(N)	Control group Mean±SD(N)	t	P
Age	38.17±9.00(52)	30.58±11.95(31)	3.282	0.002**
Length of education (year)	8.38±3.93(52)	7.16±3.44(31)	1.434	0.15
Number of victims	1.13±0.39(52)	1.29±0.93(31)	0.087	0.38
Age at the time of crime	34.31±8.68(52)	28.26±11.26(31)	2.742	0.008**
Age for the first crime	31.43±9.45(52)	21.47±7.08(31)	4.976	0.001***
Number of hospitalization	4.98±4.56(50)	4.31±4.77(16)	0.502	0.61
Length of hospitalization (month)	30.40±43.28(50)	5.13±5.30(16)	2.318	0.02*
Age of first hospitalization	28.56±7.83(50)	27.64±14.74(16)	0.310	0.75
OAS total score	10.79±2.13(52)	11.77±2.13(31)	1.872	0.06
OAS Verbal	3.04±2.13(52)	3.35±0.85(31)	1.606	0.11
OAS Self	2.00±1.06(52)	2.77±1.23 (31)	3.019	0.003**
OAS Objects	1.98±0.89(52)	2.10±0.79(31)	0.596	0.55
OAS Others	3.79±0.45(52)	3.55±0.81(31)	-1.513	0.13

t: Student's t test; $p>0.05$: not significant; * $p<0.05$: significant, ** $p<0.01$: highly significant difference, *** $p<0.001$: very highly significant difference, ¹OAS: Overt Aggression Scale

Table 2. A comparison of crime brought to court before violence, self-injurious behavior before the violent crime, alcohol and substance use at the time of crime, admission to a psychiatric institution before the violent crime in the patient and control group

		Schizophrenia group		Control group		Total		x ²	sd	p
		S	%	S	%	S	%			
Literacy	Yes	51	98.1	27	87.1	78	94	4.13	1	0.04*
	No	1	1.9	4	12.9	5	6			
Previous crime	Yes	17	32.7	18	58.1	35	42.2	5.12	1	0.02*
	No	35	67.3	13	41.9	48	57.8			
Self-injurious behavior before the violent crime	Yes	20	38.5	23	74.2	43	51.8	9.93	1	0.002**
	No	32	61.5	8	25.8	40	48.2			
Alcohol and substance use at the time of crime ¹	Yes	5	10	11	35.5	16	19.8	7.84	1	0.005**
	No	45	90	20	64.5	65	80.2			
Admission to a psychiatric institution before the violent crime	Yes	46	88.5	17	54.8	63	75.9	12	1	0.001***
	No	6	11.5	14	45.2	20	24.1			

p>0.05: not significant; *p<0.05: significant, **p<0.01: highly significant difference, ***p<0.001: very highly significant difference, ¹Missing data of two patients were excluded.

Table 3. Symptomatic characteristics of schizophrenia patients at the time of crime

Symptoms at the time of crime	S	%
Persecutory delusion	20	38.4
Delusional jealousy	3	5.7
Bizarre delusion	4	7.6
Auditory hallucination	1	1.9
Visual hallucination	1	1.9
Grandiose delusion	1	1.9
Persecutory delusion + Auditory hallucination	9	17.3
Delusional jealousy + Auditory hallucination	3	5.7
Persecutory delusion + Delusional jealousy	4	7.6
Persecutory delusion + Reference delusion	4	7.6
Other	2	3.8

The time for the crime was mostly (54.2%) during the day, including morning and noon in the patient group, while it was mostly (67.7%) in the evening and at night in the control group. The difference was statistically significant between the groups (p<0.05) (Table 4).

In terms of the instruments used for the crime, the patients (44.2%) assaulted by hands, followed by sharp or blunt instruments with a rate of 34.6%. The rate of gun use was 1.9% in the patient group, while it was 9.7% in the control group. The difference was not statistically significant between the groups (p>0.05) (Table 4).

The first-degree relatives and spouses were the most common victims of the patients (46.2%), while only 10% of those assaulted by the subjects in the control group were first-degree relatives. In addition, the patients with schizophrenia targeted strangers at a lesser frequency, compared to controls (9.6% vs.

20%). This difference between groups was statistically significant (p<0.001) (Table 4).

The mortality rate following assault was 55.8% and 51.7% in the patient group and controls, respectively. Secondly, injury was commonly experienced (38.5% and 34.5% in the patient group and controls, respectively). The difference was not statistically significant between the groups (Table 4).

DISCUSSION

The majority of the schizophrenic patients (80.7%) without responsibility for the crime and who were under observation or mandatory treatment were paranoid type. In a recent study of patients with schizophrenia who committed a crime, Belli *et al* (2010) reported that the rate of paranoid type diagnosis was 87.7%. Our result is consistent with the rates suggested in the previous studies and review articles (Tardif and Koenigsberg 1985, Krakowski *et al* 19886, Kayatekin *et al* 1991, Özdemir 1992, Uygur *et al* 1992, Şeker 1996, Türkcan *et al* 2000, Öncü *et al* 2002a, Öncü *et al* 2002b, Öncü *et al* 2007, Richard-Devantoy *et al* 2009). The rate of violent behavior was significantly higher among patients with paranoid type schizophrenia. This may be explained by a lower degree of cognitive disorder and higher degree of persecutory delusion, delusional jealousy, reference delusion, and auditory command hallucinations in these patients. Clinician should be observant regarding any type of violence if psychotic disorders are present. However, our study results indicates that more attention to paranoid subtype of schizophrenia is warranted.

It has been reported that violent actions are closely related to psychotic symptoms (Krakowski *et al* 1999, Torrey 1994). They are usually considered as part of disorganized and agitated behavior or contributed to the nature of delusions and hallucinations. Persecutory delusions and hallucinations involve threat-related

Table 4. A comparison of time to crime, type of violence, and the instruments used for the crime, the familiarity of the victim, the outcome of the crime and previous violent behavior against victim in the patient and control group

	Schizophrenia group		Control group		Total				
	S	%	S	%	S	%	x ²	sd	p
Time to crime¹									
Day	27	56.2	10	32.3	37	46.8	4.35	1	0.03*
Night	21	43.8	21	67.7	42	53.2			
Type of violence and instruments used									
Sharp and blunt instrument	18	34.6	10	32.3	28	33.7	5.44	5	0.36
Gun	1	1.9	3	9.7	4	4.8			
By hand	23	44.2	14	45.2	37	44.6			
Verbal assault	8	15.4	2	6.5	10	12			
Sexual assault	-	-	1	3.2	1	1.2			
Other	2	3.8	1	3.2	3	3.6			
Familiarity of the victim									
First-degree relative / spouse	24	46.2	4	10	28	30.4	14.14	2	0.001***
Second degree relative / friend / neighbour / colleague	23	44.2	28	70	51	55.4			
Strange	5	9.6	8	20	13	14.1			
Outcome of the assault¹									
Beating	1	1.9	1	3.4	2	2.5	3.7	4	0.45
Disability	1	1.9	-	-	1	1.2			
Injury	20	38.5	10	34.5	30	37			
Killing	29	55.8	15	51.7	44	54.3			
Threat	1	1.9	3	10.4	4	5			
Previous violent behavior against victim¹									
Yes	5	10	11	35.5	16	19.8	7.84	1	0.005**
No	45	90	20	64.5	65	80.2			

p>0.05: not significant; *p<0.05: significant, **p<0.01: highly significant difference, ***p<0.001: very highly significant difference, ¹Missing data were excluded.

feelings, particularly to the self from others. Such feelings affect the mood of the patient and as a result frustrated and depressed patient react to recurrent threats (Tardiff 2000, Appelbaum *et al* 2000, Junginger 1996, Krakowski *et al* 1999). Auditory command hallucinations in particular can lead to aggressive behaviors (Torrey 1994). In our study, we also found that delusions and hallucinations were associated with violent behaviors.

Increased age in the patient group is consistent with the rates reported in the previous studies in Turkey (Şeker 1996, Öncü *et al* 2002b, Öncü *et al* 2007, Belli *et al* 2010). The studies investigating aggressive behaviors and criminal behaviors in society demonstrated that younger individuals are often more aggressive (Tardiff and Koenigsberg 1985, Krakowski *et al* 1986) within a mean age of 20-30 years (Maner *et al* 1991, Özdemir 1992, Grosman *et al.* 1995, Modestin and Amman 1996). As the majority of the subjects in the control group had antisocial personality disorder and alcohol and substance abuse, the age at crime was expected to be lower.

The mean age of the psychotic patients at the time of crime was significantly higher. In a study with similar design conducted in Turkey, no significant difference was found between similar groups in terms of the age at the time of crime (Soysal and Uygur 1993). The studies including Turkish psychotic patients also reported increased age at the time of crime. Therefore the necessity to investigate several issues including prognosis, social support, therapeutic effectiveness, and patient compliance has emerged.

The rate of crime brought to the court prior to violence was also higher in the control subjects. Öncü *et al* (2002a) reported that repetitive criminal behavior following prevention and treatment was 9% in patients with psychiatric disorder having no responsibility for the crime. In another study, the rate of previous aggressive behavior to others was 10% in psychotic patients and 20% in non-psychotic patients (Soysal and Uygur 1993). In a retrospective study of patient files, Maner *et al* (1991) found that 32% of 840 male patients had a history of previous crime. These studies suggested that the rate

of criminal behavior was higher in psychiatric patients with a history of previous crime, and the history of a patient was the major factor in the determination of criminal tendency. This result was also consistent with data published in the literature (Grosman *et al* 1995, Modestin and Amman 1996, Öncü *et al* 2002a, Turgut *et al* 2006, Yee *et al* 2011).

The rate of self-injurious behavior before the violent crime was also higher in the control group. It has been reported that the rate of self-injurious behavior, as well as suicide, was higher in the patients who exhibited aggressive behavior (Krakowski *et al* 1986). This finding may result from the subjects included who had personality disorder and history of alcohol and substance abuse.

The rate of alcohol and substance abuse was also higher in the control group. In addition, other studies have suggested that a higher rate of alcohol and substance abuse in the patients with mental disorder who committed a crime was a leading factor in determining alcohol and substance abuse behavior (Marzuk 1996, Richard-Devantoy *et al* 2009, Elbogen and Johnson 2009, Ellouze *et al* 2009, Fazel *et al* 2009). Öncü *et al.* (2002a) found the rate of alcohol and substance abuse to be 14.2% in patients without responsibility for the crime, with an increasing trend in schizophrenic patients with repetitive criminal behavior. In addition, the authors reported that substance abuse was an important risk factor for repetitive criminal behavior (Şeker 1996, Türkcan *et al* 2000). In general, schizophrenia increases the rate of violence 7-fold, while comorbid alcoholism increases the risk by more than 17 fold (Fazel *et al* 2009). Comorbid substance abuse also contributes to illegal behaviors and actions (Richard-Devantoy *et al* 2009, Schanda *et al* 2010). The reason why the rate obtained in Turkey was lower than the rates found abroad may be lower incidence of alcohol and substance abuse in Turkish population due to socio-cultural norms and conventions established in Turkey.

The rate of admission to a psychiatric institution before the violent crime was 88.5% in the patients with schizophrenia in other studies. Similarly, this rate was found to be 87.5% in a Turkish study (Belli *et al* 2010).

The higher rate of daytime criminal behaviors (56.2%) exhibited by schizophrenic patients suggested that many of the patients did not commit a crime with purpose and intention. In a national registry study conducted in Sweden, Nordström and Kullgren (2003) reported that slightly more than half (54%) of 369 schizophrenic patients committed a crime between 06:00 P.M. and 06:00 A.M (Nordström and Kullgren 2003). In our study, we found the rate of criminal behavior in the evening and at night was 43.8%.

No significant difference was found between the groups in terms of the type of criminal behavior and instruments used. A study revealed that most assaults (60%) committed

by schizophrenic patients were performed by hand, followed by knife use (18%) (Nordström and Kullgren 2003). These results are consistent with the data obtained from our study. Assaults committed by hand indicate that such actions are more impulsive and unplanned. The observation that knives as the most preferred instrument may be explained by its easy-to-find nature.

The rate of first-degree relatives and family members chosen as victims was higher in the schizophrenic patients compared to controls. These results are consistent with those reported in other studies (Tuncer *et al* 1986, Kayatekin *et al* 1991, Soysal and Uygur 1993, Şeker 1996, Nielsen *et al* 2002, Öncü *et al* 2002a, Öncü *et al* 2002b, Nordström and Kullgren 2003, Joyal *et al* 2004, Shaw *et al* 2006, Belli *et al* 2010). In general, patients with schizophrenia are less prone to exhibit violent behaviors against strangers. First-degree relatives and family members are generally targeted by these patients with a 4-fold increase in the rate of injury and murder in comparison to unknown victims (Nordström and Kullgren 2003). These may be associated with decreased social function in the course of the disease, limiting of social life to only family members and close friends, and delusions and hallucinations targeting these individuals.

On the other hand, there are several limitations to our study, including lack of follow-up design, small sample size, the absence of clinical diagnostic scales used for the assessment of first-axis and second-axis disorders, and inclusion of male patients only. In addition, the effects of the aggressive behaviors on likelihood of admission, the effect of the treatment on aggressive behaviors and the effect of patient compliance in both patient group and control subjects were not examined. Inclusion of hospitalized patients with high-risk aggressive behaviors or severe psychopathology may also limit the study. Therefore, further large-scale follow-up studies are required in Turkey.

According to contemporary psychiatry, aggressive behavior is not of utmost importance in the assessment of schizophrenia. This study reveals that schizophrenic patients commit crime mostly at age ≥ 30 , with a lower rate of self-injury and alcohol and substance abuse at the time of crime, and often commit a crime during the day targeting their relatives and family members, with decreased incidence of violent behavior before the crime compared to the individuals who commit a crime with full responsibility for the crime. Addressing these factors may help us to both prevent violent behaviors of schizophrenic patients and to understand the variables contributing to violent behaviors in schizophrenic patients distinctly from individuals without severe mental disorder and with full responsibility for the crime.

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