



## RESEARCH ARTICLE

# Clinical and offense-related characteristics of male patients with schizophrenia and schizophrenia-like psychotic disorders found not criminally responsible: A sample from Turkiye

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### ABSTRACT

**Objective:** The aim of this study is to examine a sample of male patients from Turkiye with schizophrenia and schizophrenia-like psychotic disorders for whom the medical opinion of not criminally responsible is concluded for the offense that they have committed in terms of the association between clinical and offense-related factors and being found not criminally responsible.

**Method:** Clinical features and crime characteristics' comparative analysis is made between the sample group (SG) of 51 patients, for whom the medical opinion of not criminally responsible formed and who have been diagnosed with psychotic disorders, and the control group (CG) of mentally healthy 52 people, who are responsible for their criminal acts.

**Results:** Prior offense, imprisonment, and prior personality disorder diagnosis were significantly high in the CG. Premeditation, comprehending the legal meaning of the act, expected gain, and alcohol/substance use during the offense was found at lower rates in the SG. In the SG, 78.4% had delusions and 29.4% had hallucinations during the offense. The logistic regression model showed that the absence of prior diagnosis, premeditation, expected gain, and not comprehending the legal meaning of the act were found to be the predictive factors of being found not criminally responsible.

**Conclusion:** The findings of this study might help experts' decisions about criminal responsibility, and understanding the predictors of criminal acts might help prevent these acts committed by patients. A holistic approach including sociodemographic data, case files, criminal characteristics, and psychotic symptoms is essential for experts to decide on criminal responsibility.

**Keywords:** Criminal behavior, criminal responsibility, forensic psychiatry, psychotic disorders, schizophrenia

## INTRODUCTION

The association between criminal behavior and psychiatric disorders has always been an important debate for both health and law systems. We can find references to criminal responsibility in older writings,

laws, or rules different from today's denomination. Although we see different approaches or names for criminal responsibility even in ancient societies, the general idea is "not to punish the one with mental health problems" (1). This old and simple background may seem a solid basis for today's approach, but

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every nation has a law that makes it difficult to compare and find “one and true solution” for approaching offenders with psychiatric disorders (2).

Psychotic disorders are dominant in the studies consisting of not criminally responsible or forensic samples (3,4). Fazel et al. (5) showed that patients with schizophrenia had a 1.2 increased risk for violent criminal acts compared to the general population, but substance abuse comorbidity increases the risk four times compared to nonsubstance user schizophrenia patients. When sex is compared, it is noticed that male patients with schizophrenia comprise a larger part of the offenders with schizophrenia, similar to the higher frequency of male offenders in the general population (2). Despite few studies showing no additional risk for schizophrenia patients, there are studies showing a 6–10-fold increased risk of violence for men and an 8–10-fold increased risk of violence for women with schizophrenia (6). The majority of studies include participants in their forties, older than the expected mean age in the general offender population. This may be a result of late processes of legal procedures including examination of criminal responsibility, but may also give us an idea about the late occurrence of criminal behavior in patients with psychiatric disorders (2).

Studies conducted on patients with psychotic disorders show an increased risk of violence with comorbid substance abuse, nonadherence to treatment, and existence of psychotic symptoms (7–11). Lack of insight, which relates to nonadherence to treatment, also increases the risk for violent actions (12). Despite the studies showing no relation between delusions or hallucinations and violence, there are studies that show otherwise (13–16). Persecutory delusions and auditory hallucinations of command and threat are found to be related to both organized and impulsive violent acts (17). In their study in 2006, Laajasalo and Häkkänen (18) analyzed 125 schizophrenia patients who had committed homicide. It was found that 92.8% of patients had at least one psychotic symptom at the time of the criminal act.

Impulsivity and aggression are important traits to be taken into consideration, especially in violent offenders (19,20). The study comparing aggression and impulsivity between patients with schizophrenia or schizoaffective disorder and the healthy population shows that impulsivity scores are higher in the patient group and the Positive and Negative Syndrome Scale (PANSS) total scores are positively correlated with Buss–Perry Aggression Questionnaire (BPAQ) total scores (21). Although some studies point out that

pathological impulsivity is a core feature of schizophrenia (22) and executive function deficits may cause reduced capacity for inhibitory control and lead to impulsivity, it is also thought that impulsivity is a personality trait besides psychotic disorders (23).

Much information should be obtained from various sources before making a decision about criminal responsibility such as the offender’s background, childhood experiences, employment, physical or mental illnesses, alcohol or substance use history, and previous acts of crime or imprisonment. Case files are the vital link between expertise and the act of crime. Offenders’ and victims’ statements and the flow of the criminal act can be seen, but, most important, any suspicion about “mental illness” may be recognized. If there is not any evidence of mental illness in the person who claims to be mentally ill, potential malingering should be taken into consideration (24,25).

To date, there are insufficient numbers of studies examining the relationship between clinical and offense-related factors and expert opinion on the assessment of criminal responsibility. The aim of this study is to examine a sample of patients from Türkiye with psychotic disorders for whom the medical opinion of not criminally responsible is concluded for the offense that they have committed in terms of the association between clinical and offense-related factors and being found not criminally responsible.

## METHOD

### Participants, Study Design, and Procedure

This cross-sectional study was performed in Bakirkoy Prof. Dr. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology, and Neurosurgery (Istanbul), which has the earliest and most experienced forensic psychiatry specialist unit in Türkiye (20,26). It primarily provides forensic psychiatric services to 17 cities mainly, but courts all over Türkiye may demand criminal responsibility evaluation and compulsory treatment be performed there. People were taken under stationary (observation) mental examination in the hospital in accordance with Turkish Penal Procedure Code Article 74, for at most 3 weeks duration and reports were prepared due to Turkish Penal Code Article 32/1, which indicates “a penalty should not be imposed on a person who, due to mental disorder, cannot comprehend the legal meaning and consequences of the act he has committed, or if, in respect of such act,

his ability to control his behaviour was significantly diminished. However, security measures shall be imposed for such persons" (27,28).

The study was approved by the local Ethics Committee [IRB: 08.01.2019–2019/265]. The study sample consisted of male individuals who were admitted to our forensic psychiatry unit for the evaluation of criminal responsibility between January 2019 and September 2019. We only screened male patients due to the availability of insufficient data on female subjects during the study period. Within the designated time frame of the study, 140 consecutive male subjects between 18 and 65 years of age were initially identified and enrolled in the study. Subjects were excluded from the study if they met one or more of the following criteria: having a diagnosis of intellectual disability, mood disorders, or organic mental disorders (n=7), malingered subjects (n=5), refusal of participation/consent (n=8), uncooperativeness to psychometric instruments (n=3), having missing case files and records that prevented obtaining comparable data (n=2), and being found as having diminished or full responsibility (n=12). After applying the exclusion criteria, the final sample group (SG) comprised 51 patients who were diagnosed with schizophrenia, schizoaffective disorder, or unspecified (atypical) psychotic disorder according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). The control group (CG) is made up of 52 people who were sent for forensic psychiatric evaluation for our unit and do not have current or prior psychotic or mood disorder. The CG consisted of subjects who were of those concluded criminally responsible for the offense they committed. Written informed consent was obtained from all patients and, if any, their legal representatives/guardians were explained of the study procedure.

For all participants, we collected information about prior medical and criminal backgrounds, diagnoses, and treatments from the interview with the participant, family members, case files, and medical applications if it exists. Substantial clinical symptoms and information about the features of the criminal acts before, after, and during the crime were also gathered from case files. We gathered information about offenders' thought contents and psychiatric situations by examining them, investigating case files, interviewing family members, and obtaining any voluntary or forced medical application just before or after the crime if it exists. Reports containing the criminal responsibility

decisions of the participants were prepared by the medical board of the hospital by examining the observations by the forensic clinic, medical tests, clinical examination, overall medical history, and case documents. Sociodemographic, Clinical and Forensic Data Form, Barratt Impulsiveness Scale (BIS-11), and BPAQ were administered to all participants. PANSS and Schedule for Assessing the Three Components of Insight (SAI) were applied to subjects found not criminally responsible.

### Evaluation Instruments

#### *Sociodemographic, Clinical, and Forensic Data Form*

This detailed form was prepared by the researchers for collecting data about participants' demographics, medical history, clinical, and information related to the index offense (e.g., planning before the criminal act and hiding or fleeing after the criminal act). The data were acquired via interviews with participants and family members, examination of the case files, and past medical registrations of the participants.

#### *Barratt Impulsiveness Scale*

BIS-11 is a self-report scale to measure impulsiveness that was developed by Barratt. It has 30 items with a 4-point Likert-type and 3 subscales: attention, cognitive instability, and motor impulsiveness. The addition of the subscales gives the total score of the scale, and the higher total score of BIS-11 shows a higher level of impulsiveness (29). The Turkish version of the scale was adopted by Gulec et al. (30).

#### *Buss–Perry Aggression Questionnaire*

BPAQ was developed by Buss and Perry (31) and consists of 29 items that are divided into 4 subscales (physical aggression, verbal aggression, anger, and hostility). These 29 self-administered items are rated on a 5-point Likert scale, and a higher total score indicates higher aggression. The Turkish version of the scale was developed by Madran (32).

#### *Positive and Negative Syndrome Scale*

PANSS is used to evaluate the severity levels of the symptoms of patients with psychotic disorders. The scale was developed by Kay et al. (33), and the Turkish version of it was adapted by Kostakoglu et al. (34). It has 30 items with a 7-point Likert-type scale, and they are divided into three subscales as 7 items on the positive symptom subscale, 7 items on the negative symptom subscale, and 16 items on the general psychopathology subscale.

**Table 1: Sociodemographic and prior psychiatric diagnostic features of the SG and CG**

	SG, M±SD (n=51)		CG, M±SD (n=52)		t/Z	p
	n	%	n	%	$\chi^2$	
Age (years)	34.10±9.32		34.10±9.09		t=0.001	0.999
Education (years)	8.35±3.21		7.50±3.15		Z=1.191	0.234
Marital status					3.78	0.052
Married	6	11.8	14	26.9		
Not married	45	88.2	38	73.1		
Employment					7.69	<b>0.021</b>
Regular	3	5.9	12	23.1		
Irregular	5	9.8	8	15.4		
None	43	84.3	32	61.5		
Prior offense					5.91	<b>0.015</b>
Yes	38	74.5	48	92.3		
No	13	25.5	4	7.7		
Prior imprisonment					6.51	<b>0.011</b>
Yes	27	52.9	40	76.9		
No	24	47.1	12	23.1		
Alcohol use					2.17	0.140
Yes	24	47.1	32	61.5		
No	27	52.9	20	38.5		
Substance use					0.23	0.628
Yes	27	52.9	30	57.7		
No	24	47.1	22	42.3		
Prior psychiatric diagnosis					31.88	<b>&lt;0.001</b>
Yes	42	82.4	14	26.9		
No	9	17.6	38	73.1		
Prior personality disorder diagnosis					5.11	<b>0.024</b>
Yes	3	5.9	11	21.2		
No	48	94.1	41	78.8		

SG: Sample group (not responsible); CG: Control group (fully responsible); M: Mean; SD: Standard deviation; t: Independent samples t-test; Z: Mann–Whitney U test;  $\chi^2$ : Chi-squared. P<0.05 represents statistical significance (bold values).

### *Schedule for Assessing the Three Components of Insight*

This scale was developed by David (35) and divides insight into three subscales as treatment compliance, awareness of the illness, and relabeling psychotic experiences correctly. We used the first 7 questions of the scale as the eighth question (last question) is hypothetical. The Turkish version of the scale was developed by Arslan et al. (36).

### **Statistical Analysis**

SPSS 20 for Windows (SPSS, Inc., USA) statistical package program has been used in the study. The data were assessed by means of parametric and nonparametric statistical analyses. As descriptive statistics, the mean, standard deviation, and

percentage values have been presented. In respect of quantitative data, it has first been investigated whether or not they are distributed normally with the Kolmogorov–Smirnov test. The independent t-test was used for the comparison of two groups with normal distribution, and the Mann–Whitney U test was used for the comparison of the data of two groups without normal distribution. The Chi-squared test was used for the comparison of categorical variables, and Binary Multiple Logistic Regression Analysis was used for multivariate analyses where the result variable has a binary feature. The logistic regression analysis was used to determine the predictors of being found not criminally responsible. A value of p<0.05 was considered significant.

## RESULTS

When the sociodemographic features of SG and CG were compared, the mean age of the SG was  $34.10 \pm 9.32$  years (min=20, max=57), and for the CG, it was  $34.10 \pm 9.09$  years (min=18, max=51). The duration of education for the SG was  $8.35 \pm 3.21$  years (min=3, max=14, median=8), it was  $7.50 \pm 3.15$  years (min=1, max=14, median=7.50) for the CG. About 84.3% (n=43) of the SG and 61.5% of the CG (n=32) were not employed, and it was significantly higher in the SG ( $p=0.021$ ,  $\chi^2=7.69$ ). Of the participants in the CG, 92.3% (n=48) committed at least one prior offense, and 76.9% (n=40) of the same group had at least one prior imprisonment. Both scores were significantly higher in the CG ( $p=0.015$ ,  $\chi^2=5.91$ ,  $p=0.011$ ,  $\chi^2=6.51$ ). There was no significant difference in alcohol or substance use. The sociodemographic and prior psychiatric diagnostic features are shown in Table 1.

We documented 27 different crime types (single and combined), but the most committed three offenses by the SG were malicious injury (n=12, 23.5%), malicious injury and defamation (n=10, 19.6%), and homicide (n=4, 7.8%). Malicious injury (n=8, 15.4%), robbery (n=6, 11.5%), and sexual harassment (n=4, 7.7%) were the three most committed criminal actions by the CG. Table 2 displays the characteristics of the offenses and the condition of the offenders before, after, and during the offense. When the victims of the criminal actions are compared, we found that 31.4% (n=16) of the SG and 13.5% (n=7) of the CG committed offenses against family members. Twelve (23.5%) of the SG committed offenses against acquaintances and 14 (27.5%) committed offenses against strangers. For the CG, the values were 9 (17.3%) and 21 (40.4%), respectively. "Other" in Table 2 includes offenses against objects and public order offenses such as propaganda of a terrorist organization, absconding, and possession of illegal drugs or firearms.

The SG committed 39.2% (n=20) of their offenses in a household, and it was significant ( $p=0.005$ ). Alcohol or substance influence at the time of the offense was found to be 36.5% (n=33) of the CG, and it was significantly higher ( $p=0.016$ ,  $\chi^2=5.78$ ). Of the total participants, 47.1% (n=24) of the SG and 28.8% (n=15) of the CG used a weapon (e.g., firearms, knives, and sticks) during the crime, and there was no significant difference between the two groups. Premeditation was found to be high ( $p<0.037$ ,  $\chi^2=4.35$ ), and comprehending the legal meaning of the act ( $p<0.001$ ,  $\chi^2=13.62$ ) was found to be significantly high in the CG.

The expected gain was found to be a primary motive for the 88.5% (n=46) of the CG, which was significantly higher ( $p<0.001$ ,  $\chi^2=49.20$ ) (Table 2).

Although there was no significant difference between the two groups for fleeing the crime scene ( $p=0.173$ ), hiding after the criminal act was significantly higher in the CG ( $p=0.001$ ,  $\chi^2=11.60$ ). Only 24 of the SG and 17 of the CG had medical reports completed just after the arrests, but the existence of psychiatric symptoms was significantly higher in the SG ( $p<0.001$ ,  $\chi^2=12.17$ ). There was no significant difference between the two groups' count of police station statements. However, 96.2% (n=50) of the CG provided statements both at the public prosecutor's office and court, and they were significantly higher in the CG ( $p<0.001$ ,  $\chi^2=19.17$ ,  $\chi^2=12.21$ ). When we calculated the time from crime to admission for evaluation, the mean $\pm$ SD month was  $19.24 \pm 23.63$  for the SG and  $32.38 \pm 30.58$  for the CG, which shows a significant difference ( $p=0.004$ ,  $Z=-2.88$ ) (Table 2).

When the clinical features and the diagnoses of both groups are compared, 51% (n=26) of the SG was diagnosed with unspecified (atypical) psychotic disorder, 1 had an antisocial personality disorder, and 1 had substance abuse disorder comorbidity. Nineteen of the SG were diagnosed with schizophrenia, while 6 were diagnosed with schizoaffective disorder. The mean $\pm$ SD PANNS positive score was  $24.84 \pm 10.16$ , while the total score was  $89.49 \pm 22.19$  as shown in Table 3. The mean $\pm$ SD SAI score was  $3.18 \pm 3.26$ . Forty patients had delusions, and 15 patients experienced hallucinations during the offense. Persecutory delusion simultaneously with another delusion (n=25, 62.5%) was the most frequent delusion subtype. Six patients experienced persecutory delusions only. Fifteen patients suffered from hallucinations, while only 1 experienced visual hallucinations. While 14 patients were found to have auditory hallucinations, 7 of them were insulting subtypes (Table 3).

Table 4 presents the comparison of BPAQ and BIS scores between the SG and the CG. Only the verbal aggression subscale was significantly higher in the CG ( $p=0.008$ ,  $Z=-2.63$ ), while other subscales and total scores of BPAQ and BIS show no difference between the two groups.

The multivariate logistic regression model shows that when prior psychiatric diagnosis, premeditation, comprehending the legal meaning of the act, statement at the public prosecutor's office, expected gain as a primary motive, time from crime to

**Table 2: Characteristics surrounding the index offense**

	SG, M±SD (n=51)		CG, M±SD (n=52)		$\chi^2$	p
	n	%	n	%		
Crime committed against					6.84	0.077
Family	16	31.4	7	13.5		
Acquaintance	12	23.5	9	17.3		
Stranger	14	27.5	21	40.4		
Other	9	17.6	15	28.8		
Crime scene					10.53	<b>0.005</b>
Household	20	39.2	6	11.5		
Public	27	52.9	39	75.0		
Digital	4	7.8	7	13.5		
Alcohol/substance use during offense					5.78	<b>0.016</b>
Yes	8	15.7	19	36.5		
No	43	84.3	33	63.5		
Use of a weapon					3.63	0.057
Yes	24	47.1	15	28.8		
No	27	52.9	37	71.2		
Premeditation					4.35	<b>0.037</b>
Yes	25	49.0	36	69.2		
No	26	51.0	16	30.8		
Comprehending the legal meaning of the act					13.62	<b>&lt;0.001</b>
Yes	21	41.2	40	76.9		
No	30	58.8	12	23.1		
Expected gain as primary motive					49.20	<b>&lt;0.001</b>
Yes	10	19.6	46	88.5		
No	41	80.4	6	11.5		
Fleeing the crime scene					1.86	0.173
Yes	15	29.4	22	42.3		
No	36	70.6	30	57.7		
Hiding					11.60	<b>0.001</b>
Yes	2	3.9	15	28.8		
No	49	96.1	37	71.2		
Psychiatric symptom in medical report after arrest					12.17	<b>0.001</b>
Yes	16	66.7	2	11.8		
No	8	33.3	15	88.2		
Statement at police station					1.173	0.279
Yes	40	78.4	45	86.5		
No	11	21.6	7	13.5		
Statement at prosecutor's office					19.17	<b>&lt;0.001</b>
Yes	31	60.8	50	96.2		
No	20	39.2	2	3.8		
Statement at court					12.21	<b>&lt;0.001</b>
Yes	36	70.6	50	96.2		
No	15	29.4	2	3.8		
Time from crime to admission (months)	19.24±23.63		32.38±30.58		-2.88	<b>0.004</b>

SG: Sample group (not responsible); CG: Control group (fully responsible); M: Mean; SD: Standard deviation; t: Independent samples t-test; Z: Mann-Whitney U test;  $\chi^2$ : Chi-squared. P<0.05 represents statistical significance (bold values).

**Table 3: Final diagnoses by the medical board, symptoms during the offenses, PANNS, and SAI scores of the SG**

	n	%
Diagnose		
Unspecified (atypical) psychotic disorder	26	51.0
Schizophrenia	19	37.3
Schizoaffective disorder	6	11.8
Delusions*	40	
Persecutory and another	25	62.5
Persecutory	6	15.0
Reference	4	10.0
Reference and another	2	5.0
Bizarre and another	1	2.5
Bizarre	1	2.5
Erotomanic	1	2.5
Hallucinations†	15	
Visual	1	6.7
Auditory	14	93.3
Insulting	7	46.7
Threatening	2	13.3
Commanding	2	13.3
Commanding violent act	1	6.7
Calling his name	1	6.7
Other	1	6.7
	<b>M±SD</b>	
PANNS positive	24.84±10.16	
PANNS negative	21.86±6.86	
PANNS general psychopathology	42.69±9.65	
PANNS total	89.49±22.19	
SAI	3.18±3.26	

M: Mean; SD: Standard deviation; PANNS: Positive and Negative Syndrome Scale; SAI: Schedule for Assessing the Three Components of Insight; \*: Of the sample group, 78.4% (n=40) experienced delusions during the offense; †: About 29.4% (n=15) of the sample group experienced hallucinations during the offense.

admission, and use of a weapon in the model are included, it is found that  $\chi^2=20.843$ ; df 8;  $p=0.008$ , and total correct classification percentage of the model 90.3% (Table 5). The absence of a statement at the public prosecutor's office independently increases the probability of being found not criminally responsible by 39.122 times. Not being able to comprehend the legal meaning of the act increases the probability of being found not criminally responsible by 35.899 times, and if the primary motive is not an expected gain, the probability increases by 32.281 times. The logistic regression analysis explains 83.3% (Nagelkerke  $R^2$  of 0.833) of total cases.

## DISCUSSION

The study's aim was to identify which clinical and offense-related factors are associated with being found not criminally responsible by comparing fully responsible offenders and not criminally responsible patients with schizophrenia and schizophrenia-like psychotic disorders. Sociodemographic factors, prior psychiatric diagnoses, crime scene behaviors, and psychotic symptoms of the patients were taken into consideration. We also documented the aggression scores with BPAQ and impulsivity scores with BIS for both groups. We have found that the presence of a prior psychiatric diagnosis, the absence of the offender's statement at the public prosecutor's office, and the absence of an expected gain as a primary motive were significantly associated with being found not criminally responsible in a sample of offenders who underwent forensic psychiatric evaluation.

Lack of regular employment in patients was found to be similar to former studies but the high rate of unemployment in the CG was also an important finding which may cause a criminal act, especially for material gain (37,38). Prior criminal acts are strong precursors of another act of crime, and both groups showed high rates of prior offense. However, prior offense and prior imprisonment were significantly higher in the CG, similar to the literature (39). The indifference between both groups' alcohol and substance use history is a noteworthy finding. We found higher rates of alcohol and substance use by forensic psychiatry patients with psychiatric disorders than rates documented nearly 20 years ago in Türkiye (40,41). The increasing use of alcohol and substances by patients with psychotic disorders might be a result of increasing accessibility of them and is an important finding that should not be avoided.

We found the existence of prior psychiatric diagnoses (psychotic disorders, mood disorders, and alcohol or substance use disorders) before contact with the law higher in the SG than in the CG, similar to the literature (39). Only 17.6% (n=9) of the SG had their first contact with psychiatry after the criminal act. This is a different finding from Nielssen and Large's meta-analysis, which shows one in three patients committed an offense during the first psychotic episode (42). Optimistically, we may assume that psychiatry reached out to a large number of patients before acts of crime were committed, but in contrast, it is possible to think that we failed to observe our patients and keep them in treatment, resulting in them committing offenses.

**Table 4: Comparison of BPAQ and BIS scores of the SG and the CG**

	SG, M±SD (n=51)	CG, M±SD (n=52)	t/Z	p
<b>BPAQ</b>				
Physical aggression	10.45±7.42	12.04±7.73	t=-1.06	0.291
Verbal aggression	6.10±4.21	8.54±4.90	Z=-2.63	<b>0.008</b>
Anger	9.69±6.17	11.71±6.87	t=-1.57	0.119
Hostility	11.43±7.96	14.10±7.54	t=-1.74	0.084
Total	37.67±23.10	46.38±22.38	t=-1.94	0.055
<b>BIS-11</b>				
Attention	31.82±7.29	34.53±8.12	t=-1.78	0.078
Motor	14.17±3.46	15.07±3.93	Z=-1.18	0.235
Nonplanning	21.74±3.01	22.34±4.29	t=-0.08	0.414
Total	67.74±12.18	71.96±14.64	t=-1.58	0.116

SG: Sample group (not responsible); CG: Control group (fully responsible); M: Mean; SD: Standard deviation; t: Independent samples t-test; Z: Mann-Whitney U test;  $\chi^2$ : Chi-squared; BPAQ: Buss-Perry Aggression Questionnaire; BIS-11: Barratt Impulsiveness Scale; P<0.05 represents statistical significance (bold values).

**Table 5: Logistic regression analysis model for being found not criminally responsible**

	B	SE	p	OR	95% CI for exp(B)
Prior psychiatric diagnosis (no/yes)	-5.170	1.387	< <b>0.001</b>	<b>0.006</b>	0.000–0.086
Premeditation (no/yes)	1.627	1.005	0.105	5.090	0.710–36.465
Comprehending the legal meaning of the act (no/yes)	3.581	1.214	<b>0.003</b>	<b>35.899</b>	3.332–387.920
Statement at prosecutor's office (no/yes)	3.667	1.717	<b>0.033</b>	<b>39.122</b>	1.351–1133.282
Expected gain as primary motive (no/yes)	3.474	0.985	< <b>0.001</b>	<b>32.281</b>	4.686–222.363
Time from crime to admission (months)	0.036	0.019	0.061	1.036	0.998–1.076
Use of a weapon (no/yes)	-1.367	0.931	0.142	0.255	0.041–1.581

$\chi^2$ : 20.843; df: 8; p: 0.008; Cox & Snell R<sup>2</sup>=0.624; Nagelkerke R<sup>2</sup>=0.833; total correct classification = 90.3%; p<0.05 statistically significant (bold values); SE: Standard error; OR: Odd ratios; CI: Confidence interval.

Former studies showed that patients diagnosed with mental illness commit offenses against family members or acquaintances (38,43–46). Although we found a high rate of family members or acquaintances as victims, it was not significant (p=0.077) in our study. This may be a result of a small sample group or the inclusion of offenses against objects, public order, and offenses committed in digital areas. Although there is no significant difference, we found that 54.9% of the SG (n=28) committed offenses against a family member or an acquaintance, which may relate to higher rates of offenses being committed by the SG in the residences where they live with family members or acquaintances. Higher rates of premeditation and comprehending the legal meaning of the act were found in the CG, which leads us to assume that organized acts of crime were committed by the offenders with no major psychiatric disorder and they were aware of what they were doing and the consequences. Primary motive as an expected

gain (e.g., any kind of material gain, superiority over the victim) was found higher in the CG.

Although no difference was found between the groups in the use of a weapon, nearly half of the SG used a weapon during the offense. It differs from the study by Nordström and Kullgren who found 66% of the patients committed offenses with bare hands (43). However, when we examine the weapons that were used by the patients, it shows us that the majority of them can be found in any home or need no organization to possess. Only 2 of the 24 weapons were firearms and half of them were knives.

Alcohol or substance influence during the time of the offense was found higher in the CG, similar to the earlier study by Ural et al. (46), in which they found 10% (n=5) of the patients with schizophrenia and 35.5% (n=11) of the control group were under the influence of alcohol or substance. Only 8 (15.7%) patients had used either alcohol or substance just



before the index offense, while 19 (36.5%) of the CG were intoxicated during the criminal act in our study.

Higher rates of any kind of psychiatric symptom in the medical reports just after the arrest were found in the SG. No difference was found between the two groups regarding statements given in the police station, but higher rates of statements given at the prosecutor's office and court were found in the CG. In Türkiye public prosecutors initiate and conduct investigations on behalf of the public. During an investigation, the public prosecution either takes statements of suspects, victims and witnesses itself or gives instruction to law enforcement to take statements. The prosecutor's office either takes the statement of the victim or the accused herself or asks the law enforcement officers to take it upon instruction. Police reports containing psychiatric symptoms are important evidence for understanding the offenders' mental status at the time of the criminal acts (24). The shorter duration between the offense and hospitalization for observation of the SG supports the early realization of mental illness. It is possible that the family members try to use this as an opportunity for treatment, especially if the patient is nonadherent to treatment, and so they may present old documents about the patient's treatment background. On the other hand, delayed claims of mental illness by the CG may be used as an attempt to find a way of the allegations.

Our study did not include the comparison of the offender and nonoffender psychotic patients; however, Table 3 shows high scores of PANNS and low scores of SAI. We can assume that lack of insight leads to nonadherence to treatment, psychotic episodes, and potential criminal acts (12). Because all the participants of the study were offenders, the comparison of BPAQ and BIS scores of the SG and the CG did not display any significant difference (except higher scores of verbal aggression in the CG) as we expected.

The logistic regression model shows that not being able to comprehend the legal meaning of the act, absence of any kind of expected gain motive, the existence of a prior psychiatric diagnosis, and absence of statement at the prosecutor's office independently increase the probability of being not criminally responsible. Not being able to comprehend the legal meaning of the act is one of the most important bases of criminal irresponsibility both in law and literature (2). Organized and planned (premeditated) criminal act with any kind of expected gain was found at lower rates in SG (40), and prior psychiatric diagnosis, especially with nonadherence to treatment, was also found to be an increased risk factor for criminal action compatible with literature (8,10).

Our study has several limitations. The study sample comprised a small number of offenders (only 103 male subjects). There was no participant in the SG who had been diagnosed with delusional disorder or schizophreniform disorder by the medical board, so our study lacks these diagnoses although we had not excluded them. Comparing the offenders with psychotic disorders and the offenders without any major disorders led us to distinguish the factors which may increase the possibility of being found not criminally responsible, but it also prevented us from distinguishing the offender and non-offender psychotic patients and the impacts of the psychotic symptoms. Self-measured scales such as BPAQ and BIS were filled by the participants so that as a person under observation for criminal responsibility, it was a possible obstacle that they minimize their aggression and impulsivity patterns and fill the scales to be recognized as a more acceptable personality.

## CONCLUSION

Comprehensive and careful documentation of prosecution processes, a thorough examination of prior medical records particularly covering the time of the criminal act, and understanding the motivation and other characteristics of the criminal behavior are essential for an accurate evaluation of criminal responsibility.

As criminal laws differ from nation to nation and it is hard to find one principle about criminal responsibility, more research and observations about criminal responsibility around the world would help to decrease conflicts about the subject, help both medical and justice systems and reduce their burdens, and perhaps most importantly increase the understanding of psychotic patients who commit offenses and prevent them before they happen. More studies with higher number of participants and examinations with structured tools are required to understand the nature of the criminal acts and the criminal responsibility processes.

Contribution Categories		Author Initials
Category 1	Concept/Design	M.B., F.O.
	Literature review	M.B.
	Data analysis/Interpretation	F.O.
Category 2	Drafting manuscript	M.B.
	Critical revision of manuscript	F.O.
Category 3	Final approval and accountability	M.B., F.O.
Other	Supervision	F.O.

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## REFERENCES

- van der Wolf M, van Marle H. Legal Approaches to Criminal Responsibility of Mentally Disordered Offenders in Europe: In Goethals K (editor). *Forensic Psychiatry and Psychology in Europe*. First ed. Berlin: Springer, 2018, 31-44. [CrossRef]
- Tsimploulis G, Niveau G, Eytan A, Giannakopoulos P, Sentissi O. Schizophrenia and criminal responsibility: A systematic review. *J Nerv Ment Dis* 2018; 206:370-377. [CrossRef]
- Degl'Innocenti A, Hassing LB, Lindqvist AS, Andersson H, Eriksson L, Hanson FH, et al. First report from the Swedish national forensic psychiatric register (SNFPR). *Int J Law Psychiatry* 2014; 37:231-237. [CrossRef]
- Hodgins S, Müller-Isberner R, Allaire JF. Attempting to understand the increase in the numbers of forensic beds in Europe: a multi-site study of patients in forensic and general psychiatric services. *Int J Forensic Ment Health* 2006; 5:173-184.
- Fazel S, Långström N, Hjern A, Grann M, Lichtenstein P. Schizophrenia, substance abuse, and violent crime. *JAMA* 2009; 301:2016-2023. [CrossRef]
- Richard-Devantoy S, Olie JP, Gourevitch R. Risk of homicide and major mental disorders: A critical review. *Encephale* 2009; 35:521-530. [CrossRef]
- Cuffel BJ, Shumway M, Choujian TL, McDonald T. A longitudinal study of substance use and community violence in schizophrenia. *J Nerv Ment Dis* 1994; 182:704-708. [CrossRef]
- Walsh E, Gilvarry C, Samele C, Harvey K, Manley C, Tyrer P, et al. Reducing violence in severe mental illness: randomised controlled trial of intensive case management compared with standard care. *BMJ* 2001; 323:1093-1096. [CrossRef]
- Swanson JW, Holzer CE, Ganju VK, Jono RT. Violence and psychiatric disorder in the community: Evidence from the epidemiologic catchment area surveys. *Hosp Community Psych* 1990; 41:761-770. [CrossRef]
- Swartz MS, Swanson JW, Hiday V, Borum R, Wagner HR, Burns BJ. Violence and severe mental illness: the effects of substance abuse and nonadherence to medication. *Am J Psychiatry* 1998; 155:226-231. [CrossRef]
- Taylor PJ. Motives for offending among violent and psychotic men. *Br J Psychiatry* 1985; 147:491-498. [CrossRef]
- Witt K, Van Dorn R, Fazel S. Risk factors for violence in psychosis: systematic review and meta-regression analysis of 110 studies. *PLoS One* 2013; 8:e55942. [CrossRef]
- Swanson JW, Swartz MS, Van Dorn RA, Elbogen EB, Wagner HR, Rosenheck RA, et al. A national study of violent behavior in persons with schizophrenia. *Arch Gen Psychiatry* 2006; 63:490-499. [CrossRef]
- Appelbaum PS, Robbins PC, Monahan J. Violence and delusions: Data from the MacArthur violence risk assessment study. *Am J Psychiatry* 2000; 157:566-572. [CrossRef]
- Elbogen EB, Johnson SC. The intricate link between violence and mental disorder: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry* 2009; 66:152-161. [CrossRef]
- McNiel DE, Eisner JP, Binder RL. The relationship between command hallucinations and violence. *Psychiatr Serv* 2000; 51:1288-1292. [CrossRef]
- Felthous AR. Schizophrenia and impulsive aggression: A heuristic inquiry with forensic and clinical implications. *Behav Sci Law* 2008; 26:735-758. [CrossRef]
- Laajasalo T, Häkkinen H. Excessive violence and psychotic symptomatology among homicide offenders with schizophrenia. *Crim Behav Ment Health* 2006; 16:242-253. [CrossRef]
- Stanford MS, Mathias CW, Dougherty DM, Lake SL, Anderson NE, Patton JH. Fifty years of the Barratt Impulsiveness Scale: An update and review. *Pers Individ Differ* 2009; 47:385-395.
- Balcioglu YH, Balcioglu SSK, Oncu F, Turkcan A, Yorulmaz AC. Impulsive and aggressive traits and increased peripheral inflammatory status as psychobiological substrates of homicide behavior in schizophrenia. *Eur J Psychiatry* 2022; 36:207-214. [CrossRef]
- Nolan KA, D'Angelo D, Hoptman MJ. Self-report and laboratory measures of impulsivity in patients with schizophrenia or schizoaffective disorder and healthy controls. *Psychiatry Res* 2011; 187:301-303. [CrossRef]
- Ouzir M. Impulsivity in schizophrenia: a comprehensive update. *Aggress Violent Behav* 2013; 18:247-254. [CrossRef]
- Enticott PG, Ogloff JR, Bradshaw JL, Fitzgerald PB. Cognitive inhibitory control and self-reported impulsivity among violent offenders with schizophrenia. *J Clin Expe Neuropsychol* 2008; 30:157-162. [CrossRef]
- Giorgi-Guarnieri D, Janofsky J, Keram E, Lawskey S, Merideth P, Mossman D, et al. AAPL practice guideline for forensic psychiatric evaluation of defendants raising the insanity defense. *J Am Acad Psychiatry Law* 2002; 30:3-40.
- Oncu F, Sercan M. Forensic Psychiatry in Penal Code: In Uygur N (editor). *Forensic Psychiatry Practice Guide*. Second ed. Ankara: Psychiatric Association of Turkey Publications, 2014, 40-72. [Turkish]
- Balcioglu YH, Kirlioglu Balcioglu SS, Oncu F, Turkcan A. Psychopathy, temperament, and character dimensions of personality as risk determinants of criminal recidivism in schizophrenia patients. *J Forensic Sci* 2021; 66:2340-2353.

27. Republic of Turkey Legislation Information System. Criminal Procedure Law. <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5271&MevzuatTur=1&MevzuatTertip=5>. Accessed Jan 15, 2021. [Turkish]
28. Republic of Turkey Legislation Information System. Turkish Penal Code <https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5237&MevzuatTur=1&MevzuatTertip=5>. Accessed Jan 15, 2021. [Turkish]
29. Patton JH, Stanford MS, Barratt ES. Factor structure of the Barratt impulsiveness scale. *J Clin Psychol* 1995; 51:768-774.
30. Gülec H, Tamam L, Turhan M, Karakuş G, Zengin M, Stanford MS, et al. Psychometric properties of the Turkish version of the barratt impulsiveness Scale-11. *Psychiatry Clin Psychopharmacol* 2008; 18:251-258.
31. Buss A, Perry M. The aggression questionnaire. *J Pers Soc Psychol* 1992; 63:452-459. [CrossRef]
32. Madran, HAD. The reliability and validity of the Buss-Perry Aggression Questionnaire (BAQ). *Turk Psikiyatri Derg* 2013; 24:124. [Turkish].
33. Kay SR, Fiszbein A, Opler LA. The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 1987; 13:261-276. [CrossRef]
34. Kostakoglu E, Batur S, Tiryaki A, Gögüs AP. The reliability and validity of the positive and negative syndrome scale. *Turk Psikol Derg* 1999; 14:23-32. [Turkish]
35. David AS. Insight and psychosis. *Br J Psychiatry* 1990; 156:798-808. [CrossRef]
36. Arslan S, Isik E, Isikli S, Karakilic, H. The reliability and validity of Schedule for assessing the three components of insight. *Turkiye'de Psikiyatri* 2001; 3:17-24.
37. Rüesch P, Graf J, Meyer PC, Rössler W, Hell D. Occupation, social support and quality of life in persons with schizophrenic or affective disorders. *Soc Psychiatry Psychiatr Epidemiol* 2004; 39:686-694. [CrossRef]
38. Belli H, Ural C, Solmaz M, Akbudak M, Namli M, Bayik Y. Association of gender and schizophrenia subtype with age at disease onset in a cohort from rural Turkey. *Eur J Psychiatry* 2012; 26:50-54. [CrossRef]
39. Lymburner JA, Roesch R. The insanity defense: Five years of research (1993–1997). *Int J Law Psychiatry* 1999; 22:213-240.
40. Turkcan S, Incesu C, Canbek O, Can Y, Sercan M, Uygur N. The assessment of diagnoses and crime-diagnoses relations of 1831 forensic cases. *Dusunen Adam J Psychiatry Neurol Sci* 2000; 13:132-137. [Turkish]
41. Oncu F, Soysal H, Uygur N, Ozdemir F, Türkcan S, Yesilbursa D, et al. The assessment of forensic cases' diagnose and crime characteristics who committed crime after compulsory treatment. *Dusunen Adam J Psychiatry Neurol Sci* 2002; 15:132-148. [Turkish]
42. Nielsens O, Large M. Rates of homicide during the first episode of psychosis and after treatment: A systematic review and meta-analysis. *Schizophr Bull* 2010; 36:702-712. [CrossRef]
43. Nordström A, Kullgren G. Victim relations and victim gender in violent crimes committed by offenders with schizophrenia. *Soc Psychiatry Psychiatr Epidemiol* 2003; 38:326-330. [CrossRef]
44. Shaw J, Hunt IM, Flynn S, Meehan J, Robinson JO, Bickley H, et al. Rates of mental disorder in people convicted of homicide: national clinical survey. *Br J Psychiatry* 2006; 188:143-147.
45. Ural C, Oncu F, Belli H, Soysal H. Violent behavior variables among patients with schizophrenia under forensic psychiatric process: A case-control study. *Turk Psikiyatri Derg* 2013; 24:17-24. [Turkish] [CrossRef]
46. Ural C, Belli H, Oncu F, Soysal H. Profile of population targeted by violent behavior of psychotic patients. *Turk Psikiyatri Derg* 2012; 23:26-32. [Turkish] [CrossRef]