

Insight in Schizophrenia: Relationship to Family History, and Positive and Negative Symptoms

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Abstract

Objective: To determine the level of insight among patients with schizophrenia and to compare sociodemographic and clinical features.

Method: The study included 66 patients with schizophrenia based on DSM-IV criteria. A semi-structured sociodemographic instrument, the Positive and Negative Syndrome Scale (PANSS), and the Schedule for Assessing the Three Components of Insight (SATCI) were used for the study.

Results: Family history was significantly related to low-level insight in schizophrenic patients. Positive symptom scores in patients with a family history of schizophrenia were significantly higher than in patients without such a family history. Positive and general psychopathological symptoms were inversely related to level of insight in patients with schizophrenia. There was no significant relationship between the negative symptoms scores and level of insight.

Conclusion: Family history of schizophrenia in schizophrenic patients was significantly related to low-level insight. Insight in the schizophrenic patients was affected by biological, psychological, and psychosociological factors. Family history of schizophrenia was one of these factors, which may affect the level of insight in numerous ways. Studies of patient family position and its relationship to insight have generally explored the effects of family situation on schizophrenia and insight, but not family history and its relationship to insight. In this study positive symptom severity was higher in patients with a family history of schizophrenia than in those without such a history. There was a positive relationship between low-level insight and both high positive and general psychopathology symptom levels in patients with schizophrenia.

Key Words: Schizophrenia, family history, insight, positive symptoms, negative symptoms.

INTRODUCTION

Insight is a multidimensional concept, which includes psychological, psychopathological, and neurocognitive mechanisms, as well as interpersonal relationships. The majority of patients with schizophrenia have no awareness of their illness, symptoms of the disorder, or of the need for treatment. Studies show that between 50% and 80% of schizophrenic patients have a low level of insight and that they accept drug treatment due to family pressure (Amador and Gorman, 1982). Low-level insight has been associated with various characteristics of the schizophrenic patient and of the illness itself, such as female gender (Peralta and Cuesta, 1998), low-level functionality (Dickerson et al., 1997), premorbid history of the patient (Debowska et al., 1998), long ill-

ness period (Drake et al., 2000), and a low (Moore et al., 1999) or high number of depressive symptoms (Carroll et al., 1999).

Additionally, level of insight is affected by the severity of the clinical symptoms of schizophrenia. Many studies have investigated the relationship between level of insight and clinical symptoms. Some found a direct relationship between the level of insight and the severity of only positive symptoms (Baier et al., 2000), while others found a direct relationship between the level of insight and both positive and negative symptom severity (Debowska et al., 1998; Dickerson et al., 1997). On the other hand, one study failed to find a direct relationship between the level of insight and negative or positive symptoms (Schwartz and Peterson, 1999). These

inconsistencies resulted in the need for conducting more detailed investigations of the relationship between the level of insight and negative and positive symptoms in schizophrenia. The literature suggests that there are various neurocognitive and sociocultural factors that affects a patient's evaluation of their illnesses (Townsend, 1975; Perkins and Moodley, 1993).

The family is the primary factor in the sociocultural life of the patient and other schizophrenia patients in the family, especially first-degree relatives with schizophrenia, might affect the patient's level of insight. One study of the effect on insight of family history of schizophrenia found that other schizophrenics in the family might have a negative effect on the social status of the patient, and decrease illness-related insight and psychosocial functionality (White et al., 1993). The aim of the present study was to investigate the level of insight among patients with schizophrenia and to compare sociodemographic and clinical features.

METHODS

The study included 68 patients aged between 18 and 48 years that presented to the Ankara Numune Research and Training Hospital II Psychiatric Outpatient Clinic between May 2004 and April 2005, showed signs of psychopathology, and were diagnosed with schizophrenia based on the Structured Clinical Interview for DSM-IV Axis I (SCID-I) administered by a psychiatric specialist. In order to create a homogenous group, patients were chosen among those who were receiving psychotropic treatment and who had been in partial remission for approximately 6 months. Patients who scored between 3 and 5 on the Clinical Global Impression Scale (CGI) were considered to be in partial remission. Patients with a schizophrenic first-degree relative were considered to have a family history of schizophrenia. Family history was initially determined based on patient and family reports taken by a psychiatrist and then with the administration of SCID-I to the first-degree relatives by a different psychiatrist. Researchers successfully contacted all families to examine the family story. Two different psychiatrists participated in the assessment of family history and patients. Informed consent of the patients was obtained and for those patients who were unable to give informed consent, consent was obtained from a family member. Only one patient declined to participate in to the study. Exclusion criteria were organic brain syndrome, mental retardation, psychoactive substance or alcohol abuse, and physical illness that required medical treatment. One patient with psychoactive substance

(diazepam) abuse was excluded from the study. In all, 66 were included in to the study.

Instruments

Two different psychiatrists diagnosed the patients and the families and were blind to each other's findings. In order to evaluate the sociodemographic characteristics of the 66 patients diagnosed with schizophrenia according to SCID-I, a semi-structured sociodemographic form was used. We used the Positive and Negative Syndrome Scale (PANSS) for evaluating positive, negative, and general psychopathology symptoms, and the Schedule for Assessing the Three Components of Insight (SATCI) for evaluating patient insight.

Structured Clinical Interview for DSM-IV Axis I (SCID-I)

SCID-I is a structured clinical interview for DSM-IV Axis-I diagnoses developed by First et al. (1997). SCID-I was developed for the systematic investigation of symptoms in order to increase the validity of a diagnosis by facilitating a standard procedure for diagnostic assessment and by simplifying the screening of DSM-IV diagnostic criteria. The Turkish version reliability and validity was established by Çorapçıoğlu et al. (1999).

Sociodemographic Questionnaire

The questionnaire collected data concerning patient age, gender, marital status, profession, alcohol-substance use, age of illness onset, family history of schizophrenia, duration of illness, psychotropic medication use, and history of physical illness.

The Positive and Negative Syndrome Scale (PANSS)

PANNS is a structured interview developed by Kay et al. (1987), which contains 30 items and a 7-point Likert-type scale, that evaluates symptom severity. The positive symptoms subscale includes 7 of the 30 psychiatric parameters, the negative symptoms subscale includes 7, and the remaining 16 psychiatric parameters are included in the general psychopathology symptom subscale. The Turkish version reliability and validity study was conducted by Kostakoğlu et al. (1999).

Schedule for Assessing the Three Components of Insight (SATCI)

SATCI is a clinician-administered semi-structured interview for schizophrenia patients developed by David

Table I. Correlations between SATCI total score and PANSS positive, negative, and general psychopathology symptoms subscales, and sociodemographics.

	Age	Duration of illness	Mean number of hospitalizations	Duration of education	PANSS positive symptoms subscale total scores	PANSS negative symptoms subscale total scores	PANSS general psychopathology symptoms subscale total scores
SATCI total score	.088	-0.31**	-0.54**	0.315**	-0.85**	0.56	-0.35**

r: Correlation with Pearson correlation analysis
 **P < 0.01

(1990) and it includes 8 questions. Each question is considered a subscale. In addition to its 7 subscales, which include treatment acceptance (1a), treatment request (1b), awareness of an illness (2a), awareness of a mental illness (2b), explanation of the illness (2c), belief in the delusion (3a), and explanation of experiences (3b), there is another subscale entitled, reaction to not believing. The highest total score for the first 7 questions is 14. The eighth question is optional. The overall highest total score is 18. High scores signify high levels of insight. The reliability and validity study of the Turkish version of SATCI was conducted by Arslan et al. (2001).

Statistical Evaluation

All statistical evaluations were conducted with SPSS (Statistical Program for Social Sciences) v.11.0. The relationship between sociodemographic factors, positive and negative symptoms, and psychopathology scores, and SATCI total score was conducted using Pearson's correlation analysis. The comparisons between PANSS positive, negative, and psychopathology symptom subscales, SATCI total and subscale scores, and family history were conducted using independent within samples t-test. SATCI total and subscale scores, positive and negative symptoms, and psychopathology symptoms subscale scores were compared with Spearman's correlation coefficient. Significance level was considered as P = 0.05.

FINDINGS

The mean age of the women was 37 ± 7.73 years, and the mean age of the men was 31.30 ± 6.271 years. Among the patients, 69.7% were male, 36.4% were married, and 36.4% were unemployed. The majority of patients (87.9%) were part of a nuclear family and monthly income of 45.5% of the patients was below the minimum wage. Among the patients, 87.9% had a history of living in the city and 54.5% came to the treatment center of his/her own will. When the patients were classified according to subtype of schizophrenia, 52 (78.8%)

were paranoid, 13 (19.7%) were undifferentiated, and 1 (1.5%) was residual. The mean age of onset was 25.3 years, the mean duration of illness was 92.9 months, and mean number of hospitalizations was 1.71.

The mean PANSS positive symptom subscale score was 19.64, mean negative symptom subscale score was 18.18, mean general psychopathology symptom subscale score was 34.58, and mean total SATCI score was 10.95. When the relationship between sociodemographics and level of insight was considered, as presented in Table I, there was a negative relationship between the duration of illness, mean number of hospitalizations, and level of insight (P < 0.01). On the other hand, there was no significant relationship between age and level of insight.

There was a positive significant relationship between the level of education and level of insight (P < 0.05). When the correlation between PANNS positive and negative symptoms, and general psychopathology symptoms subscale total scores and SATCI total scores a negative relationship between PANNS positive and general psychopathology subscales and SATCI total scores (P < 0.01). As the PANNS positive symptoms and general psychopathology symptoms levels increased, SATCI total score decreased. There was no significant relationship between PANSS negative symptoms and SATCI total scores (Table I). Of the 66 patients, 25 (37.9%) had a family history of schizophrenia. The comparisons of PANSS subscale total scores and SATCI subscale scores and SATCI total score and judgment and lack of insight subscales of PANSS general psychopathology subscale according to patients with and without family history of schizophrenia are presented in Table II. There was a positive significant relationship between the PANNS positive symptoms subscale scores and having a family history. SATCI total score was significantly lower in patients with family a history of schizophrenia (P < 0.01 and P < 0.05, respectively). In accordance with SATCI total score, the total scores of the SATCI subscales, awareness of illness (2a), awareness of a mental illness

Table II. Comparisons of PANSS subscale total scores and SATCI subscale scores, and SATCI total score and the judgment and lack of insight subscales of the PANSS general psychopathology symptoms subscale, according to patients with and without a family history of schizophrenia.

	Family History	No family history	t
	Mean ± SD	Mean ± SD	
PANSS positive symptoms subscale total scores	25.3 ± 9.8	16.1 ± 9.5	3.760**
PANSS negative symptoms subscale total scores	18.4 ± 10.6	18 ± 7.2	-0.223
PANSS general psychopathology symptoms subscale total scores	37.4 ± 11.5	32.8 ± 12.9	1.440
PANSS judgment and lack of insight subscale	3.6 ± 1.5	2.6 ± 1.3	-2.524*
SATCI total score	8.08 ± 5	12.7 ± 4.3	-3.915**
Treatment acceptance (1a)	1.64±0.76	1.78±0.52	-0.816
Treatment request (1b)	1.68 ± 0.69	1.71 ± 0.60	-1.64
Awareness of an illness (2a)	1.20 ± 0.82	1.76 ± 0.54	-3.029*
Awareness of a mental illness (2b)	0.8 ± 0.96	1.56 ± 0.59	-3.577**
Explanation of the illness (2c)	0.84 ± 0.99	1.59 ± 0.59	-3.422**
Belief in the delusion (3a)	0.48 ± 0.65	1.17 ± 0.83	-3.745**
Explanation of experiences (3b)	0.58 ± 1.07	0.88 ± 0.85	-2.194*
Reaction to not believing (additional)	0.88 ± 1.27	2.10 ± 1.43	-3.604**

t: Correlation with independent within samples t-test

*P < 0.05

**P < 0.01

(2b), explanation of the illness (2c), belief in the delusion (3a), explanation of experiences (3b), and reaction to not believing (optional eighth question), was significantly lower in patients with a family history of schizophrenia (Table II).

The correlations between SATCI subscale scores and PANSS positive and negative symptoms, and general psychopathology symptoms subscale scores are presented in Table III. Although the majority of the subscale scores were negatively related to the PANNS positive symptoms subscale scores, there was a direct relationship between the awareness of a mental illness (2b), explanation of the illness (2c) and reaction to disbelief subscales, and PANSS negative symptoms subscale total scores. There was a negative relationship between the PANNS general psychopathology symptoms subscale and the treatment acceptance (1a), treatment request (1b), belief in the delusion (3a), explanation of experiences (3b),

and reaction in to disbelief SATCI subscales, whereas the relationship between the PANNS general psychopathology symptoms subscale and other SATCI subscales were not significant (Table III).

DISCUSSION

In this study, which aimed to investigate the relationship between level of insight, severity of positive, negative, and general psychopathology symptoms, and family history of schizophrenia in a group of schizophrenia patients, it was found that family history in patients was significantly related to low-level insight. There was a negative relationship between the level of insight and positive and general psychopathology symptoms, and there was no relationship between negative symptoms and level of insight. A direct relationship between the severity of positive symptoms and family history was found.

Table III. Correlations between SATCI subscale scores and PANSS positive, negative, and general psychopathology symptoms subscale scores.

		PANSS positive symptoms subscale total scores r_s	PANSS negative symptoms subscale total scores r_s	PANSS general psychopathology symptoms subscale total scores r_s
Treatment acceptance	(1a)	-0.484**	-0.053	-0.262*
Treatment request	(1b)	-0.552**	-0.158	-0.250*
Awareness of an illness	(2a)	-0.493**	0.134	-0.174
Awareness of a mental illness	(2b)	-0.687**	0.409**	-0.139
Explanation of the illness	(2c)	-0.570**	0.393**	-0.090
Belief in the delusion	(3a)	0.766**	0.116	-0.488**
Explanation of experiences	(3b)	-0.695**	0.227	-0.470**
Reaction to not believing (additional)		-0.704**	0.258*	-0.488**

r_s : Spearman Correlation coefficient
*P < 0.05
**P < 0.01

Another finding of his study was that as the duration of illness and number of hospitalizations increased, the level of insight decreased. Although the level of insight was not significantly related to patient age, a direct relationship to level of education was noted. A negative relationship between the severity of PANSS positive and general psychopathology symptoms subscale scores and level of insight was observed.

Other studies similarly did not find a significant relationship between patient age and level of insight (Yen et al., 2002; Gigante et al., 2004). One study found a direct relationship between level of education and level of insight (MacPherson et al., 1996) whereas others failed to find any direct relationship (Gigante et al., 2004; Laroï et al., 2000). Several studies reported that as duration of illness and number of hospitalizations increased the level of insight decreased (Yen et al., 2002; Laroï et al., 2000). It is known that a low level of insight affects the course of illness and treatment consonance (Schwartz, 1998; Lysaker et al., 1994, Buchanan 1992). There are studies reporting that as the number of hospitalizations increase and duration of illness increases the level of insight also increases (MacPherson et al., 1996; Peralta and Cuesta, 1994).

Insight is affected by various biological, psychological, and psychosocial factors. Family history is one of the factors that affect insight. Studies report significantly low levels of insight in patients with a family history. Family history might affect the psychopathological, sociocultural, psychosocial and cognitive aspects of insight.

In some cases family members exhibit schizoid characteristics and this further complicates defining some of the characteristics of schizophrenia (Johns et al., 2001). The concept of schizotaxia has been investigated in recent years and many factors related to family proclivity to schizophrenia were investigated (Faraone et al., 2000). Perhaps further investigations about the relationship between schizophrenia and insight would be useful in this regard. Although psychopathology is important to a family's definition of schizophrenia, sociocultural factors are also important. Cultural differences should not be ignored in understanding schizophrenia (Johnson and Orrell, 1995).

Family history might affect level of insight by impairing cognitive functions. There are studies on the relationship between level of insight and cognitive functions in schizophrenia (Laroï et al., 2000; Startup 1996; Lysaker et al., 2003). It is reported that, in particular, cognitive impairment, such as having difficulty in detailing schizophrenia symptoms and realizing schizophrenia symptoms, might have familial transmission (Harris et al., 1996). Such impairments might reflect low levels of insight.

There is also a psychosocial dimension to the relationship between insight and family history. In a study that investigated tolerance to stress and schizophrenia symptoms in patients with and without a family history it was found that having a family history decreased tolerance to stress. Family history can increase the degree of being affected by psychosocial factors (Norman and Malla, 2001). Stress sensitivity can have a genetic com-

ponent and reality-testing can be more frequently distorted in patients with a family history (Norman et al., 1997). This distortion, therefore, affects a patient's level of insight. It was reported that frontotemporal pathways are affected to a greater degree when under stress and thus distortion in reality-testing occurs (Norman et al., 1997).

In addition to family history, other factors that affect insight in schizophrenia patients are the type and severity of clinical symptoms. Defined by Crow (1985), positive and negative symptoms in schizophrenia constitute 2 different clusters. Positive symptoms include hallucinations, delusions, positive thought disorder, and disorganized and catatonic behaviors, whereas negative symptoms include shallow mood, impoverished thought and speech content, anhedonia, apathy, and speech and attention disorders (Kay et al., 1987). Although it is not clear whether these symptoms are different manifestations of the same disorder or of neuroanatomical disorders in different parts of the brain, studies on the subject are increasing everyday. Brain imaging studies show that negative symptoms are mostly due to functional disorders of the frontal lobe (Andreasen et al., 1986) and positive symptoms develop due to disorders in the transmission of neuronal networks (Ebmeier et al., 1993). In our study we also investigated the relationship between level of insight and positive, negative, and general psychopathology symptom levels. There was a negative relationship observed between the level of insight and the severity of positive and general psychopathology symptoms, but no relationship between the level of insight and the severity of negative symptoms.

When the relationship between the clinical features of schizophrenia and insight is considered one of the most striking studies is Mintz et al.'s (2003) meta-analysis. This study screened 40 studies on the relationship between symptom severity and insight and concluded that there is a negative relationship between insight and severity of negative, positive, and general psychopathology symptoms; however, this relationship is not statistically significant.

Similarly to our study, Vaz et al., (2002) investigated the relationship between the clinical features of schizophrenia and insight in 82 patients. They reported a negative relationship between positive and general psychopathology symptoms and insight, and that the difference between the severity of positive symptoms and level of insight was not significant.

One of the explanations for low-level insight in cases

with a high degree of positive symptoms is delusions or hallucinations. Generally, delusions or hallucinations present with low-level insight. Low-level insight is one of the criteria of schizophrenia and is included in PANSS; therefore, a relationship between the level of insight and severity of negative, positive, and general psychopathology symptoms should be expected.

In contrast to our findings some studies reported a negative relationship between the level of insight in schizophrenia patients and severity of negative symptoms, and that there is no relationship between the severity of general psychopathology symptoms and insight (Debowska et al., 1998; Cuesta et al., 1998). High levels of the negative symptoms, social withdrawal, and impairment in social functionality make it difficult for a patient to understand his/her loss in the social realm; therefore, it is possible that as negative symptoms increase awareness regarding social consequences of the illness also decreases. On the contrary, Sevy et al. (2004) found that the significant relationship between awareness of the illness and awareness of the social consequences of the illness symptoms were only related to the intensity of the positive symptoms of schizophrenia. The same study found that being or not being aware of the social consequences was totally independent of the severity of negative symptoms. In the present study we found that there was a negative relationship between the level of general symptoms and level of insight. While some studies failed to find a relationship between the level of general symptoms and level of insight (McEvoy et al., 1989), others reported a significant relationship between the level of general symptoms and level of insight (Smith et al., 1998; Vaz et al., 2002; Kemp and Lambert, 1995).

There are also studies of the relationship of insight with depressive mood. Several studies reported a significant relationship between the level of insight and the severity of depressive symptoms (Drake et al., 2004; Carroll et al., 1999; Sanz et al., 1998). It was reported that low-level insight might be related to denial of illness in order to protect self-esteem (McGlashan and Carpenter, 1976). There are studies that report a relationship between frequency of suicidal ideation and insight (Smith et al., 1998), and others that failed to find such a relationship (Evren et al., 2002). One of the limitations in our study was that we didn't assess the relationship between suicidal ideation, severity of depressive symptoms, and level of insight.

We did evaluate the relationship between familial history and the severity of clinical symptoms and found a

direct relationship between family history and the severity of positive symptoms. Although there are studies that report family history is related to the severity of negative symptoms (Silverman et al., 1987, Verdoux et al., 1996, Malaspina et al., 2000) it is also stated that a relationship exists to both positive and negative symptoms (Wickham et al., 2001). There are genetic and twin studies on clinical symptoms and family history that report a stronger genetic transition of negative symptoms in comparison to positive symptoms (Farmer et al., 1984; Dworkin et al., 1984). There was no significant relationship between family history and negative symptoms in our study.

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