

ORIGINAL PAPER

doi: 10.5455/medarh.2023.77.123-126

MED ARCH. 2023APR; 77(2): 123-126

RECEIVED: MAR 06, 2023

ACCEPTED: APR 02, 2023

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The Correlation of Positive and Negative Symptoms (PANSS Scores) in Patients with Schizophrenia According to Gender

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ABSTRACT

Background: Schizophrenia is chronic and debilitating psychiatric disorder, characterized by a constellation of clinical signs and symptoms that are categorized into distinct positive, negative, disorganization and cognitive symptom domains. The outcome of the disease is better in female patients compared to male patients who have a higher risk of rehospitalization and twice as long duration of hospital treatment. In male patients with schizophrenia an earlier onset of the disease, negative symptoms and a more severe clinical picture are noted, with a less promising therapeutic response to neuroleptics. The onset of negative symptoms is more variable. **Objective:** The aim of the study was to determine the correlation of positive and negative symptoms (PANSS scores) in patients with schizophrenia according to gender. **Methods:** The sample included 40 subjects with schizophrenia (21 males; 19 females). The study was conducted at the Department of Psychiatry Clinical Center University of Sarajevo. **Results:** All male subjects have a PANSS negative symptoms score of 17 or higher, while all female subjects have a PANSS negative symptoms score of less than 17. While the difference in the variances is not statistically significant, the results show that the difference in the average values of the PANSS symptom score between male and female subjects is statistically significant for both positive and negative symptoms ($p=0.026$). **Conclusion:** Diminished sociality, emotional responsiveness, and drive during childhood have been reported in a substantial minority of patients with schizophrenia. This aspect of the illness may account for the low level of emotional expression and neuro-motor dysfunction in infants who subsequently have schizophrenia. In other patients, the negative symptoms first occur after the onset of psychosis.

Keywords: schizophrenia, PANSS, gender differences.

1. BACKGROUND

Schizophrenia is a clinical syndrome with diverse manifestations. Although it is possible that a single pathophysiologic process accounts for this diversity, the syndrome probably comprises several disease processes, each with its own manifestations. It remains one of the most intriguing psychiatric research topics with a worldwide prevalence of 1% leading to lifelong disability in more than 50% of the sufferers. The onset of psychotic symptoms usually occurs between the ages of 17 and 30 years in men and between the ages of 20 and 40 in women. Most patients have shown subtle signs of psychosis for months or years by the time clinical care is initiated for florid psychotic symptoms. Subtle disturbances in associative thinking may develop years in advance of florid symptoms, like the disturbances observed in some biologic relatives of patients with schizophrenia, including children and adults in whom the full syndrome never develops (1, 2). Once the symptoms in these two domains are fully expressed, they tend to occur episodically, with variable levels of remission between episodes. In 5 to 15 percent of patients, relatively severe psychosis is continuous. This chronic and debilitating psychiatric disorder, is characterized by a constellation of clinical signs and symptoms that are categorized into distinct positive, negative, disorganization and cognitive symptom domains. Although positive symptoms (eg, delusions, hallucinations) must be present for a diagnosis of schizophrenia to be made, negative symptoms, typified by the absence of normal function and loss of behaviors and motivation, are highly detrimental to patient functioning and

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quality of life (3-7). While antipsychotic treatment is effective against positive schizophrenia symptoms, effective treatment for negative symptoms is lacking and most improvement occurs secondarily to improvement in positive symptoms.

Research suggests that negative symptoms are heterogeneous, with potentially different pathophysiological mechanisms and psychopathological outcomes (7, 8).

2. OBJECTIVE

The aim of the study was to determine the correlation of positive and negative symptoms (PANSS scores) in patients with schizophrenia according to gender .

3. PATIENTS AND METHODS

Patients and study design

This prospective, comparative study had been conducted at the Department of Psychiatry Clinical Center University of Sarajevo. The study included 40 patients with schizophrenia (21 males and 19 females), 18 to 67 years old. The Ethics Committee of the University Clinical Center Sarajevo gave an ethical consent to perform the study. All subjects signed a written informed consent for the use of the results obtained for publication before the enrollment. Patients included in the study were on the hospital treatment and under antipsychotic drugs at the Department of Psychiatry, and had been diagnosed with schizophrenia according to the ICD-10 criteria (9-11). Patients were included into the research on the basis of consecutive admissions, taking into account that all of them were with a long psychiatric history (at least 5 years of hospital treatment) with signed information consent within clinical research. The criteria for the exclusion referred to the appearance of psychotic phenomenology within neurological disease, organic psychosyndrome, somatic disease, neurological disorder (head trauma, brain insult, epilepsy), information on drug or alcohol abuse, or those who did not sign informed consents for voluntary participation. For the group of patients with schizophrenia, the average age was 41.50 (SD±10.44; range 22–67) years.

PANSS

The Positive and Negative Syndrome Scale (PANSS) is an established psychiatric rating system that is an operationalized, drug-sensitive instrument that offers balanced representation of positive and negative symptoms and estimates their relationship to one another and to global (or general) psychopathology. It is the most widely used measure of symptom severity in schizophrenia and this 30-item scale is typically administered by trained clinicians who evaluate patients' current severity level on each symptom (item) by endorsing 1 of 7 options (weights) numbered 1 through 7. The PANSS

has demonstrated high internal reliability and good construct validity.

Statistical analysis

The research task was to define the differences between patients with schizophrenia according to PANSS scores. For the purposes of correlation and associative analysis multivariate analysis of variance was applied using T-test of paired samples and Levene's test for equality of variances. Differences in which the p value was less than 0.05 (p<0.05) were considered statistically significant.

4. RESULTS

Demographic data of subjects according to gender

The study was conducted on a group of 40 subjects with schizophrenia. The sample consisted of 21 (52.5%) male and 19 (47.5%) female. (Table 1.)

		Female	Male	Total
Group	Schizophrenia	19	21	40
		47.5%	52.5%	100.0%

Table 1. Distribution according to gender

Comparative analysis of positive and negative symptoms (PANSS) in patients according to gender

The correlation of positive and negative symptoms in patients according to gender was examined in 40 patients with schizophrenia using psychiatric rating system (PANSS). The T test for independent samples tested whether there is a statistically significant difference in the presence of positive and negative symptoms (PANSS) in male and female subjects of the observed group. In the group of male and female patients, there is no statistically significant difference in the variances of the PANSS symptom score.

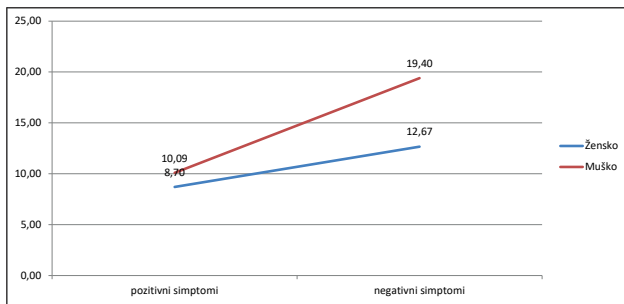
While the difference in the variances is not statistically significant, the results show that the difference in the

Gender	N	Arithmetic mean	Standard deviation	Standard error of the arithmetic mean
PANSS score – positive symptoms	Female	10	8.70	1.337
	Male	11	10.09	1.300
PANSS score – negative symptoms	Female	9	12.67	2.872
	Male	10	19.40	1.776

Table 2. Statistical descriptive values of positive and negative symptom score parameters (PANSS) according to gender

	Levene's test of equality of variances		T test of equality of arithmetic means				
	F	p	t	df	p	Average difference	Standard difference error
PANSS score-positive symptoms	.060	.809	-2.415	19	.026	-1.391	.576
			-2.412	18.691	.026	-1.391	.577
PANSS score-negative symptoms	2.621	.124	-6.219	17	.000	-6.733	1.083
			-6.066	13.078	.000	-6.733	1.110

Table 3. Statistical difference of positive and negative symptoms (PANSS score) according to gender



Graph 1. Average values of the PANSS score of positive and negative symptoms in male and female subjects of the observed group

average values of the PANSS symptom score between male and female subjects is statistically significant for both positive and negative symptoms ($p=0.026$). (Table 2., Table 3.)

The average PANSS score is higher in male subjects in both positive and negative symptoms. While for positive symptoms male subjects have a 16% higher average score, for negative symptoms they have a 53% higher average score (Graph 1.)

5. DISCUSSION

The Positive and Negative Syndrome Scale (12, 13) was developed in order to provide a well-defined instrument to specifically assess both positive and negative symptoms of schizophrenia as well as general psychopathology. Eighteen items of the Brief Psychiatric Rating Scale and twelve items of the Psychopathology Rating Schedule (14) were combined in one scale, and all items were given a complete definition as well as detailed anchoring criteria for all rating points. Strong psychometric properties in terms of reliability, validity and sensitivity have been shown in a number of subsequent studies (15). Patients were divided into groups with predominant symptomatology of positive and negative symptoms using a combination of positive and negative symptomatology rankings. Values of positive and negative symptom scores (PANSS) in male and female subjects suffering from schizophrenia, observed that there is no statistically significant difference in the variances of the specified symptom scores.

While the difference in variances is not statistically significant, the results show that the difference in the average values of the PANSS symptom score between male and female subjects is statistically significant for both positive and negative symptoms ($p=0.026$). The average PANSS score is higher in male subjects, both in positive and negative symptoms. While in the case of positive symptoms, male respondents have a 16% higher average score, in negative symptoms they have a 53% higher average score. The t test for independent samples tested whether there is a statistically significant difference in the presence of positive and negative symptoms (PANSS) in male and female subjects of the observed group. In the group of male and female patients, there is no statistically significant difference in the variances of the PANSS symptom score. While the difference in the

variances is not statistically significant, the results show that the difference in the average values of the PANSS symptom score between male and female subjects is statistically significant for both positive and negative symptoms.

The above indicates that there are significant differences in the clinical manifestations of schizophrenic psychosis, with the dominance of negative symptomatology in the group of male patients.

The reasons for the above are:

- more frequent rehospitalizations in men with a longer hospital stay,
- lower number of rehospitalizations in women,
- gender differences are most pronounced in the early onset of the disease,
- duration of hospitalization in women is shorter compared to men,
- the difference in length of hospital stay decreases with age (16, 17).

Men attempt to function socially immediately after hospital discharge (18, 19). The results of several studies confirm that women have a less severe disease course compared to men, fewer hospitalizations, outpatient treatment, less frequent occurrence of negative symptoms, good social adaptation, and a good therapeutic response to lower doses of drugs.

However, women who do not recover well usually have a worse outcome than men in the same situation (20).

The affective component in the clinical manifestation is also more pronounced in female patients, while negative symptoms predominate in men (21).

The influence of social factors and the way this influence is manifested in each gender is significant. Women, for example, are disproportionately the targets of domestic violence, while men are mostly homeless.

6. CONCLUSION

Schizophrenia is a devastating disorder that has a chronic course. Based on the clinical picture, length of hospital treatment, number of relapses, social functioning, social adaptation or work status, more than half of the studies show a statistically significant difference in relation to gender. Diminished sociality, emotional responsiveness, and drive during childhood have been reported in a substantial minority of patients with schizophrenia. This aspect of the illness may account for the low level of emotional expression and neuromotor dysfunction in infants who subsequently have schizophrenia. In other patients, the negative symptoms first occur after the onset of psychosis. As a psychopathological entity, schizophrenia reflects the specific existential context of an individual, while maintaining a consistent core in regard to all stable and diagnostically relevant characteristics. It remains one of the most intriguing psychiatric research topics. No other disease can so radically damage the personality of the patient and potentially destroy the very foundations of what we consider to be the essential part of every human being. In medical terms, it is primarily a neurocognitive or neurobiological disorder.

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