

## Correlation of Neurological Soft Signs and Negative Symptoms in Chronic Schizophrenic Patients

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### Abstrak

*Neurological Soft Signs (NSS) banyak dijumpai pada pasien-pasien skizofrenia yang kronis dibandingkan dengan yang akut. Gejala negatif, telah lama diketahui merupakan sekumpulan gejala yang juga lebih banyak dijumpai pada pasien-pasien skizofrenia kronis. Kedua kelompok gejala tersebut, dalam dua dekade terakhir ini, diketahui sebagai gejala-gejala yang mencerminkan terdapatnya kelainan organik pada otak. Tujuan penelitian ini ialah mengetahui hubungan antara kedua kelompok gejala tersebut pada pasien skizofrenia kronis, khususnya di rumah sakit Dr. Cipto Mangunkusumo dan Rumah Sakit Jiwa Jakarta, tempat penelitian ini dilaksanakan (Desember 1991 hingga April 1992). Pada penelitian ini dilakukan pemeriksaan klinik psikiatrik, pemeriksaan skor gejala negatif dengan menggunakan instrumen SANS dan pemeriksaan neurologik untuk NSS terhadap 21 pasien skizofrenia kronis sebagai kasus dan 21 pasien skizofrenia akut (skizofreniform) sebagai kelola. Sepuluh orang pasien skizofrenia kronis diperiksa oleh interrater untuk skor SANS dan 11 pasien skizofrenia kronik lainnya untuk pemeriksaan NSS. Ternyata didapatkan bahwa pada pasien skizofrenia kronis (terutama yang lebih dari 10 tahun), terdapat hubungan yang bermakna antara NSS dan gejala negatif (0.87). Dari penelitian ini diperoleh pula bahwa NSS lebih sering dijumpai pada pasien skizofrenia kronis daripada skizofreniform; dengan demikian bila NSS dijumpai pada pasien skizofreniform dan skornya cukup tinggi, dapat merupakan petunjuk prediktif bahwa pasien tersebut termasuk yang cenderung menjadi kronis (Tipe II - Crow).*

### Abstract

*Neurological soft signs (NSS) are more commonly found in chronic schizophrenic patients than in the acute type of schizophrenics (schizophreniform). The same is true for negative symptoms, as a syndrome, which is more frequently found in chronic schizophrenic patients. During the last two decades, these symptoms, had been used as indicators for organic defects in the human brain. The purpose of this study is to evaluate the correlation between these two groups of symptoms in chronic schizophrenic patients at Dr. Cipto Mangunkusumo General Hospital and The Jakarta State Mental Hospital, where this study was done. A clinical psychiatric examination was done on 21 chronic schizophrenics as cases and 21 schizophreniform patients as controls (assessment of negative symptoms was also done with SANS). All cases and controls were examined from December 1991 - April 1992, by two independent investigators. The first investigator did a clinical psychiatric evaluation and did also NSS clinical evaluation. The second investigator examined the negative symptoms with SANS. Ten cases were examined for interrater reliability of SANS and another 11 cases for interrater reliability of NSS. From this study, we conclude that in chronic schizophrenic patients (particularly those who suffered for more than 10 years) there were significant correlations of NSS and the negative symptoms (0.87). In this report, NSS could be significantly found more frequent in chronic schizophrenics than in the schizophreniform patients. This means that if the NSS score in schizophreniform patient is high, it may serve as an indicator that the schizophreniform may develop into the chronic type (Second Type - Crow).*

**Keywords :** NSS, negative symptoms, SANS, chronic schizophrenic

### INTRODUCTION

Theories of etiology and pathogenesis of schizophrenia, have been attributed to brain dysfunctions. In recent years, psychiatric attention to the neuro-

pathology or neurodysfunctional in schizophrenic patients has increased. These, are related to new findings in neuroradiology and neurophysiology.

Although no particular neurological deficit characteristic of schizophrenics have been found, there are reports and clinical descriptions of systemic surveys and controlled investigation of neurological deficit in schizophrenia. The interpretation is influenced by the various method used and the uncertainty of the concept.<sup>1</sup>

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Among various abnormalities, neurological signs, either 'hard' or 'soft', were shown by some studies to have a higher frequency in schizophrenics than normals.<sup>1</sup> 'Hard' signs, have predictive localizing power, usually referable to specific lesions of nuclei, tracts, and nerves. 'Soft' signs, represent abnormal performance on less specific tests, none of which by themselves indicate a clearly identifiable central nervous system lesion. Neurological soft signs (NSS), according to many researchers, can be used as indicators of non specific damages of human brain.<sup>2</sup> NSS are more commonly found in schizophrenic patients than other psychiatric disorders and normal control,<sup>2,3,4,5</sup> and among the schizophrenics, NSS are more frequent in the chronic patients rather than in the acute cases.<sup>1,6</sup>

Some studies have shown a significant correlation between NSS and negative symptoms in chronic schizophrenic patients<sup>1,6,7</sup> and also in relation with the severity of schizophrenia.<sup>6,8</sup> Crow et al (1980) suggested the use of positive and negative symptoms as a postulate of two types schizophrenia. The first type of schizophrenics shows acute onset of illness, normal intellectual functions, normal brain structure, good responses to antipsychotics and the absence of negative symptoms. The second type, is schizophrenics who have an insidious onset of illness, a decrease in intellectual functioning, widening of lateral ventricles of the brain, poor responses to antipsychotic medication, and the presence of negative symptoms.<sup>9,10,11</sup> In almost all of schizophrenic patients, the positive symptoms are usually present during the process of illness, however, the occurrence of negative symptoms are key factors in the advance stage of clinical signs. Usually the negative symptoms are prominent in the late stage of the illness. Once the negative symptoms are found, this may become permanent and schizophrenic process may develop into schizophrenia of second type, which will prone to be irreversible.<sup>12,13,14</sup>

In chronic schizophrenic patients, there are neurophysiological dysfunctions, and a variety of structural defects of the brain may occur. The main defects were thought to be in the frontal lobe and limbic system.<sup>12,15</sup> Clinically the chronic schizophrenic patients, are progressively deteriorating. It may be possible that the presence and increase of NSS is concomitant with the process of deterioration. The same process may also occur with the negative symptoms.

The main purpose of this study is to measure the correlation between NSS and negative symptoms, in

chronic schizophrenic patients. The first hypothesis : there is a significant correlation of negative symptoms and NSS in chronic schizophrenic patients. The second hypothesis : NSS are significantly more frequent in chronic schizophrenic patients compared to the acute type of schizophrenics (schizophreniform).

## MATERIAL AND METHODS

Twenty-one chronic schizophrenic patients (12 men, 9 women) were comparatively evaluated with 21 schizophreniform patients (10 men, 11 women) at the Psychiatric Clinic of the Department of Psychiatry, Dr. Cipto Mangunkusumo General Hospital and The Jakarta State Mental Hospital during the period of December 1991 until April 1992.

The study consisted of three steps. The first was a clinical psychiatric examination, to establish the diagnosis of schizophrenia using the criteria based on *Pedoman Penggolongan dan Diagnosis Gangguan Jiwa di Indonesia edisi II (PPDGJ-II)*,<sup>16</sup> which confirms with the criteria of The Diagnostic and Statistical Classification for Mental Disorders (DSM) III-R. Inclusion criteria for the subjects and controls were : (1) schizophrenic patients who had been ill for ten years or more for the subject group, and/or who were in their first episode of their illness for less than 6 months for the control group; (2) free from systemic physical illness; (3) no history of severe CNS (central nervous system) disorder and substance abuse; (4) no history of electroconvulsive therapy (ECT) and (5) no significant side-effects from neuroleptic medication.

The second step consisted of the identification of NSS and negative symptoms which were done by two independent investigators. The first investigator examined the scores of NSS, and the second investigator scored the negative symptoms by using SANS (the Scale for the Assessment of Negative Symptoms) instrument.<sup>17</sup>

The third step measured interrater reliability between the investigator and a neurologist by simultaneously and independently rated the NSS' scores (11 subjects). Interrater reliability for SANS was done on ten subjects by two psychiatrists.

The sample size was established by using the Fleiss' table.<sup>18</sup> Twenty one chronic schizophrenics and 21 schizophreniform patients were needed to arrive at the .05 for alpha error and .1 for beta error. The sampling method is a random sampling.

The Spearman's rank correlation coefficient test was used to correlate NSS and negative symptoms. A one tailed Mann-Whitney u test was applied to compare NSS scores of chronic schizophrenics and schizophreniform patients.<sup>19</sup>

## RESULTS

The Spearman's rank correlation coefficient test between NSS and negative symptoms in chronic schizophrenic patients is found to be significant. It may be concluded that the first hypothesis is accepted. The use of the one tailed Mann-Whitney u test to compare the NSS in chronic schizophrenic patients to the acute type (schizophreniform) is also significant ( $p = .000$ ). It complies with the earlier studies that NSS are significantly more frequent in chronic schizophrenic patients than in the acute type (schizophreniform).

Table 1. NSS & SANS total score and demographic characteristic of the patients and controls

	Chronic schizophrenic (n = 21) mean	Schizophreniform (n = 21) mean
NSS total score	13.24	0.86
SANS total score	64.95	20.47
Age	38.19	25.61
Educational level (years)	10.66	10.90

The mean age of the patients in this study which is 38.19 is higher than in the previous study of Rossi et al (1990), which was 34.82, but is lower than the study of Bartko et al (1988), which was 41.30. The clinical diagnosis of chronic schizophrenic patients, covered various types : paranoid schizophrenics 38.09%, hebephrenic schizophrenics 14.39%, undifferentiated schizophrenics 4.77% and residual schizophrenics 42.85% ( table 2 ).

Table 2. Clinical Diagnosis of Chronic Schizophrenic patients

Diagnosis	female	male	sum	%
Schiz. Paranoid	2	6	8	38.09
Schiz. Hebephrenic	2	1	3	14.39
Schiz. Residual	4	5	9	42.85
Schiz. Undifferentiated	1	0	1	4.77
Sum	9	12	21	100.00

## DISCUSSION

The significant result of the study on the correlation between NSS and negative symptoms in chronic schizophrenic supports the previous studies by Heinrichs et al,<sup>1</sup> Bartko et al.1988<sup>6</sup> and Rossi et al.<sup>7</sup> It was also found that NSS are manifested more frequent in chronic schizophrenic patients compared to schizophreniform. This confirms with the previous studies of Heinrichs and Buchanan<sup>1</sup> and Woods et al.<sup>20</sup>

It was previously suggested that the presence of NSS and negative symptoms may reflect the existence of non specific brain damages. However, it should be confirmed by other diagnostic procedures such as computed tomography scan, magnetic resonance imaging, positron emission tomography, etc.

The present of a high score of NSS in schizophreniform patients may serve as a predictor that the schizophreniform type may develop into the chronic type ( the second type of Crow's schizophrenia).

## CONCLUSIONS

The results of this study confirm the significant correlation between NSS and negative symptoms in chronic schizophrenic patients. NSS are significantly more frequent in chronic schizophrenics compared to schizophreniform patients. These findings may support the prognostic values of both NSS and negative symptoms in the evaluation of schizophrenic condition.

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