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Social functioning in first-episode schizophrenia: 1-year follow-up study

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Summary

The aim of the study was to compare social functioning of first-admitted schizophrenic patients with healthy controls and evaluate the influence of different variables on social abilities of patients, 1 month after hospitalization (T1) and in 1 year follow-up (T2).

A group of 86 schizophrenic patients: 52 male and 34 female; age 25.5; ± 5.8 and a control group of matched 52 male and 34 female subjects were enrolled. Social Functioning Scale (SFS), Positive and Negative Syndrome Scale (PANSS), Global Assessment Scale (GAS) and demographic questionnaire were used.

In both T1 and T2 we found similar levels of SFS score in patients (T1- 103.7; T2- 105.5), significantly lower than in healthy controls 117.0 (range 98.6-130.1) ($p<0.001$). In longitudinal analysis, better pre-admission functioning was associated with improvement of Independence Performance. In cross-sectional analysis, better social functioning was associated with the female sex, higher but not academic education, activity before admission, and better functioning in pre-admission period. In regression analyses (the 5-dimensional model of schizophrenia) T1 SFS was explained by negative (39%) and 1% with positive symptoms. In T2 SFS only negative symptoms explained social functioning (36%).

Social functioning in schizophrenia is disturbed from the onset of the disease and is influenced mainly by current negative symptoms. The protective effect of female sex, higher education and pre-admission functioning can be observed.

Key words: social functioning, schizophrenia, first-episode, 1-year follow-up

Introduction

Impairment in social functioning is an essential feature of schizophrenia. Patients with this disorder have problems with close relationships, ability to work, community activities, and self-care. Consequently, impaired social functioning became the diagnostic criterion of schizophrenia, in both the DSM-IV and ICD-10 classification [1, 2].

The majority of previous studies of social functioning in patients with schizophrenia were conducted in patients with a long-duration of illness [3, 4]. Studying such patients makes it difficult to differentiate the impact of illness, and concomitant factors such as medications from primary dysfunction, which may be associated with the pathogenic

process. One way to avoid the influence of such potential confounders is to study first-episode patients. Finding the significant impairment in first-episode patients may suggest that deterioration occurs before or at the onset of illness.

Studies of a cross-sectional design have shown that significant impairment of social functioning may occur in every stage of the illness [5]. However, they are not designed to assess the dynamic changes in social functioning. Most authors agree, that in the first 5 years of schizophrenia clinical deterioration progresses [6], however in several studies, there were no significant differences in social functioning between first- and multiple-episode schizophrenia patients [5]. Use of a longitudinal, prospective design allows observing if there is any worsening of social functioning in the follow-up period, after treatment of a first psychotic episode.

Several authors examined the relationship between social functioning and clinical features of schizophrenia. Positive symptoms were sometimes reported to be associated with social abilities [7, 8]; however in the majority of studies negative symptoms consistently affected social skills and quality of life. Dickerson et al. [3] reported that social functioning is associated both with negative symptoms and poor neurocognitive functions. Recently a, 5-dmiensional model of schizophrenia symptoms was proposed, which may reflect the psychopathological picture of the illness in a better way, and these dimensions may affect social functioning differently [9]. Some research also points to the importance of other socio-demographic and clinical factors for the level of social functioning [10, 11].

The purpose of this study was to assess social functioning in first-episode schizophrenia patients, 1 month after hospitalization and in a 1 year follow-up. We also evaluated the influence of basic demographic variables, premorbid functioning, current symptoms and social support on the measures of social functioning.

Material and methods

Patients and controls

Ninety six patients were qualified for the study following hospitalization due to the first episode of psychosis. At discharge, all study subjects met the diagnostic criteria for schizophrenia (ICD-10). The diagnosis was made by two clinicians and confirmed by a senior researcher. All patients signed the informed consent for the study. During the first and second assessment, respectively, 8 and 2 patients refused to participate, resulting in a final group of 86 subjects: 52 male and 34 female; age 25.5; ± 5.8 (range 17-47). The control group comprised of 86 psychiatrically healthy subjects: 52 male and 34 female, matched according to age.

Psychometric measures

Social Functioning Scale (SFS) is a 79-item questionnaire, developed and validated on outpatients with schizophrenia [12]. The questionnaire asks the patient about performance in seven areas: Social Engagement (SE), Interpersonal Communication (IC), Recreational Activities (RA), Social Activities (SA), Independence Competence

(INC), Independence Performance (IP) and Occupational Activity (OA). The purpose of the scale is to provide an evaluation of strengths and weaknesses of patient functioning, and it may reveal aims for therapeutic intervention. Recently, the scale was also used as an outcome measure in schizophrenia. The self-report questionnaire was administered by a verbal interview to both patients and caregivers. Due to a lack of significant differences in patients' and caregivers' assessment, in further analyses the patients' assessment was analyzed. SFS was previously translated into Polish and validated [13].

Positive and Negative Syndrome Scale (PANSS) includes a structured interview to assess patients on 30 items covering positive, negative and general symptoms [14]. For each item, ratings are made on a 1-7 scale of symptom severity. Based on the PANSS assessment, we used the 5-factor model of schizophrenia symptoms: positive, negative, agitation, cognitive and depression/anxiety [9].

Premorbid functioning was assessed with the Global Assessment Scale (GAS). GAS is the standard method used to assess the clinician's judgment of a patient's overall level of functioning [15]. We assessed the most severe disturbances of functioning 1-year before the first admission.

Demographic and clinical variables regarding preadmission and hospitalization periods were measured with a structured interview.

a. Demographic variables: age, sex, active role fulfillment before admission
b. Risk factors: family history of schizophrenia in 1st and 2nd degree relatives, seasonality of birth, somatic factors, comorbid somatic illnesses, life events
c. Pre-hospitalization factors: age at onset of problems with functioning, number of prodromal symptoms, presence of depressive symptoms, suicidal thoughts before admission, duration of untreated psychosis, type of onset.
d. Hospitalization period: age at first hospitalization, dominant psychopathological symptoms, presence of depressive symptoms.

Current social support was assessed with 1 question: "Are you satisfied with social support?" which was rated with 1-5 Likert scale (1 = not satisfied at all; 5 = very much satisfied).

Study design

During hospitalization we assessed demographic and preadmission variables with a structured interview and the premorbid adjustment retrospectively with GAS. Then, in prospective manner, one of the authors (K.G) performed two assessments of social functioning (SFS) symptoms (PANSS), and social support in patients' community, 1 month (T1) and 13 months (T2) after discharge. The protocol of the study was accepted by the Bioethical Committee of Poznan University of Medical Sciences.

Statistical analyses

We used the student t-test for independent data to compare results of patients and controls. Student t-test for dependent data was used to compare first and second measurements of social functioning in patients. Analysis of variance was performed

to assess the influence of demographic and premorbid variables functioning on T1 and T2 SFS score in both longitudinal and cross-sectional analysis. In regression analysis a 5-dimensional model of schizophrenia symptoms was used to determine the prognostic role of these dimensions for social functioning. Finally, we performed multiple regression analyses to determine predictive value of demographic, premorbid and hospitalization variables, together with concurrent symptoms and social support for social functioning in T1 and T2 assessments.

Results

The study sample consisted of predominantly young (62.8% below 22 years of age) and male (60.5%) patients. Female patients at first admission were older (mean difference 2.8 years, t=2.26, p<0.05). Majority of patients lived in the city (87.2%). Until the first admission 48.8% of patients had higher education, and 5.8% had academic education. In the 1-year follow-up the number of patients with a higher and academic education increased respectively by 4 and 5 persons. Until the first admission, 12.8% of patients were married. In the 1-year follow-up there was 1 divorce and no marriages. Some form of activity was reported by 72.1% of patients before admission, 26.7% of patients worked, 34.9% studied, 7% worked at home; after 13 months, the number of active persons decreased; 33 persons had quit their job or school. In both T1 and T2 social support was rated as good by 50 patients (58.1%).

In both T1 and T2 SFS assessments we found similar levels of social functioning in patients (T1- 103.7; T2- 105.5), ranges respectively: 64.8-126.4, 77.4 -127.4; which indicates a statistical trend towards higher social functioning in T2; p=0.08). Results in subscales of SFS were presented in Table 1. In healthy controls the SFS score was 117.0 (range 98.6-130.1). The difference between T2 results of patients and healthy controls was significant for global assessment (p<0.001) and every subscale of SFS (results shown in Table 1).

Table 1

Comparison of social functioning in schizophrenic patients measured with the Social Functioning Scale 1 month and 13 months after hospitalization, and the score of healthy control subjects

	SFS: T1	SFS: T2	t	p	SFS: in healthy controls	t (patients T1 vs. controls)
	Mean (SD)	Mean (SD)				
Prosociality	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Social Engagement (SE)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Interpersonal communication (IC)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Social activity (SA)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Recreational activity (RA)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Independence-performance (IP)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Independence-competence (IC)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Occupational activity (OA)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

*** p < 0.001; ** p < 0.01

Analysis of demographic and premorbid factors associated with longitudinal change in SFS score in patients

The only significant predictive factor for the SFS subscale - IP change was the GAS score. Patients with better functioning before admission showed better improvement in this subscale than patients with poor functioning in this period. No other factors predicted any change in SFS and its subscales between T1 and T2.

Influence of demographic factors on SFS – cross-sectional analysis.

1. Sex

Female patients score significantly higher in both IP (T1 – $p<0.05$; T2 – $p<0.01$) and INC (T1 – $p<0.05$).

2. Education

Results for patients with various levels of education differ significantly. The education level was divided into: basic (£8 yrs); job-related (8-10 yrs); higher (11-13 yrs) and academic (14 and more years). They were presented in Table 2. Generally, patients with higher education score significantly better than both patients with lower levels of education and academic education.

Table 2

Level of education and social functioning in first-episode schizophrenia. Interpersonal communication (IC), Social activity (SA), Recreational activity (RA), Independence: competence (INC), Occupational activity (OA)

Level of education	N	T1 Mean (SD)	T2 Mean (SD)
		Global SF Score	
Basic	11	[illegible]	[illegible]
Job-related	22	[illegible]	[illegible]
Higher	42	[illegible]	[illegible]
Academic	5	[illegible]	[illegible]
		NS.	[illegible]
		IC	
Basic		[illegible]	[illegible]
Job-related		[illegible]	[illegible]
Higher		[illegible]	[illegible]
Academic		[illegible]	[illegible]
		NS.	[illegible]
		SA	
Basic		[illegible]	[illegible]
Job-related		[illegible]	[illegible]
Higher		[illegible]	[illegible]
Academic		[illegible]	[illegible]

table continued on the next page

		N.S.	[illegible]
		RA	
Basic		[illegible]	[illegible]
Work-related		[illegible]	[illegible]
Higher		[illegible]	[illegible]
Academic		[illegible]	[illegible]
		[illegible]	[illegible]
		[illegible]	
Basic		[illegible]	[illegible]
Work-related		[illegible]	[illegible]
Higher		[illegible]	[illegible]
Academic		[illegible]	[illegible]
		N.S.	[illegible]
		OA	
Basic		[illegible]	[illegible]
Work-related		[illegible]	[illegible]
Higher		[illegible]	[illegible]
Academic		[illegible]	[illegible]
		N.S.	[illegible]

a, b – no significant differences between groups (Tukey test)

Influence of premorbid and risk factors on SFS – cross-sectional analysis

1. Activity before onset of illness

Patients who were active before hospitalization score significantly better in Occupational Activity than subjects who have not engaged in any kind of activity in T2 (111.7 (12.2) vs. 101.5 (13.3); p<0.01)

2. Pre-hospitalization functioning

In both T1 and T2 we observed a positive correlation between the GAS score referring to 1-year before hospitalization and global SFS 1 month and 13 months after hospitalization. Detailed results are presented in Table 3.

3. Family history

Family history was associated with better social functioning in 2 domains of T2: IP (p<0.05) and ICN (p<0.05).

4. Comorbid conditions

Patients with comorbid conditions scored lower in global SFS and 4 subscales: SFS (T1 and T2; p<0.05), IP (T1 and T2; p<0.05), ICN and OA (T1; p<0.05), RA (T2; p<0.05)

5. Age at onset of disturbances of functioning

Patients with a later onset of disturbances of functioning scored higher in global SFS score and its 4 subscales: IP (T1 and T2; p<0.01), SFS (T1; p<0.05), SE (T1; p<0.01), IC (T1; p<0.05), OA (T2; p<0.05)

6. Number of prodromal symptoms

Smaller number of prodromal symptoms was associated with better OA (T1; $p<0.05$)

7. Depressive symptoms before admission

Lack of depressive symptoms before 1st admission was associated with a better score in ICN and OA (T1; $p<0.05$)

8. Suicidal thoughts before 1st admission

Associated with better OA (T1 and T2; $p<0.05$)

9. Acute onset

Acute onset was associated with global SFS score and 3 subscales: SFS (T1; $p<0.01$; T2; $p<0.05$), OA (T1 and T2; $p<0.01$), IC, INC (T1; $p<0.05$)

10. Duration of untreated psychosis

Duration of untreated psychosis was associated with better score in global SFS and 3 subscales: SFS, IC (T1 and T2; $p<0.01$), OA (T1; $p<0.05$; T2; $p<0.01$), SE (T1; $p<0.01$)

11. Age at hospitalization

Better functioning in 2 subscales: SE (T1; $p<0.05$) and IP (T2; $p<0.05$) was associated with later age at hospitalization

Factors associated with hospitalization

1. Type of dominant symptoms at first hospitalization

Non-deficit symptoms were associated with better score in global SFS and 6 subscales: SE, SA, RA, IP, INC (T1 and T2; $p<0.01$), IC (T1; $p<0.05$; T2; $p<0.01$)

2. Presence of depressive symptoms during hospitalization

Lack of depressive symptoms at 1st hospitalization was associated with a better score in 3 subscales: SE, SA (T2; $p<0.05$), INC (T1; $p<0.05$)

3. Duration of hospitalization

Duration of hospitalization of 1-4 months was associated with a better score in the global SFS score and 4 subscales, than any longer hospitalization period: INC (T1; $p<0.001$; T2; $p<0.01$), OA, SFS (T1 and T2; $p<0.01$), IP (T1 and T2; $p<0.05$), SA (T1; $p<0.001$)

Factors assessed simultaneously with SFS

1. Social support

We observed a significant correlation between the rating of social support and global SFS score and 5 of its subscales. Results were shown in Table 3.

2. Psychopathological symptoms

Table 3
The correlation between pre-hospitalization functioning (1 year before admission) measured with GAS and concurrent social support with social functioning 1 month and 13 months after hospitalization; Independence: performance (IP) subscale of SFS in patients with different GAS scores; correlation between self-assessed social support and social functioning. Interpersonal communication (IC), Social activity (SA), Recreational activity (RA), Independence: performance (IP), Independence: competence (INC)

	SFS T1	SFS T2
	Global SFS	
GAS	r = .26, p = .1	r = .38, p < .01
GAS	IP	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	F(2,[illegible]) = 3.29, p = .05	NS
Social support	Global SFS	
	r = .21 p = .05	r = .35 p = .1
	IC	
	r = .25 p = .05	r = .26 p = .1
	SA	
	r = .26 p = .1	N.S.
	RA	
	r = .23 p = .05	r = .22 p = .05
	IP	
	N.S.	r = .26 p = .05
	INC	
	N.S.	r = .33 p = .1

In both prospective assessments the SFS global score and every SFS subscale were highly negatively correlated with the PANSS score. SFS global score was highest in patients with a minimal severity of symptoms (≤59 points), lower in an intermediate severity group (60-79 points) and lowest in patients with severe symptoms. Detailed results are presented in Table 4.

Regression analyses

In T1 SFS the score was predicted with 2 of the 5 schizophrenia dimensions. 39% of the variance was explained with the negative symptoms dimension and 1% with the positive symptoms dimension. In a 13-month follow-up only negative symptoms explained 36% of the variance in SFS score. Regression analyses for subscales of SFS are presented in Table 5.

In multiple regression analyses including all analyzed variables, the SFS T1 score was predicted only with the severity of current psychopathological symptoms (37% of

Table 4

The relationship between severity of symptoms and social functioning in T1 and T2. Social engagement (SE), Interpersonal communication (IC), Social activity (SA), Recreational activity (RA), Independence: performance (IP), Independence: competence (INC), Occupational activity (OA)

Symptoms severity (PANSS (T1 and T2)	T1 Mean (SD)	T2 Mean (SD)
PANSS/SFS I PANSS/SFS II	Global SFS	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	SE	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	IC	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	SA.	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	RA	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	[illegible]	[illegible]
	IP	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	INC	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]
	OA	
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]

a, b – no significant differences between groups (Tukey test)

Table 5

Multiple regression analyses of SFS T1 and T2 scores with symptom dimensions (respectively in T1 and T2) as independent variables. Social engagement (SE), Interpersonal communication (IC), Social activity (SA), Recreational activity (RA), Independence: performance (IP), Independence: competence (INC), Occupational activity (OA)

SFS T1	PANSS T1	beta	% of variance	SFS T2	PANSS T2	beta	% of variance
Global SFS	Negative	-0.51	39	Full SFS	Negative	-0.61	36
	Positive	-0.22	4				
SE	Negative	-0.56	31	SE	Cognitive	-0.45	19
IC	Cognitive	-0.51	25	IC	Cognitive	-0.35	25
					Agitation	-0.32	20
SA	Negative	-0.33	11	SA	Negative	-0.30	18
RA	Negative	-0.45	15	RA	Negative	-0.64	15
					Agitation	-0.20	22
IP	Negative	-0.53	21	IP	Negative	-0.53	21
INC	Negative	-0.41	31	INC	Cognitive	-0.45	31
	Positive	-0.29	36				
OA	Negative	-0.35	11	OA	Negative	-0.44	15

the explained variance). Regression analysis of SFS T2 included the same independent variables as in previous analysis and the SFS T1 score. After 13 months of hospitalization 57% of the variance of SFS T2 score was explained with the SFS T1 score (42%) and T2 PANSS score – 11%. Multiple regression analyses for subdimensions of SFS in T2 were presented in Table 6.

Discussion

Results of this study may suggest, that social functioning in schizophrenia is significantly disturbed from early stages of the illness (i.e. in first month after discharge), and that the level of this dysfunction is relatively stable in a 1-year follow-up. While, only GAS in a year before hospitalization predicted significant change in the Independence Performance subscale of SFS between T1 and T2, none of the other analyzed factors was predictive for a change of SFS and its subscales. Some socio-demographic variables showed association with social functioning in both prospective assessments; however the most important determinant of social functioning was clinical status, mostly negative symptoms.

Results indicating early beginning of disturbances of social functioning are concordant with results of Grant et al. [5] who found a similar level of social functioning in patients with first and multiepisode schizophrenia. This may indicate that deficits in social functioning are a primary feature of schizophrenia rather than a secondary phenomenon associated with a long duration of illness.

We reported some change in social functioning in individual cases between T1 and T2, however, no significant difference in full SFS and its subscales was observed

Table 6

Multiple regression analysis of SFS II scores with socio-demographic and clinical factors as independent variables. Social engagement (SE), Interpersonal communication (IC), Social activity (SA), Recreational activity (RA), Independence: performance (IP), Independence: competence (INC), Occupational activity (OA)

SFS T2	Factor	beta	Partial correlation	% of explained variance	t
Global SFS	PANSS T2	[illegible]	[illegible]	31	[illegible]***
	Dominant symptoms during hospitalization	-0.21	-0.31	31	-3.24**
	Education	[illegible]	0.23	[illegible]	[illegible]*
	R2 corrected = [illegible]				F = [illegible]
SE	PANSS T2	[illegible]	[illegible]	[illegible]	[illegible]***
	Depressive symptoms during hospitalization	-0.32	-0.32	[illegible]	[illegible]***
	Dominant symptoms during hospitalization	[illegible]	[illegible]	25	[illegible]*
	R2 corrected = 0.25				F = [illegible]
IC	Dominant symptoms during hospitalization	-0.34	-0.34	[illegible]	[illegible]**
	PANSS T2	-0.21	[illegible]	24	[illegible]*
	R2 corrected = 0.24				F = [illegible]
SA	Dominant symptoms during hospitalization	-0.44	-0.44	[illegible]	[illegible]***
	R2 corrected = [illegible]				F = [illegible]
RA	Dominant symptoms during hospitalization	-0.34	-0.36	[illegible]	-3.25***
	Age at first hospitalization	0.23	0.26	11	[illegible]*
	Comorbid illnesses	[illegible]	-0.24	[illegible]	[illegible]*
	R2 corrected = [illegible]				F = [illegible]
IP	PANSS T2	[illegible]	-0.31	24	[illegible]**
	Sex	[illegible]	-0.31	[illegible]	[illegible]***
	Age at first hospitalization	[illegible]	[illegible]	[illegible]	[illegible]***
	Duration of untreated psychosis	[illegible]	-0.21	[illegible]	[illegible]*
	R2 corrected = [illegible]				F = [illegible]
INC	PANSS T2	[illegible]	[illegible]	[illegible]	[illegible]***
	Family history of psychiatric disorders	[illegible]	[illegible]	[illegible]	[illegible]*
	R2 corrected = [illegible]				F = [illegible]
OA	PANSS T2	-0.31	[illegible]	[illegible]	[illegible]***
	Activity before hospitalization	[illegible]	[illegible]	[illegible]	[illegible]**
	Education	[illegible]	[illegible]	31	[illegible]*
	Functioning 1 year before hospitalization (GAS)	0.21	0.26	35	2.25*
	R2 corrected = 0.35				F = [illegible]

***p < 0.001; **p < 0.01; *p < 0.05

in schizophrenia patients when treated as a group. A general better improvement of Independence Performance subscale occurred in patients with better functioning before admission. Such patients tend to have more severe impairment in T1, than patients with

less severe premorbid dysfunction, however both groups achieved a similar level of social functioning in T2. This may be explained by a more acute onset of the disease in the former group and its disruptive effect on social functioning in T1, which was compensated in T2.

In cross-sectional analysis we found that females with first-episode schizophrenia score significantly better in Independence Performance (T1 and T2) and Independence Competence (T1) than males. This is consistent with many studies showing a favorable outcome in female patients [16, 17]. Such a phenomenon may be associated with earlier onset of symptoms in males, protective effect of estrogens and enhanced responsivity to pharmacotherapy in females. Moreover earlier onset of schizophrenia in males may interact with a later time of forming formal relationship, which results in staying single. Being married may improve social functioning; however we did not observe this, probably due to a small number of married patients in our group. We also found the significant relationship between the level of education before admission and social functioning – patients with high school education scored significantly better than patients with shorter education, and somehow unexpectedly better than patients with academic education. These differences were more pronounced in T2. Probably, some level of education plays a protective role in social functioning deterioration enabling the patient to retain some social roles. Recently, it was suggested that patients with academic education may suffer from a non-developmental form of illness, where depressive symptoms are more important than core schizophrenic symptoms [18]. One cannot exclude, that depression is an intermediate factor between academic education and poorer social functioning in schizophrenic patients.

Active role fulfillment before hospitalization was associated with better Occupational Activity in T2. Patients with better functioning one year before hospitalization (GAS score) obtained better results in the Independence Performance score than patients with impaired functioning in the preadmission period. The GAS score showed moderate correlation with full scale SFS in both T1 and T2 assessment. As pointed out by Hafner [16], most patients with schizophrenia start to suffer from social disability 24 to 51 weeks before first admission. It is possible, that an early emergence of negative symptoms is associated with this deterioration. In our sample, patients with poor social functioning probably had some negative symptoms of schizophrenia before first admission.

Self-assessment of satisfaction with social support was significantly correlated with social functioning in patients with schizophrenia. In a recent paper, Malla et al. [11] noticed that social relation/support assessed by the patients was negatively related to the duration of untreated psychosis (DUP) and psychomotor poverty. It is possible, that patients with a longer DUP experience more significant disturbance of social functioning, which results in a lack of satisfaction with social support. Moreover predominant negative symptoms in patients may disturb social relationships with caregivers and family members, affecting social support.

The most important factor predicting social functioning was the severity of concurrent psychopathological symptoms. In both T1 and T2 the SFS score was significantly related to the severity of concurrent psychopathological symptoms (PANSS score). This result corroborates the original finding of Birchwood et al. [12], who found a

significant correlation between presence of both negative and positive symptoms and social impairment. Using a five dimensional model of schizophrenia symptoms we looked for predictive factors for the full scale SFS and its subscales. In both T1 and T2 majority of variance in SFS was explained by the severity of negative symptoms, respectively (39% and 36%). This result is similar to that obtained by Dickerson et al. [3], who reported that the SFS score in a 2-year follow-up is independently predicted by the severity of negative symptoms and neurocognitive dysfunction. In T1, a small percentage of variance in SFS was predicted by positive symptoms, and this effect disappeared in T2. In some previous studies, the severity of positive symptoms also predicted social functioning [8]; however our results rather confirm the unanimous observation that functioning is associated with severity of negative symptoms [7], and points to only a slight effect of positive symptoms on social functioning. In a 1 year follow-up some aspects of social functioning was predicted also with the cognitive and agitation dimension. The former may be associated with neurocognitive functioning which affects the SFS score, and the latter may result from akathisia symptoms, which may emerge in some patients after neuroleptic treatment.

In multiple regression analysis, which included all the analyzed variables, SFS T2 was predicted mainly with social functioning in T1 and the concurrent PANSS score. A relatively small percentage of variance of Independence Performance was explained with sex (females scored better), and some variance in Occupational Activity was explained with active role fulfillment before hospitalization, education and preadmission functioning. These results may suggest, that in comparison to clinical symptoms, the analyzed demographic variables, probably except sex, do not seriously influence the social functioning of schizophrenic patients. Occurrence of prehospitalization impairment of functioning was an independent factor contributing to the adverse occupational outcome; however it is possible that this effect was not observed in other subscales of SFS due to its correlation with negative symptoms.

This study has several limitations. The study sample comprised only hospitalized patients, with a severe form of illness, and it may not be possible to generalize the results to other schizophrenic patients. The GAS assessment referred to the preadmission period (not premorbid period) and might be influenced with some negative symptoms, and possibly emergent positive symptoms. The significant relationship between negative symptoms and impaired social functioning is somehow tautological, because the very definition of the negative syndrome includes some items related to social functioning. The observed lack of deterioration of social functioning between T1 and T2 may result from a short duration of follow-up.

Nevertheless, this study allows drawing some conclusions. In first-admitted schizophrenic patients a significant disturbance of social functioning can be observed, which does not increase in a 1-year follow-up. Female sex and higher education may play a role in better social functioning, however their importance is limited in comparison with clinical status. Social functioning is predominantly dependent on the level of negative symptoms, however some of its aspects may be related to positive symptoms shortly after hospitalization, and some are associated with the cognitive and agitation dimension of symptoms in a one-year follow-up. The results of this study indicate

that the intervention to improve social functioning in schizophrenic patients should be started immediately after the onset of symptoms.

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