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Premorbid social relationships and the course of schizophrenia in a 20-year follow-up study

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Summary

Aim. An important dimension indicating a growing risk of psychosis outbreak and its subsequent unfavorable course is deteriorating social functioning, especially the lack of sufficient social relationships. The aim of the study was to evaluate the association of the quality of social contacts and the scope of support system before the onset of the illness with treatment outcomes in clinical and social dimension in various time intervals of the 20-year illness course.

Method. During the first hospitalization, an 80-person group living in Krakow and suffering from schizophrenia was selected, diagnosed according to DSM-IV-TR criteria and examined six times: at admission and discharge during first hospitalization, after 3, 7, 12 and 20 years. The analysis involved 55 persons (69% of the group included to the study) who went through all the examinations over a period of 20 years. Two-factor analysis of variance was used with one grouping factor (social contacts) and one repeated measures factor (follow-ups) for the results of GAF, BPRS, DSM-III Axis V and a series of simple linear regressions for the associations between these outcome indicators and the Surtees' *Index of Social Support*.

Results. Satisfactory, positive contacts before the outbreak of the illness translated, especially after 20 years, into better general and social functioning and fewer symptoms, especially negative ones. A wider social support before the outbreak was associated with better general and social functioning of patients and lesser severity of general, positive and negative symptoms; however, in this last case the effect disappeared after 20 years.

This study was conducted by the Krakow Schizophrenia Research Group – Cogito.

Conclusions. The quality and scope of social contacts before the outbreak of the illness, especially satisfactory relationship in non-familial milieu, are an important prognostic factor of a many-year beneficial clinical and social course of psychoses from the schizophrenia group

Key words: schizophrenia, prospective studies, predictors, social relationships

Introduction

An important dimension indicating a growing risk of psychosis outbreak and its subsequent unfavorable course is deteriorating social functioning, especially the deficit of social relationship. Prospective observations of the course of psychoses from the schizophrenia group, both short and long-term ones, proved the association between worse functioning and social adaptation before the first episode and an unfavorable clinical and social course of the illness as well as the outcome of treatment [1–6]. In the search for relevant indicators of good social adaptation, the most frequently pointed areas were good previous social relationship and school or professional stability. Studies by Häfner and an der Heiden [7], summarized by Häfner [8, 9], prove that social functioning, measured by good social relationship before the onset of the illness, differentiates the population of future patients and at the same time determines a favorable and unfavorable future course and outcome of the illness. In their early European follow-up studies, Ciompi and Müller [10] stated that the favorable course of schizophrenia should be associated with a well-integrated, stable, adapted personality, which would be expressed by having broad social contacts outside the generational family, sexual adaptation, having family life and good professional integration before the outbreak of psychosis. In a later review of the research on the main prognostic factors of the future course of schizophrenia, Hubschmid and Ciompi [11] considered the ability to establish social contacts and the ability to form relationships with the opposite sex to be the most important.

For example, in the study by Erickson et al. [12], social relationships were a prognostic factor in the short-term course of the first episode of schizophrenia. Two groups were examined using *the Interview Schedule for Social Interaction*, which included three dimensions: (1) social network, (2) accessibility and quantity of social relationships with family, friends, colleagues, and (3) support received in close relationships. Before the onset of psychosis, patients diagnosed with schizophrenia had significantly fewer close relationships, and they were less satisfactory than those of patients with schizoaffective psychosis and of healthy persons, and had fewer friends in social network than healthy persons. Having non-familial relationships was associated with a better prognosis for both groups of psychotic disorders. Cannon et al. [13] compared social functioning of people before schizophrenia, people with bipolar affective disorder and healthy controls using *the Premorbid Social Adjustment Scale*. Persons diagnosed with schizophrenia showed significantly weaker adaptation during childhood and adolescence, both in sociability and in school adaptation, compared to those diagnosed with bipolar affective disorder and healthy controls. Strous et al. [14] in a retrospective study evaluated groups with diagnosis of schizophrenia and schizoaffective disorders before the first episode using *the Premorbid Adjustment Scale*. In the period between

childhood and adolescence, approximately 80% of the respondents had no changes in social functioning until adolescence, when the deterioration occurred, especially in the group of men. In the period before the outbreak of psychosis, the results in one third of the respondents indicated a low degree of sociability and a greater withdrawal from relationships. The respondents in this group also had worse treatment outcomes in comparison to the group with better adaptation before the outbreak of the illness. In a multi-center Italian study by Bucci et al.[15], they evaluated adaptation before illness outbreak in 915 patients with DSM-IV diagnosis of schizophrenia, in their 368 first-degree relatives and in 778 control subjects using *the Premorbid Adjustment Scale*. The scale consists of several areas: sociability and withdrawal, peer relationships, adaptation to school, scholastic performance, and social-sexual aspects of life, in relation to four periods: childhood, early and late adolescence and adulthood. The results indicate worse relational, social and school adaptation before the outbreak of the illness in the patient group and worse school adaptation among their relatives. Worse adaptation before the outbreak of psychosis was associated with poorer cognitive and social functioning and with more severe symptoms, especially negative ones. The authors believe that poorer social functioning in early life may be one of the markers of susceptibility to schizophrenia.

The results of a study by Bjornestad et al. [16] show that the frequency of social interactions with friends before the outbreak of the illness was significantly positively associated with clinical recovery, while subjective satisfaction with the relationship and the quantity of contacts with family did not have such a significant impact. In a Korean study by Lee et al. [17], significantly poorer social functioning was found to be at the same level in the group of people at high risk for psychosis as in the group of people with the first episode of schizophrenia. A correlation between worse psychosocial functioning before the onset of the illness and its worse clinical course, especially the intensification of negative symptoms, was observed. A similar association with the negative syndrome was also found by other researchers [14–15] in a large, multi-center study, where they once again confirmed that patients with worse premorbid adaptation had a greater severity of negative symptoms: weaker memory, avolition, apathy, worse social understanding and functioning in ‘real life’.

In our prospective study, already reported with regard to the importance of other global predictors [18–20], we set ourselves the objective of tracing the association between social relationships before the outbreak of schizophrenia and clinical and social indicators of its long-term course.

Aim

The objective of the study was to evaluate the association of the quality of social contacts and the scope of support system before the onset of psychosis with treatment outcomes in clinical and social dimension of the course of schizophrenia in various time intervals over a period of 20 years.

Methodology

Study group

In the years 1985–1988, a study group was selected consisting of 80 persons, who met the following initial criteria: (a) first psychiatric hospitalization, (b) diagnosis: schizophrenia according to DSM-IV-TR criteria, (c) residing with the family in Krakow. The justification for the adopted criteria and methodology was presented in an earlier publication [18]. In accordance with the assumptions of longitudinal studies, the selected subjects were examined in subsequent time periods, defining altogether 6 measurement points: (1) at first admission to hospital, (2) at discharge, (3) after 3 years, (4) after 7 years, (5) after 12 years (where at the same time patients were diagnosed in accordance with the DSM-IV-TR criteria) and (6) after 20 years. The final analysis included 55 persons (69% of the study group). None of the patients was diagnosed with organic brain damage or addiction to psychoactive substances. All participants gave informed consent to participate in the study. Two experienced clinicians evaluated the course of the illness and participants' functioning at subsequent measurement points. Various reasons for excluding 25 subjects (31.25%) from the analysis were documented. During the 20-year follow-up, 5 persons (6.25%) died of natural death, 1 person (1.25%) was misdiagnosed at the time of qualification and excluded after one year from the study, 2 persons (2.5%) broke contact at an early stage and moved to another place of residence, 2 persons (2.5%) provided written information that they work abroad (in Canada and Greece). Another 9 persons (11.25%) were examined in a full clinical trial in a 20-year follow-up but did not complete all the previous ones. As to the remaining 6 persons (7.5%), information was gathered on the phone or from the family. In the latter two groups, the course of the illness was unfavorable or very unfavorable in one half of the persons, and in the other half very favorable or favorable in terms of severity of symptoms, number of re-hospitalizations, professional activity, and social contacts. In the group of people with a very good course of schizophrenia, the reason for refusal was considered to be "a strong intention to move away from the issues related to the illness and treatment". The collected information indicates that the group which was not included in the analysis does not differ in its characteristics from the 55-person (68.75%) group described below.

Premorbid social contacts were evaluated during the clinical interview with each patient and their family at the time of admission to hospital. The subjects were divided into two groups according to the quality of social contacts before the illness: satisfactory contacts (A) and unsatisfactory contacts, possibly lack of contacts (B). Groups formed on the basis of these categories (qualitative assessment) were then compared (Student's *t*-tests, Mann-Whitney's *U* tests and Chi^2 tests) in terms of primary sociodemographic and clinical data, and also in the scope of supportive relationship on the Surtees' *Index of Social Support* (ISS) [21, 22] (see Table 1).

Table 1. **Socio-demographic data for the investigated groups**

Socio-demographic data	(A) Satisfactory contacts (n = 31)		(B) Unsatisfactory contacts/ lack of contacts (n = 24)		
	Number of persons	Percentage	Number of persons	Percentage	Differences
Gender					
Women	22	71	11	46	$Chi^2 = 3.56$ p = 0.059
Men	9	29	13	54	
Education					
Graduate	10	32	6	25	$Chi^2 = 3.90$ p = 0.420
Undergraduate/studies	2	7	2	8.5	
Secondary	14	45	8	33	
Vocational	5	16	6	25	
Primary	0	0	2	8.5	
Marital status					
Married	13	42	8	33	$Chi^2 = 0.42$ p = 0.515
Single	18	58	16	67	
	Mean (±SD)	Median	Mean (±SD)	Median	
Age	28.2 (±6.9)	28	26.6 (±5.6)	26.5	t = 0.91 p = 0.370
Age (onset of symptoms)	27.5 (±7.3)	27	25.7 (±5.2)	25	t = 1.03 p = 0.310
Duration of untreated psychosis (weeks)	38.8 (±82.2)	12	55.5 (±81.3)	24	z = – 1.01 p = 0.310
Surtees' Index of Social Support	6.12 (±3.1)		8.6 (±2.7)		t = – 3.02 p = 0.004

The groups differed only in terms of the result on the ISS, suggesting that among the subjects satisfied with their relationships, there was also a stronger social bond and a better support (which is indicated by a lower result on the ISS).

Tools and Procedure

Each patient was described using research tools related to the anamnestic period (admission to a stationary ward and discharge) and subsequently in follow-up studies (after 3, 7, 12 and 20 years). During the phase of study design preparation and selection of research instruments, the team was trained in order to increase the reliability of assessments when filling in questionnaires and scales. In subsequent studies, the authors used a permanent set of diagnostic tools – *Anamnestic and Catamnestic*

Questionnaire, GAF (*Global Assessment of Functioning*), BPRS (*Brief Psychiatric Rating Scale*) and DSM-III Axis V. The Anamnestic Questionnaire included questions about education level, occupational status, marital status and the age at onset of symptoms. The level of social functioning, interpersonal relationship and an estimated time of untreated psychosis were also analyzed. A psychopathological condition of patients was evaluated with the use of the BPRS. A general assessment of the level of functioning was carried out using the GAF ordinal scale [23]. Axis V of DSM-III is a comprehensive assessment on a 5-degree scale of the best level of functioning in the past year, taking into account social relationships, work or study and participation in social life.

Regarding statistical analyses, the following methods were used: (a) two-factor analysis of variance with one between-group factor (social contacts) and one repeated measures factor (follow-ups) for the results of the BPRS, GAF and Axis V of DSM-III, which were complemented with an analysis of contrasts; in the remaining cases the Friedman's ANOVA was utilized, alongside a series of Mann-Whitney *U* tests; (b) a series of correlations (Pearson's or Spearman's) for associations of clinical and social outcomes with the results on the ISS. All calculations were made for a sample of $n = 55$ (69% of the study group) using IBM SPSS Statistics 24 and STATISTICA 13.1 packages. The significance level was set at $\alpha = 0.05$; however, the probability of test statistics at $0.05 < p < 0.1$ significance level (due to the small sample size) were interpreted as significant at the level of a statistical trend [24, 25].

Results

BPRS – total

An analysis of variance with repeated measures revealed a significant main effect of the study time $F(5, 49) = 57.81$* (asterisk indicates multivariate tests); $p < 0.001$, which indicates a significant change in the mean scores on the BPRS – total at subsequent measurement points, regardless of whether the subjects belonged to the group (A) or (B), as well as a significant main effect of premorbid relationships $F(1, 53) = 4.83$; $p = 0.032$. Regardless of the measurement point, the group of persons with satisfactory and/or numerous premorbid relationships scored on average significantly lower on the BPRS – total in comparison to the group of persons declaring unsatisfactory and/or limited relations or total lack of contacts (38.6 vs. 42.3 points, respectively).

The effect of the interaction between the study time and the group was insignificant –$F(5, 49) = 1.17$*; $p = 0.335$. For this reason, and due to a large number of comparisons performed in *post-hoc* analyses, it was decided to examine the effect of premorbid relationships only on the long-term outcomes of treatment, i.e., after 20 years. For this purpose, a contrast analysis was performed. It turned out that group (A) was not only better overall but also scored significantly lower on the BPRS – total in the final phase of the study (after 20 years) – $F(1, 53) = 4.84$; $p = 0.032$. The exact data were presented on Chart 1.

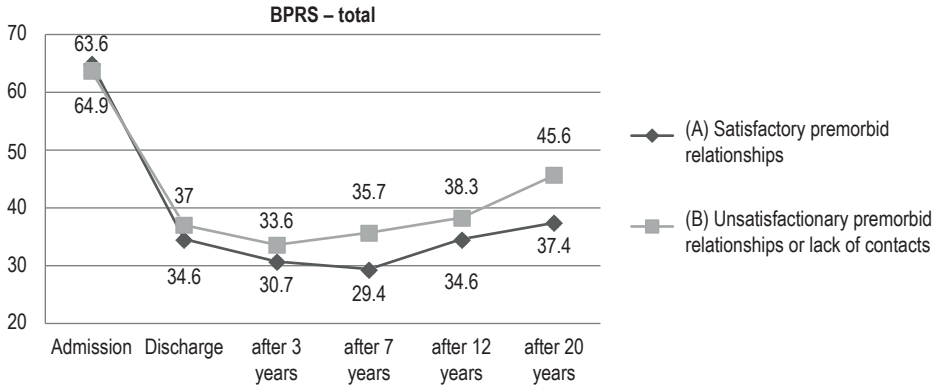

Chart 1. **Dynamics of BPRS – total scores in relation to the quality of relationships**

Because of a small sample size and due to a frequent lack of fulfilled assumptions for the regression model, the correlation coefficient (Pearson's r or Spearman's rho) was used to assess the association between the ISS and the other results.

The weaker the bonds and premorbid social support (higher score on the ISS), the higher the BPRS score at the time of discharge from hospital, as well as after 7, 12 and 20 years. The results of analyses for the sum of BPRS points and ISS are presented in Table 2.

Table 2. **Correlation coefficients for the BPRS – total and Surtees' Index of Social Support (n = 55)**

Pearson's r correlation coefficients and p values	BPRS – total					
	Admission	Discharge	after 3 years	after 7 years	after 12 years	after 20 years
ISS	-0.01	.28	.17	.31	.34	.29
	p =0 .957	p = 0.040	p = 0.205	p = 0.020	p = 0.011	p = 0.030

BPRS – positive syndrome

The analysis of Friedman's ANOVA variance showed that both in the group with favorable premorbid relationships – $Chi^2(5) = 79.18$; $p < 0.001$, and in the group with unsatisfactory relationships – $Chi^2(5) = 41.60$; $p < 0.001$ – the results on the BPRS – positive syndrome significantly change over time, which is shown in Chart 2. In relation to long-term results of the study and the impact of satisfaction with social relationships, no differences between the groups were observed after 20 years ($U = 277.00$; $Z = – 1.64$; $p = 0.100$). For the sake of better readability, the graph shows mean values (Chart 2).

The results of correlation for the sum of the BPRS – positive syndrome points and the ISS are presented in Table 3. The weaker the bonds and social support in the

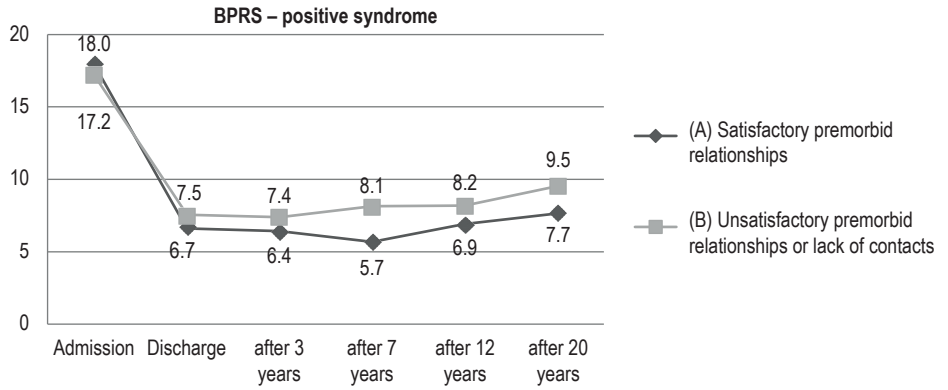

Chart 2. **Dynamics of the results on the BPRS – positive syndrome in relation to the quality of premorbid relationships**

premorbid period (higher score on the ISS), the greater the severity of positive symptoms at the time of discharge, as well as after 7, 12 and 20 years.

Table 3. **Correlation coefficients for the BPRS – positive syndrome and Surtees' Index of Social Support (n = 55)**

Spearman's rho coefficients and p values	BPRS – positive syndrome					
	Admission	Discharge	after 3 years	after 7 years	after 12 years	after 20 years
ISS	-0.16	0.31	0.11	0.35	0.35	0.32
	p = 0.239	p = 0.023	p = 0.438	p = 0.008	p = 0.008	p = 0.016

BPRS – negative syndrome

The analysis of Friedman's ANOVA showed that both in the group with favorable premorbid relationships – $Chi^2(5) = 30.65$, $p < 0.001$, as well as in the group with unsatisfactory relationships – $Chi^2(5) = 21.71$, $p = 0.001$, the results on the BPRS – negative syndrome significantly change over time, as shown in Chart 3. As indicated by a subsequent Mann-Whitney *U* test, the severity of negative symptoms in groups differed after 20 years of the study in favor of the group with satisfactory social relationships ($U = 255.00$; $Z = -2.01$; $p = 0.044$). For the sake of better readability, the chart shows mean values (Chart 3).

The results of correlation for the sum of the BPRS – negative syndrome and ISS are presented in Table 4. The weaker the bonds and social support in the premorbid period (higher score on the ISS), the greater the severity of negative symptoms at the time of discharge, as well as after 3, 7 and 12 years. However, the associations between the BPRS – negative syndrome and social support was not observed after 20 years.

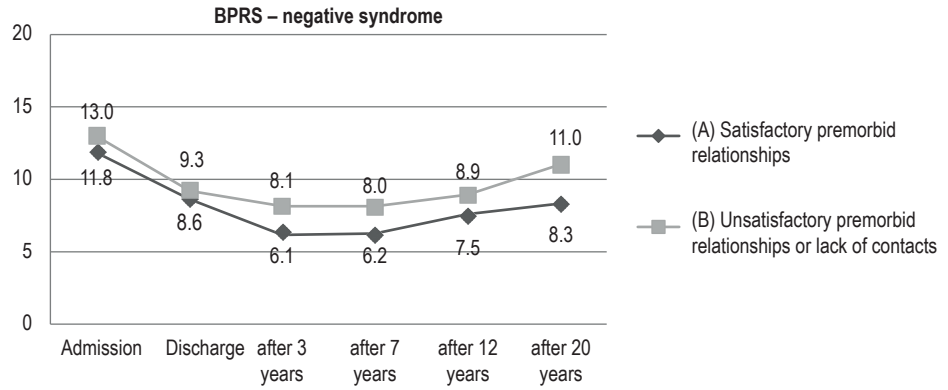

Chart 3. **Dynamics of results on the BPRS – negative syndrome in relation to the quality of premorbid relationships**

Table 4. **Correlation coefficients for the BPRS – negative syndrome and Surtees' Index of Social Support (n = 55)**

Spearman's rho coefficients and p values	BPRS – negative syndrome					
	Admission	Discharge	after 3 years	after 7 years	after 12 years	after 20 years
ISS	0.02	0.29	0.28	0.31	0.37	0.17
	p = 0.876	p = 0.029	p = 0.036	p = 0.019	p = 0.006	p = 0.220

General functioning as measured by the GAF

The analysis of variance with repeated measures revealed a significant main effect of the study time $F(3, 159) = 4.38$; $p = 0.005$, which indicates a significant change in the mean duration of re-hospitalization at subsequent measurement points, regardless of whether the subjects belonged to the group (A) or (B), as well as a significant main effect of premorbid relationships – $F(1, 53) = 4.98$; $p = 0.029$. Regardless of the measurement point, the group of persons with satisfactory and/or numerous premorbid relationships scored on average significantly higher on the GAF than the group of persons declaring unsatisfactory and/or limited relationships or total lack of contacts (63.3 vs. 55.7 points, respectively).

The effect of the interaction between the study time and the group was insignificant – $F(1, 159) = 1.46$; $p = 0.227$. For this reason, and due to a large number of comparisons performed as a part of the classical *post-hoc* analyses, it was decided to examine the effect of premorbid relationships only on the long-term outcomes of treatment, i.e., after 20 years. For this purpose, a contrast analysis was performed. It turned out that group (A) was not only better overall but also scored significantly higher on the GAF at the final phase of the study (after 20 years) – $F(1, 53) = 5.54$; $p = 0.022$. The exact data are presented in Chart 4.

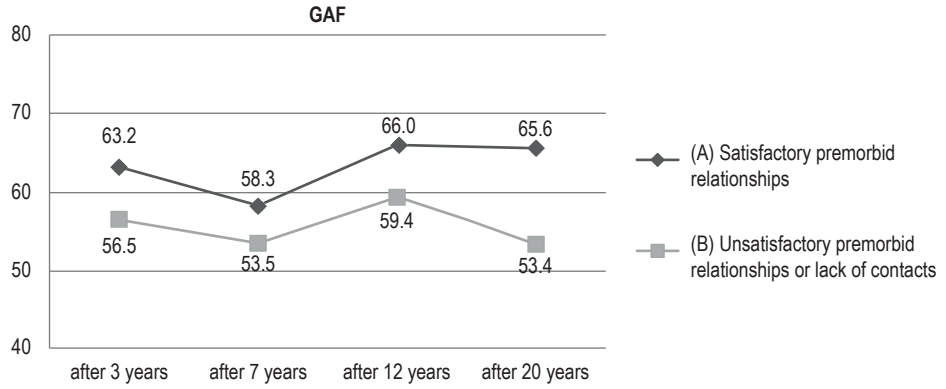

Chart 4. **Dynamics of the GAF scores in relation to the quality of premorbid relationships**

Correlation results for the GAF – total and ISS scores are presented in Table 5. Coefficients for all the investigated dependencies turned out to be insignificant. The stronger the bonds and social support in the premorbid period (lower ISS score), the better the assessment of overall functioning after 3 and 12 years. Moreover, after 7 and 20 years, the results (suggesting the same direction of dependence) remain at the limit of significance.

Table 5. **Regression coefficients for the GAF results and Surtees' Index of Social Support (n = 55)**

Pearson's r coefficients and p values	GAF			
	after 3 years	after 7 years	after 12 years	after 20 years
ISS	-0.38	-0.25	-0.34	-0.24
	p = 0.005	p = 0.065	p = 0.012	p = 0.076

Social functioning – Axis V of DSM III

The analysis of variance with repeated measures revealed a significant main effect of the study time – $F(4, 50) = 3.46^*$; $p = 0.014$, which indicates a significant change in the mean score on Axis V of DSM-III at subsequent measurement points, regardless of whether the subjects belonged to the group (A) or (B), as well as a significant main effect of premorbid relationships – $F(4, 50) = 8.63$; $p = 0.005$. Regardless of the measurement point, the group of persons with satisfactory and/or numerous premorbid relationships scored on average significantly lower on Axis V of DSM-III than the group of persons declaring unsatisfactory and/or limited relationships or total lack of contacts (3.7 vs. 4.3 points, respectively).

The effect of the interaction between the study time and the group was insignificant –$F(4, 50) = 1.37$ (multidimensional tests); $p = 0.258$. For this reason, and due to a large number of comparisons performed as a part of the classical *post-hoc* analysis, it was

decided to examine the effect of premorbid relationships only on the long-term outcomes of treatment, i.e., after 20 years. For this purpose, a contrast analysis was performed. It turned out that group (A) was not only better overall but also scored significantly higher on Axis V of DSM III in the final phase of the study (after 20 years) – $F(1, 53) = 5.85$; $p = 0.019$. The exact data are presented on Chart 5.

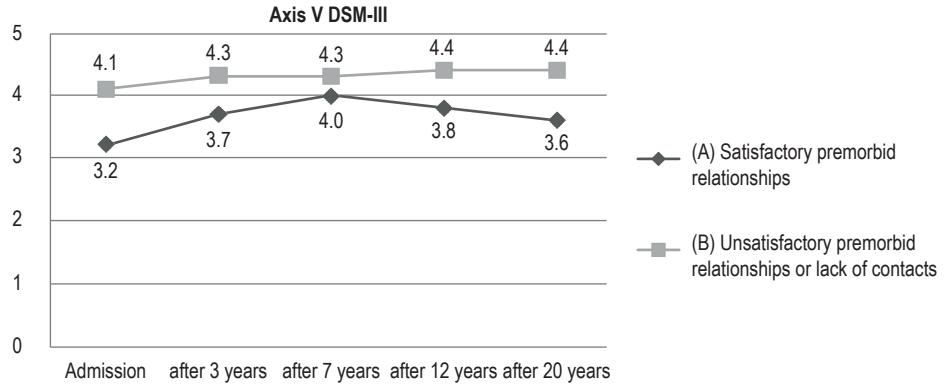

Chart 5. **Dynamics of Axis V of DSM-III results in relation to the quality of premorbid relationships**

The results of correlation between the outcomes of social functioning (DSM III axis V) and the scores on the ISS are presented in Table 6. Practically, at each measurement point a significant correlation between the results on DSM-III Axis V and the ISS was noted (measurement after 7 years remained at the limit of significance). The weaker the support before the illness (higher ISS score), the worse the general social functioning of the patient (higher DSM-III Axis V score) over the entire 20-year follow-up.

Table 6. **Regression coefficient for the results of Axis V of DSM-III and the Surtees' Index of Social Support (n = 55)**

Spearman's rho coefficient and p values	Axis V of DSM-III				
	Admission	after 3 years	after 7 years	after 12 years	after 20 years
ISS	0.28	0.366	0.25	0.32	0.40
	p = 0.038	p = 0.006	p = 0.076	p = 0.018	p = 0.003

Discussion

The long-term prospective Krakow study confirmed, both in short and long term evaluations, the association between worse social functioning measured by the quality and quantity of social relationships before the first episode of the illness and unfavorable clinical and social course of the illness and treatment outcomes. Similarly to

Carpenter and Strauss [1], Möller et al. [2] Prudo and Blum [3], Munck-Jørgensen and Mortensen [4], Melle et al. [5], Hopper et al. [6], Häfner and an der Heiden [7], Häfner [8, 9], Cannon et al. [13], Strous et al. [14], Bucci et al. [15], and Lee et al. [17], we confirmed that good social relationships before the onset of the illness diversifies the population of future patients and is associated with lesser severity of both positive and negative symptoms of patients, as well as their better social and general functioning.

In our study, satisfaction especially with non-familial relationships before the onset of psychosis differentiated BPRS scores regardless of the duration of the illness. This indicates that persons who had satisfactory relationships before the onset of the illness had less severe symptoms (total score on the BPRS). In the final phase of the analysis, this difference persisted, which means that this factor of social functioning was associated with long-term treatment outcomes. The quantitative measure of the relationships, understood as the extent of social bond measured by the ISS, was a significant predictor of an overall severity of symptoms at the time of discharge from hospital after the first hospitalization, and then from 7 years onward it was still relevant, even for long-term treatment outcomes after 12 and 20 years. Similar results were obtained in the assessment of positive symptoms, where the difference between the group with satisfactory relationships and the one with unsatisfactory relationships persisted after 20 years. The distant dynamics of the associations with negative symptoms was different. The weaker the bonds and social support in the premorbid period measured by the ISS, the greater the severity of negative symptoms on discharge from hospital, and after 7 and 12 years, but no associations were observed between the BPRS – negative syndrome and social support after 20 years.

Similar results were obtained by observing general and social functioning of patients using the GAF and DSM-III Axis V. The stronger the bonds and social support in the premorbid period, the better the general functioning after 3 and 12 years, as measured by the GAF, and the better the general social functioning (on DSM-III Axis V) throughout the 20-year follow-up.

In the study by Erickson et al. [12], *the Interview for Social Interaction*, used to examine social support, was similar to the ISS utilized in our study. Both studies assessed the quantity and quality of contacts, availability of friends, acquaintances and relatives. And not only the quantity, quality and availability of contacts in the premorbid period predicted the course of the illness, but also the very non-familial relationships were positively associated with a better prognosis. It seems that a particularly important conclusion of this research is the need to identify at an early stage the difficulties in social functioning of children and adolescents, and to develop preventive measures in the school environment in close cooperation with the family. It is obvious that there is a need to develop preventive actions aimed at building satisfactory relationships with peers and competences in obtaining support, better adaptation at school, all of which are significantly less developed in people at risk of developing psychosis, especially schizophrenia. This is all the more difficult because the lack of these relationships and competences may be associated – as Erickson et al. [12] attempt to interpret this phenomenon – with a low tolerance for stress and difficulties in establishing and maintaining closeness. Therefore, the influence of family, school, social institutions and organizations, aimed at developing

individual resources and interpersonal skills useful in coping with stressful situations, intended to strengthen intra-family relations, mature fatherhood and motherhood, are the best preventive program against later crises, and what is particularly important, they protect against suicidal risks among young people during their adolescence.

Good premorbid social functioning, especially expressed through satisfying non-familial relationships, is associated with the possibility of receiving support from friends and acquaintances but also with establishing new relationships, functioning in different groups during the course of the illness and is an important predictor influencing the illness course and the recovery process.

Limitations

One weakness of this study was a rather limited number of subjects who participated in all measurement points of the study and a lack of additional structured tools for quality assessment of premorbid social relationships. Although the researchers involved in our study had a significant level of clinical experience, no formal inter-rater reliability tests were conducted.

General conclusions

Analyses presented in this study indicate that both the quality and scope of social contacts before the onset of the illness, especially satisfactory relationships in non-familial milieu, are an important prognostic factor of a many-year beneficial clinical and social course of psychoses from the schizophrenia group.

Acknowledgments

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