Correlations between parameters of the social network and treatment outcomes of people suffering from schizophrenia seven years after the first hospitalization*

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Summary

Aim. The study investigated correlations between selected parameters of social networks of 64 patients with schizophrenia (DSM III), and the aims of treatment such as: motivation to receive treatment, insight, compliance in taking medication, satisfaction with treatment, and treatment outcomes in the area of clinical, social and family functioning seven years after the first hospital admission.

Material and method. The parameters of social networks were checked with Bizoń's questionnaire. Treatment outcomes criteria were assessed with use of competent judges' method. The intensity of psychopathological symptoms was measured on the BPRS-LA scale.

Results. A compound system of social support and a large social network, with a high level of support, correlate in a beneficial way with a higher subjective satisfaction with the treatment. A large extra-familial network, with a high level of support, correlates with a better insight into the illness. The larger somebody's social network, including the extra-familial network and the high level of incoming support, the fewer positive and negative symptoms they had, and the milder the course of their illness. A larger range of the network correlates with a smaller number of relapses and the total hospitalisation time. Those who have a large network that provides a high level of support, both in the family and outside it, have been less frequently hospitalised in outpatient care. No connection was found between the network's parameters and the number of inpatient hospitalisations.

Conclusions. People with a large network, including the extra-familial network, who receive a high level of social support, function better in society, do not become regressive in their professional lives and there are fewer burdens in their family life. A high level of social support correlates with better family functioning. Families of people with schizophrenia who have a large extra-familial network with a high level of support experience less deterioration and disintegration, less criticism and rejection.

social network / schizophrenia / treatment outcome / follow-up study

INTRODUCTION

The role of social networks in the life of patients suffering from schizophrenia has been

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described on numerous occasions in follow-up studies concerning the impact of selected variables on the course of the illness [1]. In Zubinowska's [3] concept of liability to being hurt, one of the "moderating" variables that influence the course of schizophrenia is the social network. It may serve as a buffer that protects one against an outbreak of the illness or a relapse [2].

In their studies of social network, many authors underline that the network's function is the social support it provides, namely "something that positively affects the relations between the

ill person and the environment, the course and treatment of the illness" [4]. The system of social support consists of those who, while living close to the individual, provide for his/her needs and counteract the emotional burden [2]. In crisis, according to Hirsch [5], the availability of social support depends on the structural parameters of the social network such as the range of the network or the density of its links; these parameters may either hinder or foster the development of social contacts that prove satisfying for the individual. Hirsch's research [5] was related to the atmosphere in the family home of a person ill with schizophrenia. His findings suggest that a less dense network of relations with people who are emotionally neutral towards the patient may allow for a more optimistic prognosis than a dense network of strong ties.

With patients ill with schizophrenia, the network of mutually related people who give them support may decrease the risk of a relapse or another hospital admission [4]. Huessey (1981) thinks that it is the disability to alter one's social role that involves a higher number of relapses. Perhaps a large network enables one to adapt more efficiently so as to fulfil social roles and to modify them.

The research conducted by Skantze et al. [7] confirms that it is frequent contacts with the family that is important for the network of social support. On the other hand, Beels [8] criticises the idea that more frequent contacts account for the higher quality of life. He stresses that new relations entail new obligations and burdens, which – when accompanied by perception deficits, a disability to initiate contact or offer support – may in consequence disturb the participation in social exchanges.

An overview of empirical studies on the role of social networks for patients suffering from schizophrenia [4, 8, 12, 13, 14, 15] indicates that still more research is needed to describe the system of support as well as to analyse the correlations between the network's parameters and schizophrenia treatment outcomes throughout the years of living with the illness in its various phases.

AIM OF THE STUDY

Within the Krakow study, three years after the first hospitalisation, correlations were an-

alysed between selected parameters of the social network and treatment outcomes in the clinical and social aspect [14]. A separate publication presents the outcomes of treatment seven years after the first hospitalisation; that research was conducted within the Krakow longitudinal study on the course of schizophrenia [20]. Now, we would like to show our findings as to the above mentioned correlations in the seven-year follow-up period. The following aims were identified:

1. To assess correlations between the parameters of the social network and treatment objectives of patients ill with schizophrenia seven years after their first hospitalisation (K-7).
2. To assess correlations between the parameters of the social network and treatment outcomes in the clinical aspect seven years after the first hospitalisation (K-7).
3. To assess correlations between the parameters of the social network and treatment outcomes in the social aspect seven years after the first hospitalisation (K-7).
4. To assess correlations between the parameters of the social network and treatment outcomes in the familial aspect seven years after the first hospitalisation (K-7).

MATERIAL AND METHODS

The study group included 64 patients suffering from schizophrenia and diagnosed according to the DSM III criteria, 36 women and 28 men. The assessment was made seven years after their first admission to mental hospital, the Adult Psychiatry Clinic, between the years 1982-1984. During the follow-up period, all of them received treatment in the outpatient ward for psychoses and rehabilitation.

The average age in the study group was 32. The first symptoms of the illness occurred on the average at the age of 26, and the first hospitalisation at the age of 27. The period between the onset of the illness and the first hospital admission was 50 weeks. For 53 patients, the first hospitalisation took place during the first episode; for 11 of them, it happened during one of the relapses. When assessing social contacts from before the illness, it was found that 8 patients had had

at least one deep, satisfying relationship outside the family, 23 patients - many superficial relationships, 11 patients - one superficial relationship, 14 patients – not satisfying relationships, 7 patients - no extra-familial relationships. At the moment of conducting the study, 38 patients were employed full-time, 11 patients were either students or employees temporarily on sick leave, 4 received sickness & disability benefit and were employed part-time, 3 just took their social security benefit and did not work, and 8 patients had neither employment nor the benefit.

The parameters of social networks were checked by means of Bizoń's questionnaire [16], which is described in Axer's study [10] as well as in our previous article [14]. The questionnaire is used to gather data concerning people who fulfil supportive functions, and to analyse characteristic features of the support system such as (i) the range of the network, that is the number of people it embraces (a small network: up to 10 persons; a middle-sized network: 11-20 persons; a large network: over 20 persons); (ii) the number of persons in the extra-familial network (a small network: up to 2 persons; a middle-sized network: 3-10 persons; a large network: over 11 persons); (iii) the age of the network, that is the stability of relationships (new relationships: up to 1 year; older relationships: 1-10 years; old relationships: over 10 years); (iv) the level of support as a product of the number of people and the satisfied need (a low level: up to 20 points; a medium level: 21-50 points; a high level: over 51 points); as well as the type of the support system (centred, with one person satisfying most of the individual's needs; dispersed, with several people satisfying a particular need; or compound, with one person satisfying the majority of the individual's needs and additionally various people satisfying different, particular needs). The following criteria were considered when assessing the treatment outcomes in the outpatient programme: insight, motivation to receive treatment, compliance in taking medication as well as the subjective satisfaction with the treatment, according to Likert scales. The assessment was made with the use of the competent judges method. The criteria were considered on the scales as follows. Insight: 1-no insight into psychosis; 2-partial insight into psychosis; 3-full insight into psychosis with no insight into psy-

chodynamic aspects; 4-insight into psychosis and psychodynamic aspects. Motivation: 1-no motivation; 2-low motivation, passive acceptance of the therapist's or the family's suggestions, rejection of the therapist's proposals; 3-average motivation, periodically ambivalent attitude towards treatment, participation in the suggested forms of therapy and general cooperation with the therapist; 4-good ability to identify one's own objectives of treatment and active participation in the suggested forms of therapy. Compliance in taking medication: 1-the patient refuses to take medication or pretends to take it; 2-the patient takes medication but has an ambivalent attitude towards it, periodically did not take it or reduced the doses, and the family often had to check if the medication was taken; 3- the patient takes medication as prescribed by the therapist, knows how medication works and how to counteract side effects, perceives the benefits of taking medication. The patients assessed their satisfaction with the treatment on a seven-degree scale (from no satisfaction to very high satisfaction). Additionally, a qualitative description was appended. In the clinical aspect, the following criteria were assessed: the intensity of psychopathological symptoms, as measured on the BPRS-LA scale; the number and duration of subsequent hospitalisations; the number of relapses within seven years; and the course of schizophrenia according to Jablenski's criteria from the WHO research: 1-a full remission after one psychotic episode; 2-following a psychotic episode, a full remission with one or more non-psychotic episodes; 3-a full remission with two or more psychotic episodes; 4-an incomplete remission after one psychotic episode; 5-following a psychotic episode, one or more non-psychotic episodes with an incomplete remission between them; 6-two or more psychotic episodes with an incomplete remission between them; 7-permanent and intensified symptoms of psychosis. The social criteria were: employment, social functioning according to the DSM III scale, and family functioning assessed in three dimensions on Likert scales using the method of competent judges, among whom were family therapists working with the families in question. Attitude of the family towards the patient: 1-the patient is treated with calm kindness; 2-the patient is relieved of tasks, overprotected; 3-the patient

is criticised; 4-both 2 and 3 take place. In the assessment of the burden for the family, the following objective factors were included: the negative impact of the illness on the financial standing of the family, daily routine, leisure devoted to contacts with the patient, limited contacts. The scale was: 1-no burden; 2-minimum burden; 3-the burden is relatively heavy; 4-the burden is heavy. How the family has adapted to the illness over the seven years was assessed by the judges on the following three-degree scale: 1-the family are empowered, positive changes in the structure and functions of the family allowed for the development of its members, the family has undertaken new tasks within the past seven years, there has been no deterioration or disintegration in the family; 2-there are no negative changes as compared with the time before the onset of the illness, but the family has come to a standstill; 3-the family is gradually disintegrating and deteriorating, helplessness, chaos and mutual animosity are on the increase.

The correlations between the parameters of the social network and treatment outcomes were measured with Spearman's correlation coefficient.

RESULTS

Discussed below are correlations between the social network and (i) those treatment outcomes that are among the objectives of the psychosocial treatment programme (within which the patients have received treatment for years); (ii) treatment outcomes in the clinical aspect; (iii) treatment outcomes in the social aspect; (iv) treatment outcomes in the familial aspect.

Correlations between the parameters of the social network and treatment outcomes

We analysed the correlations between the parameters of the social network and the four objectives of psychosocial treatment that are related to the milder course of schizophrenia (Tab. 1).

Table 1. Correlations between the parameters of the social network and treatment objectives for people ill with schizophrenia seven years after the first hospitalisation

Treatment objectives	Range of network↑ (larger)	Size of extra-familial network (larger)	Level of support (higher)	Source of support (family and outside)	Type of support system (compound)	Age of network (old relationships)
1) compliance in taking medication ↑ (better)	0.17	0.15	0.23	-0.10	0.11	-0.12
2) motivation to receive treatment↑ (better)	0.20	0.03	0.12	0.06	0.10	-0.01
3) insight into the illness ↑ (better)	0.24	0.35**	0.28*	0.04	0.19	0.05
4) subjective satisfaction with the treatment ↑ (higher)	0.39**	0.19	0.39**	-0.20	0.33**	-0.09

*p< 0.05, ** p < 0.01, as measured with Spearman's correlation coefficient

There exists a statistically significant correlation between the parameters of the social network and insight into the illness as well as the subjective satisfaction with treatment. The patients with a large extra-familial network who receive more community support, more often have a better insight into the illness. The patients with a large network who receive more compound-type community support are more often subjectively satisfied with treatment.

**Social network and treatment outcomes
in the clinical aspect**

The correlations between the selected parameters of the social network and the intensity of symptoms were assessed on the general, negative and positive subscale of the BPRS LA (Tab. 2a) as well as five treatment outcomes: the number of hospitalisations in inpatient care, the number of hospitalisations in outpatient care, the duration of hospitalisations, the number of relapses and the course of the illness according to Jablenski (Tab. 2b).

There exists a statistically significant correlation between the range of the network, the size of the extra-familial network and the level of support, and the intensity of positive and negative symptoms assessed according to the BPRS LA. Those patients suffering from schizophrenia who have a large social network, including the extra-familial network, and receive much community support, have fewer positive and negative symptoms as well as a general lower level of symptoms according to the BPRS LA.

Table 2a. Correlations between the parameters of the social network and the intensity of symptoms as measured with the BPRS LA scale in K-7

Treatment outcomes, clinical aspect	Range of network ↑ (larger)	Size of extra-familial network (larger)	Level of support (higher)	Source of support (family and outside)	Type of support system (compound)	Age of network (old relationships)
Global BPRS assessment ↑ (higher)	- 0.32*	-0.29*	- 0.37**	-0.03	-0.18	0.01
Negative BPRS subscale ↑ (higher)	- 0.42**	-0.30*	- 0.39 **	-0.02	-0.23	0.11
Positive BPRS subscale ↑ (higher)	-0.38**	-0.37**	- 0.45**	-0.11	-0.23	0.03

* p< 0.05, ** p < 0.01, as measured with Spearman's correlation coefficient

Table 2b. Correlations between the selected parameters of the social network and treatment outcomes in the clinical aspect in K-7

Treatment outcomes, clinical aspect	Range of network↑ (larger)	Size of extra-familial network (larger)	Level of support (higher)	Source of support (family and outside)	Type of support system (centred, dispersed, compound)	Age of network (old relationships) ↑
Number of hospitalisations in inpatient care (higher)	-0.21	-0.17	-0.24	0.01	0.19	-0.06
Number of hospitalisations in outpatient care (higher)	-0.36**	-0.03	-0.26*	-0.36**	-0.19	-0.09
Total duration of all hospitalisations (longer)	-0.25*	-0.20	-0.23	0.05	0.15	0.01
Number of relapses (higher)	-0.27*	-0.08	0.22	-0.06	0.16	-0.09
Course of the illness acc. to Jablenski, WHO (worse)	-0.28*	- 0.50**	-0.38**	0.17	0.02	0.04

* p< 0.05, ** p < 0.01, as measured with Spearman's correlation coefficient

Seven years after the first hospitalisation, the following correlations were observed: the range of the network strongly correlates with treatment outcomes except for the number of inpatient hospitalisations (Table 2b). The patients with a large social network are less frequently treated in outpatient care, have shorter inpatient and outpatient hospitalisations, fewer relapses and a less severe course of the illness. There is a strong correlation between such parameters of the social network as the range of the network, the size of the extra-familial network and the level of support, and the course of the illness. Those patients who have a large network, including the extra-familial network, and who receive much support, have a milder course of the illness, with remissions of the symptoms. There is a correlation between such parameters of the social network as the range of the network, the level and source of

support, and the number of subsequent hospitalisations in outpatient care. Those schizophrenic patients who have a large network and receive a high level of support, whose sources lie in the family and outside the family, have fewer hospitalisations in outpatient care. No statistically significant correlation was found between the parameters of the social network and the number of subsequent hospitalisations in inpatient care.

Social network and treatment outcomes in the social aspect

The correlations between selected parameters of the social network and treatment outcomes in the social aspect were analysed as to two chosen criteria: employment and social functioning according to DSM III (Tab. 3).

Table 3. Correlations between the parameters of the social network and treatment outcomes in the social aspect for people ill with schizophrenia in K-7

Treatment outcomes, social aspect	Range of network↑ (larger)	Size of extra-familial network (larger) ↑	Level of support (higher)	Source of support (family and outside)	Type of support system (compound)	Age of network (old relationships) ↑
↑ Employment (progress)	0.32*	0.31**	0.32**	-0.02	0.08	0.01
↑ Social functioning acc. to DSM III (better)	0.38**	0.44**	0.41**	-0.08	-0.05	-0.03

*p< 0.05, **p < 0.01, as measured with Spearman's correlation coefficient

Seven years after the first hospitalisation, with people suffering from schizophrenia, a statistically significant correlation can be observed between the parameters of their social network and two treatment outcomes in the social aspect, employment and social functioning, as measured according to DSM III. Those patients who have a large network, including the extra-familial network, and who receive more support, less frequently experience the loss of professional status and they function socially better (fulfilling their roles, maintaining social contacts and organising their leisure).

Social network and treatment outcomes in the familial aspect

The analysis concerned the correlations between the selected parameters of the social net-

work and treatment outcomes in the familial aspect, such as the family's attitude, the burden to the family and the family's adaptation to the illness (Tab. 4).

There exists a statistically significant correlation between the parameters of the social network and treatment outcomes in the familial aspect, such as the family's attitude, the burden to the family and the family's adaptation to the illness. The burden correlates with four parameters of the social network and is smaller in proportion to the range of the network and the size of the extra-familial network. It gets smaller in connection with the high level of support received from the network, especially when the centre of support is the family. The level of social support correlates positively with all other indicators of the family's functioning. In the

Table 4. Correlations between the parameters of the social network and indicators of family functioning in K-7

Family functioning	Range of network (larger)↑	Size of extra-familial network (larger)	Level of support (higher)	Source of support (family)	Type of support system (compound)	Age of network (old rela-tion-ships)↑
↑ Family attitude (less criticism and rejection)	0.23	0.27*	0.32*	0.11	0.13	-0.18
↑Burden for the family (smaller)	0.32	0.46**	0.27*	0.34**	0.14	- 0.01
↑Family adaptation (better)	0.14	0.13	0.30*	0.18	0.04	-0.03

* $p < 0.05$, ** $p < 0.01$, as measured with Spearman's correlation coefficient

families of those patients who have a large extra-familial network and receive much support, there was less criticism or rejection. The families of those schizophrenic patients, who receive much social support, less frequently deteriorate or disintegrate.

DISCUSSION

We analysed the correlations between the parameters of the social network (the range of the network, the size of the extra-familial network, the level and source of support, the type of the support system, the age of the network) and treatment outcomes (insight, motivation to receive treatment, compliance in taking medication, satisfaction with treatment) and specific treatment outcomes in the clinical, social and familial aspect, the study group being 64 persons suffering from schizophrenia and the follow-up period being seven years after the first hospitalisation.

There exist statistically significant correlations between such parameters as the range of the network, the size of the extra-familial network, the level of support, the type of social support system, and such treatment outcomes as insight and subjective satisfaction with the treatment. Those patients who have a large network, including the extra-familial network, and who receive much support, have a better insight into the illness. This correlation corroborates previous findings in the Krakow study on the course of schizophrenia in relation to the three-year

follow-up period. Further confirmation can be found in Beels' reports [8], who described the correlation between the family's acceptance of the illness and a favourable prognosis in schizophrenia, including the patient's insight. Toldorf's study [12] says that contacts between people suffering from schizophrenia and others last for a short time and are easily disturbed (the network provides little social support). Lin, Dean and Ensel [21] suggest that people suffering from schizophrenia prefer to receive support from more distant, that is less burdening, ties. Our study partly corroborates both the former and the latter hypothesis. There are such schizophrenic patients who receive much support both from the family members and from more distant relationships, i.e. extra-familial relationships, and they have a better insight into the illness. Koivumaa-Honkanen et al. [15] think that lack of social support correlates with a low satisfaction with the treatment. The Krakow study confirms a correlation between the range of the network and the level of support, and satisfaction. Those patients who have a large network and receive much support from a compound support system, frequently have a higher subjective satisfaction with the treatment.

As in the previous, three-year follow-up, so now in the seven-year follow-up, there exists a statistically significant correlation between the parameters of the social network and the intensity of positive and negative symptoms as measured on the BPRS LA scale. The patients with a large network, including the extra-familial network, and with a high level of support,

have fewer positive and negative symptoms. The above mentioned data were confirmed in Hammer' study [4], where a correlation was found between the size of the network and the types of relationships, and the intensity of psychotic symptoms.

The range of the network correlates with a few indicators of treatment outcomes. Throughout the seven years after the first hospitalisation, the patients with a large network have had fewer hospitalisations in outpatient care, the duration of their treatment in inpatient and outpatient care is shorter, they have had fewer relapses and a milder course of schizophrenia, with remissions of symptoms. Many people suffering from schizophrenia, despite subsequent hospitalisations, have a large network of 20 or more persons. Clinical practice shows that schizophrenic patients include other patients in their extra-familial networks, meeting them privately and taking advantage of the institutional support system (outpatient care, occupational workshops, and community homes).

During the seven years following the first hospitalisation, the patients who have a large network and get much support, both from the family and other sources, have been less frequently hospitalised in outpatient care. Those patients who have a large network, which gives more support, have a milder course of the illness, with symptom remissions. Perhaps a good network with a large range and with a high level of support serves as a buffer against more hospitalisations and effects a milder course of the illness. This is corroborated by Caplan [2], who says the support system counteracts emotional burdens. Also Hammer [4] indicates a correlation between the network and the number of hospitalisations.

The patients with a large network have fewer relapses. Huessey (1981) thinks that the inability to change the social roles one fulfils entails a higher number of relapses. Perhaps a large network allows a better adaptation to social roles and their changes. On the other hand, no correlation was found between the parameters of the network and the number of hospitalisations in inpatient care, although a statistically significant correlation of this type was observed in the three-year follow-up period.

There is a correlation between the parameters of the social network and treatment outcomes in the social aspect such as social functioning and employment. The patients with a large network, including extra-familial network, receiving much support, function socially in a better way (as to role-fulfilment, social contacts and leisure activities) and their professional status does not decline. This testifies to the higher mobility among this group of patients suffering from schizophrenia.

There exists a statistically significant correlation between the parameters of the social network and treatment outcomes in the familial aspect such as the attitude of the family, the burden on the family and the adaptation to living with the illness. The burden on the family correlates with four parameters of the social network and decreases with the increase of the range of the network and the size of the extra-familial network. The burden decreases with the increase of support, especially the family support. The level of social support correlates positively with all the indicators of the family functioning. In the families of the patients who have a large extra-familial network and receive a high level of support, there is less criticism and rejection. The families of the patients whose network provides a high level of social support experience less deterioration and disintegration.

The above mentioned findings are corroborated for instance by Angermeyer [6], who described the "stocking effect", which is the expansion of the network via family relations, while the circle of friends and acquaintances gets visibly smaller. Also the research by Skantze et al. [7] confirms that the network of social support is formed by frequent contacts with the family. The research findings in the Krakow seven-year study partly corroborate those results, yet the difference lies in extra-familial contacts. In our study, the patients ill with schizophrenia receive support also from the network including acquaintances, friends, neighbours or therapists.

Beels [8] is critical about the idea that more contacts assure a higher quality of life as new relations involve new obligations and burdens. Lack of ability to initiate contacts, to give and receive social support is related to the deficiency in the perception capabilities as to social exchange, disability to establish and maintain contacts with other people.

It seems that Beels' [8] reflection can be partly accepted, but one has to refer also to the environment in which the patient lives. If the patient has good, strong relationships with one or two persons in the immediate environment, either in the family or outside it, then based on that, the patient may extend the network, adding perhaps more superficial but also satisfying relations. Our experience with giving patients a wide offer of therapy and rehabilitation choices in the Krakow programme of community treatment shows that even a network based on institutions can provide motivation to undertake various kinds of activities [19]. Consequently, a beneficial social network allows the patients, especially the chronic patients, to live in the community and undertake their own activities.

CONCLUSIONS

Seven years after the onset of the illness, the parameters of the social network with people ill with schizophrenia, such as the range of the social network, the size of the extra-familial network and the level of support, are more closely correlated with treatment outcomes than the age of the network, the type of the support system or the source of support.

There exists a correlation between the large range of the network and the high level of social support, and a better insight into the illness and a high subjective satisfaction with the treatment.

A correlation was found between the large range of the network, the size of the extra-familial network and the level of support, and the intensity of psychopathological symptoms and better treatment outcomes in the social aspect.

A high level of social support is positively correlated with better functioning of the families of the patients who were embraced by the seven-year follow-up study.

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PSYCHIATRIA POLSKA
[POLISH PSYCHIATRY]
YEAR 2008 MAY–JUNE, VOLUME XLII ISSUE 3

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