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Dynamics of occupational and relational functioning of outpatients with mental disorders in two-year observation

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Summary

Objectives: The aim of the project was to assess changes of occupational and relational functioning within 2 years period of ambulatory treatment of persons suffering from different mental disorders.

Material and method: Outpatients (n=184) at the age of 18-54 from five diagnostic groups – according to ICD-10: psychotic disorders (F2), affective disorders (F3), anxiety disorders (F4), eating disorders (F5) and personality disorders (F6) were enrolled in the prospective study with 6, 12 and 24 months follow-up assessments. Functioning was evaluated by the Social and Occupational Functioning Assessment Scale (SOFAS) and the Global Assessment of Relational Functioning (GARF).

Results: In the whole group occupational and relational functioning improved during the two-year follow-up. At the time of recruitment to study the worst occupational functioning (SOFAS) was observed within the group schizophrenic patients and the best within neurotic group. In each diagnostic group SOFAS scores have improved over time. However, the groups F2 and F6 difference between the baseline and 24.months follow-up measurements was irrelevant statistically, whereas in the case of the other groups (F3, F4, F5) a significant increase were observed. In all diagnostic groups except F6 the relational functioning has improved. Taking into account the results of the entire cohort, there was no association between occupational functioning and relationships and age, sex. The occupational and relational functioning was, however, strongly associated with the presence of negative and depressive symptoms, number of days on sick leave and level of education.

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Conclusions: The results warrant further research, in-depth discussion on the recognition of occupational dysfunction, disability of social coping in relationships among people with mental disorders. The next step will be the introduction of appropriate after-effect in this regard.

Key words: occupational functioning, relational functioning, mental disorders

Introduction

There is a growing interest in the problem of occupational disability of people with mental illnesses. People hospitalized for mental disorders experience more frequent periods of unemployment compared to those with other medical problems [1]. It is believed that re-employment is one of the key ways to promote mental health among the unemployed [2, 3], as work is an essential coping mechanism that creates both a purpose and meaning of life for many people with mental illness [4]. The authors emphasize that understanding the link that exists between employment and the course of recovery is essential, because the care offered to mentally ill patients should enable them to realize their goals and aid them in achieving future professional success [5]. Therefore, it seems important not only to indicate the number of employed persons diagnosed with a psychiatric disorder, but also to determine their level of occupational disability as well as the impact of socio-demographic factors and the clinical rehabilitation on their vocational rehabilitation. The problem of occupational disability concerning patients undergoing psychiatric health care has been characterized in literature in terms of the population range [6] and the clinical range, taking into account different types of facilities such as hospitals [7,8,9], healthcare centers [10,11] or GP practices [12 ,13]. Occupational functioning has been reported in relation to patients suffering from depression [14, 12, 15], bipolar disorders [16], schizophrenia [10, 17- 20], schizoaffective disorders [21, 17], anxiety disorders [22, 23] and personality disorders [24]. There are significantly fewer studies concerning the problem of relational functioning of patients with recurrent depression and affective disorders [25, 26] or schizophrenia [27]. There is a lack of research, which over the long term, analyze both dimensions of functioning and in different mental disorders.

It is still unclear whether mental illness causes a job loss or whether a job loss leads to mental illness. On the one hand, the risk of developing depression is two times higher among people who have lost their jobs than those who have maintained their professional position [28]. On the other hand, the development of a mental illness in an employed person may cause their functioning at work to deteriorate [29]. The unemployment rate among such patients is three times higher compared with healthy persons [30]. As of yet, the issue concerning the dynamics of occupational and relational functioning of people suffering from various mental disorders has not been researched.

Objectives

The aim of the study was to evaluate occupational and relational functioning of people with different mental disorders, as well as its dynamics over time. Furthermore, the impact of selected socio-demographic and clinical factors on occupational and relational functioning was assessed.

Material and method

Subjects were selected from a group of patients reporting to four mental health clinics in Wroclaw, Swidnica and Zabkowice in Lower Silesia over the course of 15 months, who met the inclusion criteria and agreed to participate in the study. Patients who were included in the study were in the age of 18-54 years and belonged to one of the five diagnostic groups according to ICD-10: schizophrenic disorders (F2), affective disorders (F3), stress-related or somatic neurosis (F4), eating disorders (F5) and personality disorders (F6). Two inclusion criteria had to be met: lack of a formal ruling of a person's disability for work and their written consent. The criteria for exclusion included alcoholism or other psychoactive substances, dementia, serious chronic somatic disorders and the inability to give an informed consent to participate in the study. The study was carried out over a two year period and was prospective. Measurements were performed on the day of enrolment in the study (T1), 6 (T2) and 12 (T3) months later and 2 (T4) years later. During the study as a part of the psychiatric treatment a standard therapy offered by a psychiatrist in the clinic of mental health was applied. The type of therapy (psychopharamcotherapy and/or psychotherapy) was not interfered. The current study shows the results of the first and last measurements, and the dynamics of occupational functioning (SOFAS), and relational functioning (GARF) for all the time points.

Research Tools

To evaluate the occupational functioning, a Social and Occupational Functioning Assessment Scale, SOFAS, was used. The scale ranges from 0-100 points, where 1-10 points indicates a prolonged inability to maintain personal hygiene, an inability to function without harming oneself or others or without significant support from others, and 91-100 points indicates the best functioning when doing a wide range of activities. The SOFAS does not take into account any increase in the severity of psychopathological symptoms. The scale is completed by a doctor and takes into account the clinical information about the patient.

The relational functioning was assessed using the Global Assessment of Relational Functioning Scale (GARF). The scale ranges from 0-100 points, and the higher the score, the better the relational functioning. This tool can be used for a general analysis of family or other long term relationship. Both documents were adapted to polish conditions by Wciórka et al. [31].

To assess the presence and severity of psychopathological symptoms the Brief Psychiatric Rating Scale (BPRS) was used (the latest, 4.0 version with 24 points revision), which allows for the assessment of the severity and nature of psychopathological symptoms. Each case was assessed on a scale from 1- no symptoms, to 7 – severe symptoms [32]. A questionnaire with the socio-demographic and clinical data was also used in the study.

Statistics

The collected material was analysed statistically and its diversity was taken into account. The R software package version 2.4.1 was used. The normality of data distribution was verified using the Shapiro Wilk. Depending on the nature of the basic comparison of two dependent samples the test was carried out using Student's t test for dependent groups or nonparametric equivalent – Wilcoxon test). In comparisons of more than two attempts, in case when the data meet the criteria of normal distribution, one-way ANOVA and Tukey's post hoc test were used. In the absence of a normal distribution (eg, for a continuous variable and a categorical variable) the Kruskal-Wallis ANOVA was used. In order to examine the linear relationship between the two variables with a normal distribution the Pearson correlation coefficient was calculated. In case of rejection of the hypothesis of normal distribution the Spearman rank correlation coefficient was calculated. The categorical chi2 test was used to examine the relationship between the data. In order to study the relationship between one of a linear variable (e.g. SOFAS) and a set of independent variables the linear regression was used. The factor model fit R2 was calculated in order to analyze the fit of the model.

Results

Group characteristics

The majority of all patients (n=184) consisted of people whose primary diagnosis was that of a stress-related and somatic neurotic disorder (F4, n = 57). The other groups, in terms of the number of participants, comprised patients suffering from affective disorders (F3, n = 43), personality disorders (F6, n = 36) and schizophrenia (F2, n =32). The least numerous group consisted of patients with diagnosed eating disorders (F5, n = 16).

The age of the subjects ranged from 18-54 years, with a mean of 34.8 (±11.3) years. The difference between the groups of patients was statistically significant ($p<0.001$). Patients from group F5 had the lowest average age (23.7±4.6) compared to other patients, whereas patients from group F4 (38.8±10.3) and F3 (38.7±11.9) had the highest average age. The number of women outweighed the number of men in all the groups (n=132, 71%). Women constituted 100% of patients with eating disorders (n=16).

The majority of patients had a secondary education (n=96, 51.9%), while the number of patients with only a primary education was the smallest (n=16, 8.6%). The treatment groups did not differ significantly in terms of the educational level (p=0.7). There were no differences between treatment groups when it came to the type of employment, (blue collar workers /white collar workers), p=0.28. During the two-year observation seven patients obtained/ granted the right to pension (3.8%).

74 people (40%) lived in a stable and formal relationship, 24 people (13%) were in informal relationships while widows/widowers constituted the smallest number of patients (n=6, 3.3%). There was a statistically significant difference between treatment groups (p<0.001). Most of those who were in formal or informal relationships came from groups F3 and F4. Nevertheless, only 13 patients (7%) lived alone. The difference between treatment groups was not significant (p=0.61), (tab.1).

Table 1. **Socio-demographic data in the diagnostic groups.**

	number	age (±sd)	gender F/M	education p/v/s/c	work b/w	marital status 1/2/3/4/5	residence n/a
F2	32	30.4 (±9.5)	18/16	2/4/20/6	13/19	19/7/2/4/0	30/2
F3	43	38.7 (±11.9)	33/11	5/8/21/10	17/27	10/22/7/3/2	43/1
F4	57	38.8 (±10.3)	45/13	5/16/27/10	26/32	8/33/8/6/3	52/6
F5	16	23.7 (± 4.6)	16/0	1/2/9/4	3/13	13/1/0/2/0	15/1
F6	36	32.6 (±10.6)	20/15	3/3/19/10	10/25	16/11/7/0/1	32/3
p-value	p<0.001	p<0.001	p<0.01	0.7	0.28	p<0.001	0.61

education – (p-primary/ v-vocational/ s-secondary/ c-collage)
work – (b-blue collar workers/ w-white collar workers)
marital status – (1-single / 2-married / 3-informal relationship/ 4-divorced / 5-widow/ widower)
residence – (n-not alone/ a-alone)

The severity of psychopathological symptoms (BPRS)

Research subjects (n=184) received an overall average BPRS score of 1.6 (±0.4) for the first measurement, and 1.4 (±0.3), 1.3 (±0.3), 1.3 (±0.3) for subsequent measurements. A significant change in BPRS occurred between T1 and T2 values (p<0.001), and the result remained at a constant level close to T2 during subsequent measurements. Significant differences between treatment groups were noted in T1 and T4. At both measurement points, the most severe psychopathological symptoms were noted in the group with schizophrenia (F2), and the least severe ones in patients with neurosis (F4) (tab.2). The severity of psychopathological symptoms (T1 vs. T4) decreased significantly in all treatment groups (p<0.05), except for F6.

Table 2. **The severity of psychopathological symptoms (BPRS), occupational functioning (SOFAS) and relational functioning (GARF) for the measurements T1 and T4 in diagnostic groups.**

	F2	F3	F4	F5	F6	p-value
BPRS T1	1.8 (±0.5)	1.7 (±0.4)	1.4 (±0.3)	1.6 (±0.2)	1.5 (±0.3)	0.001
BPRS T4	1.5 (±0.4)	1.3 (±0.3)	1.2 (±0.2)	1.4 (±0.3)	1.4 (±0.3)	< 0,05
SOFAS T1	53.4 (±14.4)	67.6 (±17.0)	69.8 (±16.3)	62.8 (±15.4)	60.3 (±17.0)	< 0,01
SOFAS T4	61.8 (±19.9)	77.8 (±17.7)	78.1 (±15.9)	82.7 (±15.5)	68.8 (±19.6)	< 0,01
GARF T1	53.6 (±14.0)	65.0 (±15.0)	66.7 (±14.2)	57.8 (±10.6)	57.6 (±16.0)	< 0,001
GARF T4	62.9 (±18.6)	75.7 (±16.0)	77.2 (±16.9)	80.0 (±17.8)	62.7 (±21.4)	< 0,01

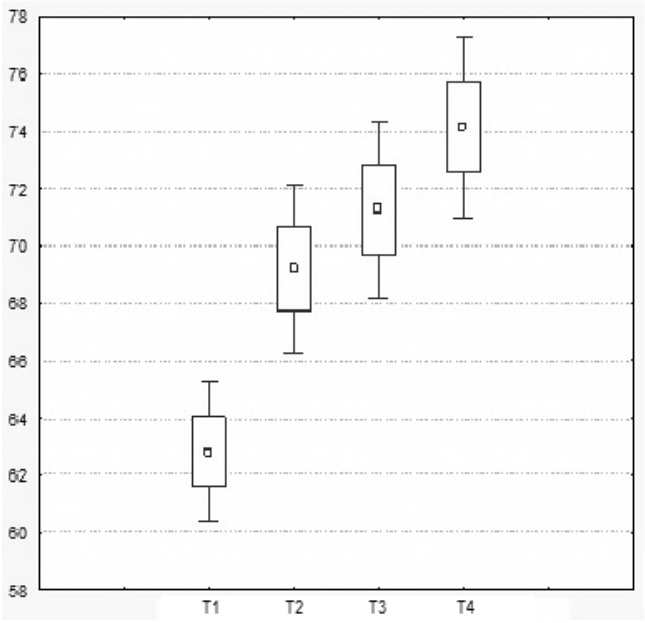
T1 – the day of enrolment in the study, T4 – 2 years later; F2 – schizophrenic disorders, F3 – affective disorders, F4 – stress-related or somatic neurosis, F5 – eating disorders, F6 – personality disorders; p-value – the difference between diagnostic groups at a given measurement.

Occupational functioning (SOFAS) and its dynamics

Research subjects (n=184) received an average score of 63.9 (±17.4) for T1 and 74.0 (±19.0) for T4. The results of the SOFAS increased clearly over time, but the growth rate varied between successive measurements. When evaluating the changes taking place from one measurement to the next, the largest difference appeared between T1 and T2 ($p<0.001$). The SOFAS value also increased in subsequent measurements, but the changes between T2 – T3 and T3 -T4 were not statistically significant ($p=0.37$ and $p=0.08$). However, the final difference between T1 and T4 was very distinct ($p<0.001$) (fig.1). A very high link between the severity of psychopathological symptoms and the results of the SOFAS scale ($p<0.001$) was found.

There were significant differences between SOFAS values in the different treatment groups both in T1 and T4. At both test points, patients with diagnosed schizophrenia exhibited the largest occupational functioning impairment. (F2). Patients with neurosis (F4) functioned the best in T1, and those with an eating disorder in T4 (F5) (tab.2). No correlation between the time change and the treatment group ($p=0.098$) was noted. In each group the SOFAS results improved with time. However, in F2 and F6 groups, the difference between T1 and T4 measurements was not statistically significant ($p=0.57$ and $p=0.54$). In the remaining groups (F3, F4, F5) an improvement between T1 and T4 was clear ($p=0.001$).

Figure 1. **Occupational functioning (SOFAS) for the whole group in subsequent measurements.**



T1 – the day of enrolment in the study, T2 – 6 months later, T3 – 12 months later, T4 – 2 years later; mean ±SD.

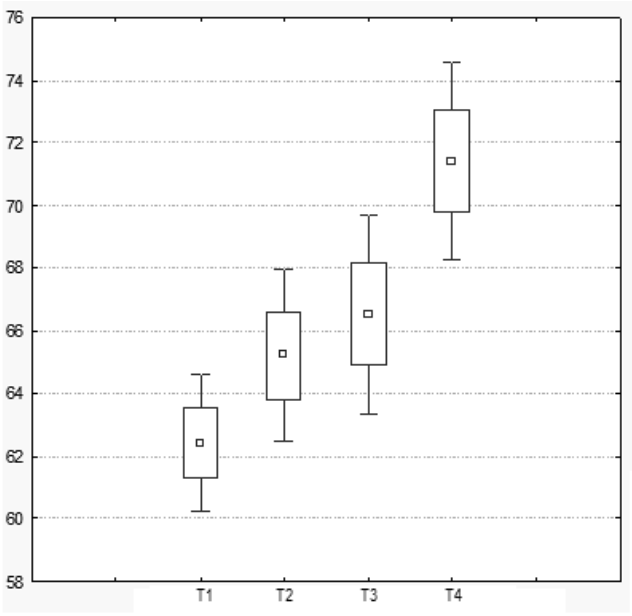
Relational functioning (GARF) and its dynamics

The average GARF score for the entire study group at the first measurement point was 62.4 (±15.3), and 71.6 (±18.9) at the last one. However, the changes between the early measurements T1 and T2 as well as T2 and T3 were not statistically significant ($p=0.063$ and $p=0.47$). It was only between T3 and T4 that a significant improvement was noted ($p<0.01$). The final difference between T1 and T4 was significant ($p<0.001$) (fig.2). There was no connection between changes taking place in time and the treatment group ($p=0.44$). There was a high correlation between the severity of psychopathological symptoms and relational functioning at both measurement points ($p<0.001$), as well as between average scores in the SOFAS and GARF scales ($p<0.001$).

There were significant differences in GARF values observed between treatment groups in T1 and T4. In the first measurement, the strongest disorder in relational functioning was noted in patients with schizophrenia (F2), while the patients with neurosis achieved the best results in that area (F4). After two years (T4), patients from group F4 also displayed the best relational functioning and patients from groups F2 and F6 had the worst results (personality disorders) (tab.2). A significant improvement

in relational functioning (T1 vs. T4, p<0.001) was observed in all treatment groups apart from patients with personality disorders.

Figure 2. **Relational functioning (GARF) for the whole group in subsequent measurements**



T1 – the day of enrolment in the study, **T2** – 6 months later, **T3 –** 12 months later, **T4** – 2 years later; mean ±SD.

Socio-demographic and clinical factors and occupational and relational functioning

Subjects with a higher education included in the study (T1) had the highest average score on the SOFAS, compared with those with secondary (p<0.001), vocational (p<0.01) and primary education (p<0.001). It was found that the more psychiatric hospitalizations the patients had in their medical history at the T1 measurement, the fewer points they obtained (on average) on the SOFAS scale (p<0.001, r=- 0.353), and that the shorter their leave the better their professional functioning was (p<0.001, r= -0.401). There was no statistically significant association between age, gender, and profession of the patients and the overall score on the SOFAS both for T1 and T4.

Taking into account the results of the regression analysis, negative symptoms had the greatest impact (17.2%) on occupational functioning (SOFAS) during the first measurement (T1) followed by education (10.1%), the number of days of absence from work (8.8%), and symptoms of depression (6.5%) and psychotic symptoms (only 0.2%). The whole model explained 42.5% of variance (tab.3). Full list of factors

used in the regression equations also included the presence of maniac symptoms, age and gender. None of these factors had any significant importance in the description of the model.

Similarly, negative symptoms had the greatest influence (13.9%) on the relational functioning (GARF) while the number of days of leave (6.7%), depressive symptoms (6.4%), education (3.5%) and psychotic symptoms (1.0%). These factors explained a total of 31.5% impact on the relational functioning (tab.4). Full list of factors used in the regression equations also included psychiatric diagnosis, the presence of maniac symptoms, age and gender. None of these factors had any significant importance in the description of the entire model.

Table 3. **SOFAS – regression table**

	p-value	percent of explained variation (%)
education	<0.001	10.1
negative symptoms	<0.001	17.2
positive symptoms	0.49	0.2
severity of depression	<0.001	6.5
days on leave	<0.001	8.8

Table 4. **GARF – regression table**

	p-value	percent of explained variation (%)
education	<0.05	3.5
negative symptoms	<0.001	13.9
positive symptoms	0.11	1.0
severity of depression	<0.001	6.4
days on leave	<0.001	6.7

The relationship between SOFAS and work

Occupational functioning improved during the study (T1 vs. T4) in the whole study group (n=184). The greatest improvement in the SOFAS occurred in the case of persons with a full time employment ($p<0.001$) and casual work ($p<0.05$). No improvement (T1vs. T4) in occupational functioning was found in unemployed people or those on a pension (tab.5).

Table 5. **Occupational functioning (SOFAS) in the measurements (T1, T2, T3 and T4) depending on the work of respondents**

	full time employment	casual work	unemployed	pension
	mean (SD)	mean (SD)	mean (SD)	mean (SD)
SOFAS T1	69 (±16)	60 (±16)	56 (±17)	52 (±20)

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SOFAS T2	76 (±14)	65 (±14)	61 (±18)	51 (±20)
SOFAS T3	79 (±14)	64 (±17)	65 (±20)	52 (±17)
SOFAS T4	82 (±15)	71 (±18)	61 (±17)	51 (±18)
p-value	<0.001	<0.05	0.37	0.93

T1 – the day of enrolment in the study, T2 – 6 months later, T3 – 12 months later, T4 – 2 years later; p-value – difference between measurement of T1 vs. T4 in the group.

Discussion

The presented results represent the two-year observation of 184 patients from five diagnostic categories. A long-term observation of patients with diverse illnesses is an undeniable advantage of this study since most of the available reports refer to patients from a single diagnostic category. Due to characteristics of some disorders, certain methodological problems could not be avoided. The treatment groups differed in terms of age, gender and marital status. The youngest subjects were in group F5 (eating disorders). This group comprised of women only, and consisted of the largest number of unmarried persons. Women dominated in the remaining diagnostic categories but the ratio of women to men was approximately 70 to 30%. At the same time, there was no confirmed statistically significant association between age, sex, marital status and socio-occupational functioning or relational functioning. Therefore, the observed differences between various diagnostic groups in relation to these factors do not seem that important. The diagnostic categories did not differ significantly in terms of education, type of work (blue collar/white collar), or residence (alone/with family or with a partner) and only 7% of the entire study group lived alone.

Rymaszewska and co-authors proved that one of the dominant factors that determine receiving disability pension is a low level of education [33]. Education was shown to be one of the essential socio-demographical factors to affect occupational functioning. The higher the level of education, the better the socio-occupational functioning was. Moreover, the number of hospitalizations and days of leave were significantly associated with the level of occupational functioning. The higher the number was, the worse the person functioned. This conclusion can be related to Durie's study, where the longer the patients remained without a job after psychiatric hospitalization, the harder it was for them to resume employment [7]. Similarly, Harnois and Gabriel showed that people who, after being discharged from psychiatric hospitals, resumed employment were less likely to be re-hospitalized than those who did not return to work [8]. In turn, Hayes and Gant proved that work might help in preventing further episodes of illness and frequent hospitalizations [9]. The current study clearly demonstrated that people with a full time employment showed a significant improvement in terms of their socio-demographical functioning over a two-year period, while a smaller improvement (although statistically significant)

was observed in casual workers. The unemployed and pensioners did not experience any improvement in their functioning.

Looking at the results of the entire study group, one can see the dynamics of the process of psychiatric treatment. Already at the second measurement point (after 6 months of recruitment) the severity of psychopathological symptoms significantly decreased (this shows that the treatment brought desired results) and it remained at this level until the end of the study. The reduction of psychopathological symptoms obtained through treatment correlated very highly with improved educational and relational functioning at each measurement point, but the dynamics of the changes over time were different in each field. The fastest improvement was observed in the socio-occupational functioning, already at the second time point (after 6 months).

The trend continued in subsequent measurements, but the improvement was not as dynamic. The effects of treatment were the slowest in relational functioning. From the onset of the study, the results in that area improved, but a significant change took place only after two years. Thus, despite undertaken psychiatric treatment, it took much longer to obtain improvement in interpersonal relations than in occupational functioning.

The analysis of changes in the course of psychiatric treatment for different diagnostic groups leads to interesting conclusions. At the time of recruitment, people with schizophrenia obtained the worst results both in the severity of psychopathological symptoms and in terms of socio-occupational and relational functioning. On the other hand, the best results at the time of recruitment (in all areas of functioning) were obtained by patients with stress and somatic neurosis (F4). In the long-term, two-year observation, psychiatric treatment proved to be effective in all analysed areas (reduction of psychopathological symptoms, improvement in socio-occupational and relational functioning) in patients with diagnosed neurosis (F4), eating disorders (F5) and affective disorders (F3). The effectiveness of this type of treatment has also been demonstrated by other authors [34, 35].

There was no improvement in socio-occupational functioning in the group of schizophrenic patients (F2) despite a reduction in the severity of psychopathological symptoms. Mean scores of SOFAS increased, but this change was not statistically significant. At the same time, the results of the last measurement indicated the worst socio-occupational functioning of this group. These observations are consistent with the reports of Wojtowicz-Pomierna, where people with schizophrenia not only had difficulty coping effectively with responsibilities and work-related tasks but also, very many, possessed a low level of formal education and weak professional qualifications which were usually inadequate for the needs of the job market [36].

Patients with personality disorders (F6) showed the least improvement during the study period of all the diagnostic groups. There was no statistically significant improvement (T1 vs. T4) in any of the studied parameters (severity of psychopathological symptoms, occupational functioning, and relational functioning) in this group.

Limitations of the work

The main limitation of this study was the diverse number of patients in each diagnostic group, including a very small number in a group with eating disorders (n = 16). This state of affairs requires conclusions regarding groups diagnosed with F5 to be treated with extreme caution. At the same time it must be emphasized that the assumption of this research project was to recruit to the study all persons who meet the inclusion criteria admitted to the Outpatient Mental Health Clinic at a fixed time (1.5 years). Thus, a small size of F5 group is a direct reflection of the number of these patients in the Clinic Extending the research of the next few months in order to recruit additional people from the selected diagnostic group poses a risk that the results could not be comparable due to the changing socio-economic situation in a given region (e. g., unemployment, etc.). Another methodological problem was the selection of research tools. In the project, which includes the patients with a variety of different diagnostic groups, the assessment of the severity of psychopathological symptoms using one selected scale may raise methodological doubts. Finally, we were encouraged for the application of the scale BPRS with the results obtained in the multicentre European study [34], where the tool was also used in patients with personality disorders. Obtaining financing from the Ministry (No. 40406931/3103), where the project was subjected to a thorough methodological verification, dispelled our doubts.

Conclusions

1. During the two-year follow-up there was a significant improvement in the socio-occupational functioning in the group of affective, anxiety and eating disorders, and no significant changes in the group of schizophrenia and personality disorders.
2. In all diagnostic groups, except for personality disorders showed significant improvement in relational functioning.
3. Dynamics of changes in the socio-occupational functioning and the improvement performed faster than in relational functioning.
4. There was no correlation between age, gender and occupational and relational functioning. It was found a significant association with the presence of negative symptoms, depression, education, and number of days on sick leave.
5. The findings warrant further research, in-depth discussions on effective forms of assistance in the dysfunctions of the work and functioning of the relationships of people with mental disorders.

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