

Clinical Functioning in a Cohort of Patients with Severe Mental Disorder, before and after Joining a Workplace Reintegration Program

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Abstract

Objective: To determine the rate of relapse in a cohort of patients with severe mental disorder (SMD), during a two year period, before joining a workplace reintegration program run by the Pere Mata Foundation (Reus, Tarragona, Spain) and to compare this information with the rate of relapse during the two subsequent years. We sought to compare both periods to determine if any differences existed in number of patients admitted and duration of stay, as well as the number of times the patients contacted the ambulatory facilities.

Methods: A fixed historical cohort of 86 subjects with SMD was monitored for two years before, and for two years after, joining the workplace reintegration program.

Results: The number of patients admitted to the hospital and the length of time they spent there decreased significantly after they had joined the program, as did the number of patients who contacted the ambulatory facilities. The length of time without relapses increased after joining the program (χ^2 for Log Rank=4.46 df=1 p=0.035), and the rate of relapse before joining the program was 39% but fell to 18% after joining. The relative risk (RR) of having a relapse was greater during the observation period before joining the program than in the observation period after joining (RR 2.13 95% CI 1.27-3.55 p=0.002).

Conclusions: Integrated clinical treatment combined with participation in a workplace reintegration program improved the clinical functioning of patients with SMD, decreased the number and length of hospital admissions, increased the length of time without relapse and reduced the patients' use of ambulatory facilities.

Keywords: Severe Mental Illness; Schizophrenia; Bipolar Disorder; Workplace Reintegration; Employment- Supported; Rehabilitation; Outcome Assessment

Introduction

Severe Mental Disorder (SMD) is defined by three criteria: presence of a serious mental illness (typically psychotic or severe affective disorders), accompanied by a prolonged moderate or serious functional incapacity, with most patients having received two or more years of controlled treatment from the mental healthcare services [1].

Although there is evidence that most patients with SMD wish to work [2], the rate of unemployment among this group is greater than that found among people with somatic illnesses [3]. In countries such as the United Kingdom, the rates of competitive employment in SMD patients are rarely greater than 20% [2]. In Spain during 2008, the rate of unemployment in the general population was 13.91% [4], whereas this figure was estimated to be 85% for people with SMD [5], and 90% in the subgroup of people with schizophrenia [6].

Unemployment has been associated with poor social performance and worsen course of severe affective disorders. On the other hand, employment inclusion may play a role in the prevention of functional

impairment and gives rise to opportunities for identification of potential interventions to improve the functional status of patients [7,8].

There is evidence that persons with SMD benefit from workplace reintegration programs [9-12] because such programs structure and occupy their time, create opportunities for social inclusion, give greater access to social networks, increase self-esteem and provide financial remuneration [2,13]. By the same token, researchers have noted that combining these programs with specialized mental healthcare has a particularly beneficial effect on the control of symptoms [14].

Programs of this kind can contribute to lasting improvement in the social readjustment [15]. These kinds of treatment can raise rates of social rehabilitation from 50% to 68% [16-18] and have a positive impact on patients' quality of life [19-23].

Another beneficial effect of these treatments is the decreased frequency and intensity of symptoms, particularly those of thought and affective disturbances [24-27]. A recent clinical assay demonstrated that people with SMD who are reintegrated into the workplace after a relapse have a better overall functioning with diminished symptoms and an increased chance of remission at the end

of monitoring [28]. Until present time, we have been unaware of any study in Spain that assesses the impact of workplace reintegration on the clinical improvement of patients; in fact, it is recognized that further research is required in this area [6].

Although concern has been expressed over whether the demands of work could worsen the health of these patients [29-31], evidence exists demonstrating that people with SMD on a workplace reintegration program (e.g. vocational training, protected work, supported employment, social businesses) have fewer re-hospitalizations and make fewer visits to the emergency service, compared with those patients that only use the healthcare services to manage their illness [32-34].

Taken together, this leads us to the conclusion that reintegrating patients with SMD into the workplace has a protective effect on their mental health, resulting over time in fewer and shorter hospital admissions and less contact with the various mental health care services.

This study analyzed patients for two years prior to and two years after they joined the workplace reintegration program at the Pere Mata Foundation (PMF) in Reus (province of Tarragona, Spain). The aim was to compare each two year period to determine the lengths of time during which the patients are free from relapses needing hospital treatment. The study also compared both periods to identify any differences in how many patients were admitted to the hospital and duration of stay, as well as the number of times the patients contacted the ambulatory care facilities.

Methods

We carried out an analytical study of a fixed historical cohort of patients with SMD, in which the cohort was monitored two years before and two years after joining a workplace reintegration program. The PMF, the Research Commission of the University Psychiatric Hospital "Pere Mata Institut" (PMI) and the Ethical and Clinical Research Committee of the Saint Joan Hospital in Reus gave their approval for the project to be carried out.

Program description

The treatment assessed by this study is provided by the Pere Mata Foundation (PMF), which aims to help people with SMD to integrate into the community through employment. To do this, the Mental Health Network requests the labor services to provide employment. This program is structured in two steps: Pre-Work Service (PWS) and Special Work Centre (SWC).

Pre-work service: The aim is that the participant acquire, restore, and maintain sufficient capacity to allow the insertion and maintenance as much time as possible in a supported work activity (special work centre). The reintegration actions include:

Psychosocial situation individualized analysis. It includes social and psychological interview to evaluate whether he or she met the criteria for inclusion in the program. To meet these criteria, the patient must be motivated, be undergoing treatment and clinically stable, have his or her basic needs covered, have a sufficient level of autonomy to comply with working hours and carry out daily tasks and have certification confirming disability due to mental illness. If after this evaluation the patient was considered unsuitable for the program, the network making the request is informed so that the reasons for rejection can be addressed and the patient can be reevaluated.

Analysis of personal, vocational, and professional characteristics in order to identify working skills.

Designing of an individual rehabilitation program. Training schedule personalized according to individual professional characteristics, which include specific intervention methodology. The rehabilitation program have short- and long-term aims and is reviewed every fourth month.

Training on skills for the work context. Includes acquisition, restoration, and maintenance of habits and job skills; as well as social skills and abilities for problems resolution.

The length of the PWS is linked to the fulfillment of goals consigned in the individual rehabilitation program. The upper length of time shall not exceed three years.

Special work centre: Patients are placed in the SWC after PWS according to their specific skills. The SWC is a company that combines elements from both protected employment and supported employment [35] and that carries out productive activities such as laundry, gardening, cleaning, restoration, industrial assembly processes, packaging. All the patients performed paid work and had an employment contract.

During this process the patients are monitored and supported to evaluate the particular difficulties they experience and to increase the resources available to them in the workplace. At the same time, the patients are encouraged to develop and consolidate personal resources needed to keep their jobs and to bring to it the tools and strategies needed to deal with any difficulties and conflictive situations that may arise.

Participants

The study included working age-patients with SMD derived by their reference psychiatrist who diagnosed mental disorders according to ICD-10th and evaluated disability according to Spanish law (i.e., by means of a clinical interview to verify a "diminished capacity to carry out an autonomous life", "a diminished capacity for work", and a general "significant deterioration in functional capacity") [36], and them assessed by the social work-psychology team of the PMF for criteria to be admitted into the workplace reintegration program (previously described on Psychosocial situation individualized analysis).

This cohort was composed by all subjects from to the PMF's program, monitored for a total length of four years (two years before their admission or Period A and two years after admission or Period B). Of the 86 participants, 64% were men, with an average age of 34.76 (+7.26). 83.7% of these men were single, but 16.3% had or had had a partner at some point. 74.4% of the study population had basic qualifications, 19.8% middle qualification, 4.7% high qualification, and 1.2% had not scholar skills. 82.4% had working experience prior to joining the PMF. As expected by the study design, social and demographic variables of the cohort did not differ significantly at the start of either period (data not shown).

Measurement and Procedure

The data were taken from the registers at the PMF and the PMI. The PMI includes a psychiatric hospital and its network of ambulatory care facilities integrated with the PMF and is responsible for providing

mental healthcare for the province of Tarragona, the area from which the subjects were selected.

We monitored each patient to determine how much time elapsed before their first admission to the hospital for SMD in both Period A (beforehand) and Period B (afterwards). Furthermore, we counted the total number and length of admissions for both periods. We also recorded the patients' primary diagnoses and the percentage of disability attributed to SMD. For the purposes of this study, we will regard relapse as a clinical worsening that leads to psychiatric hospitalization.

We also counted (in both periods) the number times the patients attended the ambulatory facilities in the Mental Healthcare Network. The number of patient consultations was divided into psychiatric, psychological, social work and nursing. Finally, we recorded the number of non-completed appointments as an indirect measurement of attendance at SMD care programs.

If patients left the workplace reintegration program, we recorded the reason for this, whenever possible. We also evaluated possible differences in the sociodemographic and clinical data between those who completed the program and those who did not.

Data Analysis

We compared the repeated measurements using the Wilcoxon Signed Rank test. We used a Kaplan-Meier survival curve to analyze the conditional probability of relapse during both two year periods. A

Log-Rank test was used for the overall comparison between both curves. To determine when patients were at the highest risk of relapse during both periods, we used the actuarial method to calculate the risk function and used the Wilcoxon (Gehan) statistic for the overall comparisons.

We calculated the number of relapses before and after the patients joined the program, the relative risk (RR) of having to be admitted to the hospital at least once, the percentage of the relative risk reduction (%RRR) and the number of subjects that needed to be treated to avoid a relapse (NNT).

To evaluate the possible differences in the sociodemographic and clinical variables among those patients who did not complete the program, we performed a bivariate analysis using a χ^2 , Fisher's exact test for the qualitative data or the Mann-Whitney U test for the quantitative data. Finally, Pearson χ^2 tests were used to evaluate the possible relationship between previous education status (as a possible confounding variable) and risk of at least one hospital admission during both before and after join the program.

For the statistical calculations, we used Excel, SPSS 15.0. We considered the value of significance to be $p < 0.05$ for all the contrasts.

Results

The most frequent diagnosis for SMD was paranoid schizophrenia (37.2%), followed by schizoaffective disorder (17.4%) and bipolar disorder (12.8%).

	Before					Afterwards					p
	Mean	Median	SD	Min	Max	Mean	Median	SD	Min	Max	
Number of admissions	0.65	0	1	0	5	0.26	0	0.6	0	4	0.002
Average number of days	27.24	0	81.5	0	687	3.99	0	10	0	50	0
Number of psychological appointments conducted	0.63	0	2	0	13	0.44	0	1.8	0	12	0.231
Number of non compliant psychological appointments	0.13	0	0.6	0	5	0.06	0	0.3	0	3	0.301
Number of psychiatric appointments conducted	9.74	8	6.8	0	28	7.42	6	6	0	27	0.004
Number of non compliant psychiatric appointments	1.16	1	1.4	0	6	0.65	0	0.9	0	4	0.005
Number of social work service appointments conducted	6.84	4	7	0	25	5.7	4	6.5	0	34	0.168
Number of non compliant social work service appointments	1.51	1	1.9	0	8	1.06	0	1.7	0	10	0.027
Number of nursing service appointments conducted	23.28	12	39.4	0	315	20.12	12	24.2	0	111	0.921
Number of non compliant nursing service appointments	1.59	0.5	2.3	0	13	1.33	0	2.3	0	12	0.2

Table 1: Number of patients admitted to the hospital, their length of stay, and number of patients attending the ambulatory facilities before and after joining the workplace eintegration program (p values are for Wilcoxon Signed Rank Test).

The primary diagnosis of 48.9% of the population studied was some type of schizophrenia. The remaining diagnoses were: psychotic disorder not otherwise specified (5.8%), delusional disorder (4.7%),

schizoid personality disorder (3.5%), schizotypal personality disorder (2.3%), borderline personality disorder (2.3%) and obsessive

compulsive disorder (2.3%). The average percentage of disability resulting from mental illness was 61.88% (+8.63%).

Table 1 shows the differences in the number of hospital admissions and the average number of days spent in the hospital for before and after the start of the reintegration program. Both the length and number of hospital admissions decreased significantly ($p < 0.01$).

The number of patients that attended the ambulatory facilities decreased across the board after they had joined the program, but only the decrease in number of patients attending the psychiatric service was statistically significant. The number of appointments not kept also decreased significantly for the psychiatric and social services after patients had joined the program (Table 1).

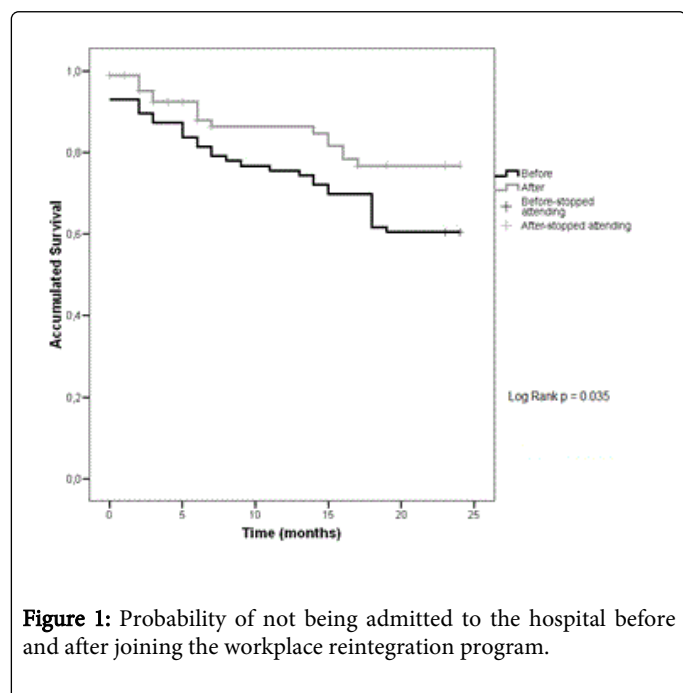


Figure 1: Probability of not being admitted to the hospital before and after joining the workplace reintegration program.

The Kaplan-Meier survival test carried out at each point of the program (Figure 1) showed that the survival without relapse increased

after patients joined the PMF (χ^2 for the Log Rank=4.46 $df=1$ $p=0.035$).

Table 2 shows the accumulated probability of “survival” without relapse at 0, 6, 12 and 18 months during each observation period. It can be seen that there is a 76% probability that patients will not have been hospitalized 18 months after joining the PMF. The table also shows the points of greatest risk of hospitalization before and after (risk rate).

Figure 2 shows that the risk of relapse increases 12 months after joining the PMF, but then decreases drastically by 18 months. Before joining the program, the risk of relapse is significantly higher at 0, 6 and 18 months (Wilcoxon Statistic=4.43 $df=1$ $p=0.035$).

Treatment’s impact measures shows that the proportion of relapses before joining the workplace reintegration program was 39%, whereas the proportion of relapses after joining the program was 18%. If the patient is not part of the workplace reintegration program, the RR of having a relapse is 2.13 (95% confidence interval -CI- 1.27-3.55, $p=0.002$), the %RRR is 53.8% (95% CI=21.35-71.84) and the NNT to prevent the relapse of patients on this program is 5 (95% CI=2.93-12.95).

There were no differences on education status and hospital admissions neither before nor after joining the program (χ^2 (3)=2.473 $p=0.480$ and χ^2 (3)=2.120 $p=0.548$, respectively).

Finally, significant differences were found in the educational level of those who abandoned the rehabilitation program, as opposed to those who did not: 90.9% of those who left the program during monitoring had a low level of education, this value being higher than the 64.2% observed in those who remained ($p=0.006$) (other sociodemographic and clinical were not statistically different and are not shown). 42.4% of those who left the program were unable to commit themselves adequately to the process and showed a high level of absenteeism, despite being provided with individual support. In addition, 33.3% dropped out voluntarily, that is, despite adapting well to the process, they decided to leave. Other reasons for abandoning the program included not wanting to lose disability benefits (9.1%), not having enough money to get to the PMF (6.1%), moving address (6.1%) and changing job (3%).

	Period (months)							
	Before				Afterwards			
	0	6	12	18	0	6	12	18
Patients at the start	86	72	65	60	86	61	54	47
Patients eliminated during the interval	0	0	0	27	19	3	1	31
Patients exposed to risk	86	72	65	46.5	76.5	59.5	53.5	31.5
N° terminal events (relapses)	14	7	5	8	6	4	6	0
Accumulated survival	0.84	0.76	0.7	0.58	0.92	0.86	0.76	0.76
Risk rate	0.03	0.02	0.01	0.03	0.01	0.01	0.02	0

Table 2: Probability of accumulated “survival” and actuarial risk rate of being hospitalized at 0, 6, 12 and 18 months before and after joining the workplace reintegration program.

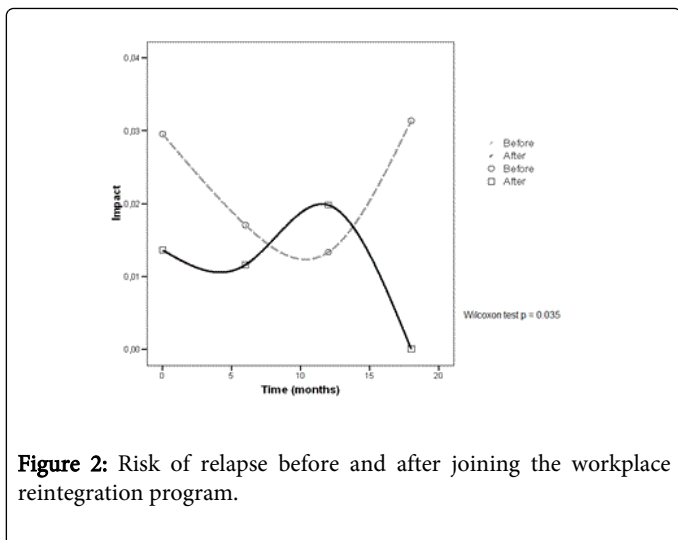


Figure 2: Risk of relapse before and after joining the workplace reintegration program.

We analyzed (a posteriori) the patients who abandoned the workplace reintegration program and found that 36.4% of them presented with at least one relapse. This value is high compared with the overall percentage of relapses among those patients who remained within the PFM during the two years after joining, that is, 20.8%, although the two percentages are not comparable because the two observation periods are unequal.

Discussion

Patients on workplace reintegration programs such as that of the PMF show various differences regarding clinical functioning compared with those who are not on such a program.

These differences can be seen in the number and length of hospital admissions. Even though patients in the program punctually had higher number of hospital admissions at month 12 (Figure 2), the adherence to psychiatric visits, and the global length and number of hospitalizations at the end of follow-up were significantly lower (Table 1).

The risk of readmission at the end of follow-up and the risk of having a longer length of stay are higher when patients do not participate in workplace reintegration and rehabilitation programs. These risks have been described for people with SMD, where in particular the non affective psychotic symptoms are the cause of hospitalization [37].

Our study also reveals that enrolment in a psychosocial care program reduces the consumption of ambulatory care facilities, particularly those relating to psychiatric care. This suggests that our subjects' health was improved for a continued period, and this in turn may mean that the number and intensity of symptoms is reduced or that new and effective forms of dealing with the symptoms have been acquired, especially if we take into account the fact that the rate of non compliant appointments also decreases. This finding is supported by other studies demonstrating the beneficial effects of work on clinical symptoms [27,38]. Our findings lead us to believe that the rehabilitation in people with SMD improves insofar as the treatment combines employment with social and healthcare resources, something which has previously been observed [39,40].

Although other studies have shown that clinical characteristics are not a predictor of workplace reintegration success [41]; it should be kept in mind that our study possibly had favorable results because being "clinically stable" is a criterion for inclusion in the program. Therefore, this analysis should be replicated comparing two independent clinically stable groups, one of which would belong to the reintegration program and the other not. Burns T. et al. have suggested that although working has a positive effect on mental health, this association may be due to the improved health and general functioning of patients who undergo these kinds of treatments [28]. Otherwise, the design used in this study allowed us to measure the variability of the clinical functioning over time, with the advantage of being able to observe a sample of behaviors instead of having two samples of subjects.

The analysis was hindered by the significant number of patients who abandoned the process, although this was partially made up for by analyzing these subjects' characteristics. Most of the patients who abandoned the program did so because they had lost motivation. Although patients express an interest in working, they may not really be committed to or involved in the process, which suggests that there is a difference between attitudes expressed and actual behavior [42]. It may also be the case that the patients are afraid of failure when faced with the demands of the program and that this causes them to become discouraged [43].

Another significant percentage of patients were lost from the process because of a lack of adherence; that is, it is likely that the obstacles they faced were related to a resistance to change, a lack of confidence in their abilities or some other kind of psychological barrier associated with working routines such as the inability to adapt to timetables or to carry out certain kinds of work [44].

A small number of cases left the program for fear of losing their disability benefit. Several studies have shown that fear of losing benefits is a powerful barrier against workplace reintegration [45], and it has also been asserted that most people with SMD who are not interested in working are more interested in obtaining benefits than in making any effort to re-enter the workplace [43-45].

The group of patients who abandoned the program had a lower level of education than those who continued with it and subsequently had a higher rate of relapse. Those people who abandoned the program may present with more complex clinical symptoms or worse prognoses and this requires exhaustive research to determine whether there is a group of patients with SMD who require different workplace reintegration programs that focus more directly on their particular characteristics (such as the degree of education) than the program evaluated by this study.

There are some limitations on the generalizability of our results due to study design and inclusion criteria. Because of the historical nature of this cohort we could not perform a more accurate measure of diverse variables that might be related to the reported variations on risk rates through time. Our participants had to meet a sequence of criteria including clinical stability and coverage of basic needs, which may implies a better prognosis and hampers inferring our results to more severely impaired subjects, even though all patients from our pre-post cohort had SMD.

Conclusions

Patients on workplace reintegration programs have fewer and shorter re-admissions to hospitals, consume fewer day care resources, respond better to therapy, and experience longer periods of "survival" without relapse.

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