



## ORIGINAL ARTICLE

# Schizophrenia and work: aspects related to job acquisition in a follow-up study

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**Objective:** Work is considered one of the main forms of social organization; however, few individuals with schizophrenia find work opportunities. The purpose of this study was to evaluate the relationship between schizophrenia symptoms and job acquisition.

**Method:** Fifty-three individuals diagnosed with schizophrenia from an outpatient treatment facility were included in an 18-month follow-up study. After enrollment, they participated in a prevocational training group. At the end of training (baseline) and 18 months later, sociodemographic, clinical data and occupational history were collected. Positive and negative symptoms (Positive and Negative Syndrome Scale – PANSS), depression (Calgary Depression Scale), disease severity (Clinical Global Impression – CGI), functionality (Global Assessment of Functioning – GAF), personal and social performance (Personal and Social Performance – PSP) and cognitive functions (Measurement and Treatment Research to Improve Cognition in Schizophrenia – MATRICS battery) were applied at baseline and at the end of the study.

**Results:** Those with some previous work experience (n=19) presented lower scores on the PANSS, Calgary, GAF, CGI and PSP scales ( $p < 0.05$ ) than those who did not work. Among those who worked, there was a slight worsening in positive symptoms (positive PANSS).

**Conclusions:** Individuals with less severe symptoms were more able to find employment. Positive symptom changes do not seem to affect participation at work; however, this calls for discussion about the importance of employment support.

**Keywords:** Schizophrenia; work; symptom; support

## Introduction

An essential characteristic of schizophrenia is its impact on psychosocial functioning, which includes impairment of self-care, independent life skills, quality of social relations and the capacity to work or study.<sup>1</sup> Although multiple facets of the disorder may contribute to functional incapacity, cognitive functioning and the severity of negative symptoms have been more commonly associated with impaired performance in activities related to social functioning, work or study.<sup>2-4</sup> In a systematic review, Shamsi et al.<sup>5</sup> reviewed predictors of functional incapacity in schizophrenia and found that attention, processing speed, language and memory are predictors of employability and impairments in social functioning and social skills.

According to several studies, schizophrenics who are employed report greater life satisfaction than those who are unemployed.<sup>6-8</sup> One of the main goals of people with mental disorders is access to activities that are satisfying

and give meaning to life, including work. Most people with severe mental disorders are willing and able to work<sup>9</sup>; however, unemployment rates in this population remain excessively high, ranging from 80 to 90%.<sup>1</sup> These numbers reflect a combination of psychological and social barriers, such as stigma and lack of support and professional guidance.<sup>10-14</sup>

In a review, Bond & Drake<sup>10</sup> highlight a schizophrenia diagnosis and psychiatric symptoms as predictors of low employability, while remission is a predictor of favorable work outcomes. They emphasize that attitudes towards individuals with schizophrenia, especially from employers, and lack of access to support services act as barriers to employment.

A preparatory group is a type of prevocational training to improve work habits and personal skills. This model considers that people with mental disorders need a preparation period before seeking competitive jobs. This strategy includes participation in sheltered workshops, transition jobs, skills training and other preparatory activities.<sup>15</sup>

It has been argued that using support strategies during the employment process of individuals with schizophrenia is important.<sup>11,14,16</sup> However, most individuals with serious mental disorders do not receive supported

employment.<sup>10,16</sup> According to Boycott et al.,<sup>17</sup> the main obstacles to implementing supported employment are organizational and systemic barriers, as well as barriers related to employment specialist competencies and attitudes. Due to policy and funding restrictions within the current Brazilian mental health care system, supported employment for individuals with schizophrenia is still in its incipient phase. Since supported employment programs are generally unavailable, prevocational programs can be a promising strategy for those who want to work.<sup>18</sup>

This study aimed to identify and analyze the relationship between symptomatology and job acquisition and retention. Individuals with schizophrenia were enrolled in a prevocational training group and then followed up for 18 months to analyze the relationship between achievement and permanence at work and the central features of the disorder, such as symptomatology, functionality, social functioning and cognitive aspects. We hypothesized that more favorable symptomatology profiles would present higher rates of job acquisition and retention.

## Materials and methods

### Participants

All individuals undergoing treatment in the Schizophrenia Program (Programa de Esquizofrenia – PROESQ) of Universidade Federal de São Paulo (UNIFESP) and the Integrated Center for Mental Health (Centro de Atenção Integrada à Saúde Mental – CAISM) of Santa Casa de São Paulo who expressed a desire for employment were invited by their psychiatrist to participate in the study. The psychiatrists were previously informed of the study's inclusion and exclusion criteria: age between 18 and 45 years (mean age: 34.24 ± 7.42), stable psychiatric symptoms for at least 2 months prior to enrollment, and good treatment adherence in the psychiatrist's opinion. The referring psychiatrists used DSM-IV criteria for schizophrenia to determine the diagnosis.

All prospective participants were interviewed and allocated into groups for prevocational training. Groups of 10 to 15 individuals were formed until a 1-year pre-set deadline had expired (2012-2013). Those who had participated in at least 6 meetings were included in the study.

A convenience sample was formed of 53 of schizophrenics desiring employment, each of whom was followed up for 18 months. All participants were informed that participation in this study was voluntary and would not affect his/her treatment. All participants provided voluntary written informed consent, and the study was approved by the Ethics Committee of the Universidade Federal de São Paulo (180.554/12).

### Instruments

#### Clinical diagnosis data

Clinical data included onset age and duration of the disorder, medications, and alcohol and drug use.

#### Socio-occupational background

Information was obtained about the participant's last three periods of employment, including work hours and type of work, social security benefits and participation in interviews.

#### Positive and Negative Syndrome Scale (PANSS)

This scale is used to identify and quantify positive and negative symptoms in schizophrenia. The scale is divided into three sections: a) positive symptoms: 7 items; b) negative symptoms: 7 items; c) general symptoms: 16 items. All items are rated from 1 to 7 according to symptom severity (1 = absent; 2 = minimal; 3 = mild; 4 = moderate; 5 = moderately severe; 6 = severe; 7 = very severe). Higher scores indicate greater severity.<sup>19</sup>

#### Remission criteria

Eight items on the PANSS scale are used to define remission in schizophrenia (P1 – delusions; P2 – conceptual disorganization; P3 – hallucinatory behavior; N1 – affective blunting; N4 – social withdrawal passive/apathetic; N6 – lack of spontaneity and fluency; G5 – mannerism/posture; G9 – unusual thought content). Two factors are considered necessary to fulfill remission criteria: 1) symptomatic, all eight items must present scores ≤ 3; 2) temporal, remission should be sustained for 6 months.<sup>20</sup> In the present study, both criteria were used, except that the temporal criterion was extended to 18 months.

#### Calgary Depression Scale

This nine-item scale assesses depression in schizophrenia. For each item, the symptom is scored as absent, mild, moderate or severe. Higher scores indicate greater severity of depression.<sup>21</sup>

#### Global Assessment of Functioning (GAF)

This numeric scale (0 to 100) is used as a scoring system for the severity of psychiatric disorders. It is a subjective assessment of the social, occupational and psychological functioning of patients. The scale is shown and described in the DSM-IV-TR. The score is often given in intervals of ten points.<sup>22</sup>

#### Clinical Global Impression (CGI)

This well-established rating tool is applicable to all psychiatric disorders and can be easily used by practicing clinicians.<sup>23</sup> The CGI has two components: CGI-Severity (CGI-S), which rates illness severity, and the CGI-Improvement (CGI-I), which rates change from baseline. The CGI-S rates the severity of a patient's illness on a 7-point scale ranging from 1 (normal) to 7 (extremely ill), according to the clinician's experience of patients suffering from the same condition. The CGI-I assesses the extent of a patient's clinical change at the point of assessment compared to baseline and also involves a 7-point range, from 1 (very much improved) to 7 (very much worse).<sup>24</sup>

### Personal and Social Performance (PSP)

This scale measures four areas of individual functioning and social performance (usual social activities, personal and social relationships, self-care, aggressive and disturbed behavior). Higher scores indicate better performance.<sup>25</sup>

The Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) cognitive battery

This recently validated instrument was an initiative to develop a standard battery of cognitive tests for use in clinical trials on schizophrenia.<sup>26</sup> It consists of a set of 10 tests developed through a consensus of experts and was designed to establish an acceptable way to evaluate cognition-enhancing agents, thereby providing a pathway for the approval of new medications by the U.S. Food and Drug Administration (FDA). It was also meant to aid standardized evaluations of other interventions to treat the core cognitive deficits of schizophrenia. The battery should be completed in about an hour and a half. Grouped by cognitive domains, the battery consists of the following tests (9 of the 10 tests were used): processing speed – Trail Making Test, Digit Symbol Coding Subtest, and Category Fluency Test; attention/vigilance – Continuous Performance Test (CPT); working memory – Letters and Numbers Span Test (SPAN L N) and Spatial Span Subtest (SPAN S); verbal learning – Hopkins Verbal Learning Test (HVLT); visual learning – Brief Visuospatial Memory Test (BVMT); reasoning and problem solving – Mazes. The social cognition test was not used due to lack of reasonable reliability in the Brazilian version.<sup>26,27</sup>

### Study design

An exploratory study involving an 18-month follow-up was conducted. The initial evaluation took place at the end of participation in the prevocational training group (baseline), with a subsequent evaluation 18 months later. The participants' clinical, sociodemographic and employment history were assessed through a socio-occupational questionnaire.

Over the 18 months, all individuals were followed monthly through in-person meetings or telephone calls to report their participation in job interviews, study and work. Specific interventions to support job retention were not performed during the study. All individuals continued psychosocial treatment in the aforementioned services throughout the study period. Of the 53 participants, 45 were followed up for 18 months by phone, email or in person to report the circumstances of their job search. All participated in initial clinical evaluations and 41 participated in a final evaluation. Among those who did not do undergo the final clinical evaluation, three were employed and could not miss work, and one was incarcerated. However, there was a greater dropout rate with the MATRICS battery, eight unexcused absences, which left only 37 evaluations at the end of the study.

### Prevocational training

The prevocational training program was carried out in three stages: 1) weekly 1-hour meetings with those

who were as yet unsuccessful in their job search (the main barriers identified were lack of documentation, insecurity and fear about revealing their diagnosis); 2) support material about the issues raised in the previous stage was developed and shared in eight 90-minute sessions; 3) a pilot project was carried out, followed by support team training.

The main topics of the eight support sessions were: 1) the goals of the group; 2) how to communicate assertively; 3) the importance of a good résumé; 4) how to write a résumé; 5) how to behave in an interview; 6) stigma, stressors and group work; 7) the importance of relationships at work; 8) a farewell meeting.

All participants (n=53) completed the prevocational training group, produced a new résumé and acquired the necessary documentation to be hired for a formal job. It was outside the scope of the program to offer or recommend jobs.

### Data analysis

For the analysis, baseline clinical and neuropsychological data were compared between those who worked for at least 1 month during the 18-month follow up (employed group [EG]) and those who did not (unemployed group [UG]). Previous studies have considered 1 day<sup>12,14</sup> or 1 week<sup>11</sup> as the job acquisition criterion, although Vauth et al.,<sup>28</sup> used a 3-month cutoff point. In the present study, job acquisition was defined as 1 month of employment to enable analysis of the relationship between work experience and possible changes in symptomatology. To analyze symptom changes in both groups during follow-up, assessments from two different points (baseline and 18 months later) were compared.

### Statistical analysis

The sample was divided into two groups based on job acquisition: those who obtained any kind of paid work, either formal or informal, for at least 30 days (EG), n=19, and those who did not (UG), n=26. Analysis included a frequency analysis and chi-square test for categorical data, as well as the Kolmogorov-Smirnov test to determine sample distribution. To compare means, an independent *t*-test for parametric data and the Mann-Whitney test for nonparametric data were used. For repeated measures, a paired *t*-test was used for parametric data and the Wilcoxon test was used for nonparametric data. Binomial logistic regression analysis was performed to analyze job acquisition predictors.

## Results

### Sociodemographic data

The mean age of the original sample (n=53) was 34.23 (standard deviation [SD] = 7.42) years; the majority of participants were men, n=38 (71.7%); 45 were single (84.9%); the mean years of schooling were 12.51 (SD = 3.34); 37.7% had completed high school and 35.9% had

enrolled in higher education. The mean disorder duration was 11.92 (SD = 6.66) years. A total of 45 patients completed the study; of those, 19 (35.8%) acquired a job, with 10 (52.6%) earning  $\geq$  minimum wage. There was no statistical difference between EG and UG regarding gender, marital status, education, age or disorder duration (Table 1).

### Job acquisition analysis

Statistically significant differences between EG and UG were found in most of the scales (Table 2), although there were no significant differences in the MATRICS cognitive battery.

At the beginning of the study, 14 (73.7%) participants from the EG met the criteria for remission and 5 (26.3%) did not. In the UG, 8 (30.8%) were in remission and 18 (69.2%) were not; this difference was statistically significant ( $\chi^2 = 1-8.091$ ,  $p = 0.004$ ). At the end of the study, 15 (93.7%) individuals from EG met the remission criteria and 14 (56%) from UG were in remission, a statistically significant difference ( $\chi^2 = 1-6.716$ ,  $p = 0.01$ ).

Baseline PANSS, CGI, GAF and PSP were included in a binomial logistic regression model. An association was

found between job acquisition and total PANSS score (OR = 1.15, 95% confidence interval 1.06-1.25,  $p = 0.001$ ).

The average length of employment in the EG was 11.55 months (SD = 6.48). Three individuals remained employed for less than 6 months (6.8%); six (13.6%) remained employed between 6 and 12 months and 10 (22.7%) for more than 12 months.

### Symptomatic changes

The mean baseline and final evaluations were compared to identify changes in symptoms and neuropsychology over the follow-up period. Among the EG ( $n=16$ ), the mean PANSS positive scale was 8.31 (SD = 1.74) at baseline and 9.69 (SD = 2.27) at the final evaluation; this result was statistically significant ( $t = -2.18$ , degrees of freedom = 15,  $p = 0.046$ ). There were no significant changes in PANSS negative, general psychopathology or total score, or in Calgary, GAF, PSP or MATRICS measures. No significant results were found in the UG.

### Discussion

Fifty-three individuals with schizophrenia who participated in a prevocational training program were followed for

**Table 1** Sociodemographic comparison of employed and unemployed schizophrenics followed up for 18 months.

	Employed	Unemployed	p-value
Gender			
Male	14 (73.7)	18 (69.2)	0.745
Female	5 (26.4)	8 (30.8)	
Marital status			
Single	15 (78.9)	23 (88.5)	0.665
Married	1 (5.3)	1 (3.8)	
Divorced	3 (15.8)	2 (7.7)	
Educational (complete or incomplete)			
Elementary school	1 (5.3)	3 (11.5)	0.102
High school	11 (57.9)	15 (57.7)	
Higher education	7 (36.8)	8 (30.8)	
Age, mean (SD)	33.26 (7.1)	34.54 (7.6)	0.570
Disorder duration, mean (SD)	10.5 (6.6)	12.9 (6.81)	0.243

Data presented as n (%), unless otherwise specified.

The chi square test was used for comparison between groups,  $p \leq 0.05$ .

SD = standard deviation.

**Table 2** Comparison of baseline assessments for the employed and unemployed groups.

	Employed (n=19)	Unemployed (n=26)	Test result*
PANSS P	8 (7/12)	12 (7/24)	$U = 103.5$
PANSS N	14 (9/25)	21 (9/28)	$U = 130$
PANSS G <sup>†</sup>	23 (3.94)	29 (5.81)	$t = -3.979$
PANSS T	44 (36/66)	61.5 (42/94)	$U = 74$
Calgary	0 (0/2)	0.5 (0/10)	$U = 154$
GAF	65 (55/85)	60 (20/80)	$U = 115.5$
CGI-S	3 (2/4)	4 (2/5)	$U = 161$
PSP	70 (50/90)	60 (40/80)	$U = 138$

Data presented as median (minimum/maximum), unless otherwise specified.

Calgary = Calgary Depression Scale; CGI-S = Clinical Global Impression-Severity Scale; GAF = Global Assessment of Functioning; PANSS = Positive and Negative Syndrome Scale (G = General Psychopathology Scale; N = Negative Scale; P = Positive Scale; PANSS T = Total Score); PSP = Personal and Social Performance.

\*Independent  $t$ -test or Mann-Whitney  $U$  test. All results were significant ( $p \leq 0.05$ ).

<sup>†</sup> Mean (standard deviation).

18 months. The purpose of the study was to evaluate factors related to finding and keeping employment and symptom changes during the follow-up period.

We found less clinical impairment among patients in the EG than the UG. Among those who found work (EG), 73.7% met the remission criteria at the beginning of the study. The group also presented fewer symptoms in all PANSS subscales, fewer depressive symptoms, better functionality and better social performance. These results corroborate previous studies<sup>10-14</sup> claiming that individuals with controlled symptoms have better performance in finding work. These results point to remission as a predictor of favorable work outcome.<sup>13,20</sup>

In the binomial regression analysis, total PANSS score was strongly associated with employment, since less symptomatic individuals performed better at finding work. This corroborates the results of previous studies<sup>29-32</sup> indicating that cognitive functioning may be decisive for job acquisition<sup>2</sup>; however, in the present study no statistically significant results were found in the neuropsychological evaluations. This might be explained by the relatively small sample size.

The results suggest a worsening of positive symptoms over time in the EG; however, this worsening – from 8.31 to 9.69 in the positive PANSS scale – is not clinically relevant. In fact, Leddy-Stacy & Rosenheck<sup>33</sup> suggest that further evaluation should be performed to estimate the minimum clinically important difference (MCID) for these symptoms.

Considering that the employment rate for individuals with schizophrenia ranges from 10 to 20%, our results are encouraging, with 35.8% of all individuals gaining some work experience during the follow-up period. These results could be explained by the participants' high level of formal education,<sup>34</sup> as well as their motivation to work<sup>35</sup> and group support.<sup>18</sup> However, simply obtaining a position with satisfying work hours and wages is probably not enough, since job retention remained problematic. At the end of the study, only 7 EG participants (36.8%) were still working.

Despite efforts to improve its rigor, this study has some limitations. The sample size made it impossible to analyze predictors of job retention. The sample size may have also limited analysis of the relationship between changes in positive symptoms and work experience, as well as the cognitive analyses. Moreover, this is a convenience sample of individuals with high education levels and favorable symptomatology who were undergoing treatment at university outpatient clinics, which sets the analysis within a particular context. Another limitation is related to strategy: prevocational training is associated with lower job acquisition rates than supported employment. However, the barriers to implementing supported employment in Brazil made prevocational training more feasible.

This study's findings are an important contribution, especially the favorable symptomatology among patients who found employment. Thus, it is evident that treatment to control symptoms and increase functional capacity is essential. Moreover, the prevocational training program was important for overcoming initial barriers, such as lack of official documents, fear and insecurity. The meeting

format increased motivation among members and facilitated an exchange of work-related experiences.<sup>35</sup> Thus, prevocational programs can be considered a feasible strategy for the social insertion of similar populations.

To promote the professional inclusion of individuals with schizophrenia, certain actions are important, such as encouraging new ways to understand schizophrenia and to deal with the stigma and lack of information about the disorder.<sup>36,37</sup> Furthermore, work engagement requires understanding of the disorder's impact on job acquisition and retention, perception of how occupational stress interferes in the disorder's evolution, and consideration of the specificity and combination of choices involved in the job. Finally, job acquisition support entails avoiding occupational risks and minimizing the worsening of symptoms due to the effects of employment. In light of such conditions, a case can be made for developing treatment strategies that enable social participation, normalize social status and advocate for these individuals.<sup>38,39</sup>

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