Identifying improvable employment-related factors in schizophrenia patients

（統合失調症患者の就労に関連する要因の抽出）

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ABSTRACT

Although many studies report various factors related to future employment of schizophrenia patients, few identify the treatable or improvable ones. The responses to the first year of treatment and daily antipsychotic drug doses may be the treatable and improvable factors. We surveyed 235 schizophrenia outpatients in three facilities, of whom 129 and 106 were employed and unemployed, respectively. Through face-to-face interviews and medical record reviews, we investigated symptomatic and social functioning responses to the first year of treatment using the Global Assessment of Psychopathology Scale (GAPS) and the Social and Occupational Functioning Assessment Scale (SOFAS). We investigated daily antipsychotic drug doses and other clinical assessments at the interview time. Finally, we used multivariable logistic regression analysis. SOFAS-measured improvements in the period 6 to 12 months after beginning treatment and daily antipsychotic drug doses equivalent to less than 600 mg of chlorpromazine were identified as an employment-related factor, but GAPS-measure

improvements were not. Social functioning improvements in the period 6 to 12 months after beginning treatment and low-to-moderate daily antipsychotic drug doses were detected as employment-related factors, suggesting that early efforts to improve social functioning and optimize antipsychotic drug doses could lead to future employment for schizophrenia patients.

Keywords:

social functioning

antipsychotics

early improvement

1. Introduction

Employment in society is highly important for recovery in schizophrenia patients (Andreasen et al., 2005; Schennach et al., 2012; Secker et al., 2001; Üçok et al., 2012). Schizophrenia patients face employment rates as low as 8 to 35% in various countries including Japan (Anthony et al., 1987; Brekke et al., 1993; Gaite et al., 2002; Marwaha et al., 2004; Ministry of Health, Labour and Welfare 2010; Rogers et al., 1988). It is important to identify the factors critical to their employment.

Previously reported employment-related factors for schizophrenia patients include cognitive impairment, negative symptoms, youth, education, experience of employment, marital status, sex, remission duration, and public support/disability income (Tsang et al., 2010; Üçok et al., 2012). However, few studies have tried to identify the clinically improvable or treatable factors.

Studies on recovery from schizophrenia serve as useful starting points for identifying such factors. Previous studies have reported that early support

during the first 2–5 years from the onset of illness is related to recovery from schizophrenia (Birchwood et al., 1998) and that early improvements in psychiatric symptoms and social functioning (Verma et al., 2012; Lambert et al., 2008; Ascher-Svanum et al., 2008; Emsley et al., 2008; Kinon et al., 2010) promote overall psychiatric and social function recovery. Furthermore, Kopelowicz et al. (2005) reported that patients who recovered from schizophrenia had received lower antipsychotic dosages than those who did not recover. These findings provide useful clues for identifying improvable employment-related factors in patients with schizophrenia.

Other reported recovery-related factors include resilience (Hofer et al., 2016; Bozikas et al., 2016), insight (Lysaker et al., 1998), depressive symptoms (Brekke et al., 1993; Mueser et al., 1997), and the duration of the untreated period (DUP) (Bottlender et al., 2003; Harrigan et al., 2003; Harris et al., 2005; Boden et al., 2009). These may also be employment-related factors in patients with schizophrenia.

We aimed to identify the improvable employment-related factors for

schizophrenia patients by surveying outpatients receiving treatment. We hypothesized that daily antipsychotic drug doses and early symptomatic or social function responses to treatment would be related to employment. Furthermore, we examined whether resilience, insight, depressive symptoms, and the DUP were related to employment status in patients with schizophrenia.

2. Methods

2.1. Participants and definition of employment

This study was approved by the institutional review boards of all participating research facilities. Written informed consent was obtained from all participants after they received a full explanation of the procedure including potential risks and benefits. This study was conducted from October 2011 to June 2014 in three different facilities: Chiba University Hospital (urban area), Chiba Psychiatry Medical Center (urban area), and Sodegaura Satsukidai Hospital (rural area). Our inclusion criteria were (1)

an age from 18 to 65 years, (2) a diagnosis of schizophrenia or schizoaffective disorder according to the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (American Psychiatric Association, 2000), and (3) outpatient status. A diagnosis of comorbid mental retardation or dementia was an exclusion criterion.

We defined employment in society as (1) working in a full-time or part-time job or (2) being self-employed in one's own business or profession. We excluded participants engaged in work rehabilitation. Those meeting the criteria for employment in society formed the employed group, and the others formed the unemployed group.

2.2. Study design and procedure

This study was cross-sectional. We first surveyed outpatients with schizophrenia or schizoaffective disorder at three facilities and determined their employment status according to the criteria in **2.1**. We then collected the required clinical information described in **2.3** through both retrospective

examinations of medical records and face-to-face interviews with participants and their families.

2.3. Assessments

2.3.1 Clinical response to initial treatment

To assess each patient's clinical response to initial treatment, we used the Global Assessment of Functioning Scale (American Psychiatric Association, 2000), which rates functioning on a numeric scale (1 through 100) in 10-point bands from severe psychiatric symptoms and poor functioning to mild psychiatric symptoms and high functioning. We also used the Social and Occupational Functioning Assessment Scale (SOFAS) to assess social functioning and the Global Assessment of Psychopathology Scale (GAPS) to assess psychiatric symptom severity, as in previous studies (Goldman et al., 1992; Pedersen et al., 2007; Smith et al., 2011). We retrospectively measured SOFAS and GAPS scores at the following three timepoints: the first

consultation with a psychiatrist (T0), 6 months after beginning treatment (T1), and 12 months after beginning treatment (T2) (Fig. 1).

2.3.2 Daily antipsychotic drug doses as chlorpromazine-equivalent doses

We determined all participants' daily antipsychotic drug doses at the interview (Fig. 1) by reviewing medical charts and converted each daily dose to a chlorpromazine (CP)-equivalent dose according to a published method (Inagaki and Inada, 2008). We classified CP-equivalent doses lower than 600 mg/day as low-to-moderate and those higher as high because treatment-resistant schizophrenia is defined as the need for doses greater than 600 mg/day (Juarez-Reyes et al., 1995; Suzuki et al., 2012).

2.3.3. Other clinical assessments

We investigated several clinical assessments used in previous studies. Because a systematic review (Tsang et al., 2010) identified negative symptoms as an employment-related factor, we measured schizophrenia-related psychiatric symptoms and psychopathology using the

Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1988). Previous studies found that depressive symptoms correlated with cognitive dysfunction, which is strongly related to unemployment (Brekke et al., 1993; Mueser et al., 1997), so we measured the severity of depressive symptoms using the Japanese version of the Calgary Depression Scale for Schizophrenia (JCDSS) (Addington et al., 1996; Kaneda et al., 2000). Because previous studies have showed that high resilience patients could lead to recovery (Hofer A et al. 2016) and that resilience may influence SOFAS scores in patients with schizophrenia (Bozikas VP et al., 2016), we measured resilience using the Connor–Davidson Resilience Scale (CDRS) (Connor and Davidson, 2003). Poor insight is reportedly associated with social functions, especially the maintenance of interpersonal relationships (Lysaker PH et al., 1998), so we measured insight using the Japanese version of the Schedule for Assessments of Insight (SAI-J) (David, 1990; Sakai et al., 2000). The DUP is reportedly a strong predictor of outcomes in the social function and psychiatric symptom domains

(Bottlender et al., 2003; Harrigan et al., 2003; Harris et al., 2005; Boden et al., 2009), so we also assessed it.

2.4. Statistical analysis

For the patients' characteristics, summary statistics were constructed as frequencies and proportions for categorical data and means and standard deviations for continuous variables. The baseline variables were compared using a chi-square test for categorical outcomes and an unpaired *t*-test for continuous variables.

To compare the employed and unemployed groups' clinical responses to initial treatment, the SOFAS and GAPS scores assessed from T0 to T2 were analyzed using a mixed effects model for repeated measures (MMRM) analysis (Gueorguieva and Krystal, 2004). To detect the employment-related factors, we used a multivariable logistic regression analysis with the simultaneous method. Employment status was set as the dependent variable, while the independent variables were the CP-equivalent drug dose, PANSS

negative symptoms score, JCDSS total score, CDRS total score, SAI-J total score, sex, years of education, work history, disease duration, and half-year changes in SOFAS and GAPS scores. Statistical significance was defined as $p < 0.05$. These analyses were performed using SPSS Version 21.0 for Macintosh (IBM; Armonk, NY).

3. Results

The employment rate was 20% (255/1254) among all outpatients with schizophrenia or schizoaffective disorder at the three facilities. Of the 1254 outpatients, 235 (129 employed and 106 unemployed) participated in this study. The participants' demographic and clinical characteristics are shown in Table 1.

3.1. Clinical response to initial treatment

MMRM analysis of SOFAS scores showed that the employed group exhibited significantly greater improvements than the unemployed group at

both T1 (mean inter-group difference: 4.732, 95% confidence interval [CI]: 0.837–8.627, $p = 0.018$) and T2 (7.048, 95% CI: 2.652–11.44, $p = 0.002$) (Fig. 2.1). Similarly, MMRM analysis of GAPS scores showed that the employed group exhibited significantly greater improvements than the unemployed group at both T1 (7.147, 95% CI: 2.776–11.52, $p = 0.0015$) and T2 (9.338, 95% CI: 4.554–14.12, $p = 0.0002$) (Fig. 2.2).

3.2. Daily doses of antipsychotic drugs

As shown in Table 1, the employed group had significantly lower ($p < 1.0 \times 10^{-6}$) daily CP-equivalent drug doses than the unemployed group. The mean difference was -272.2 mg/day (95% CI: -367.1 to -177.3).

3.3. Other clinical assessments

As showed in Table 1, compared to the unemployed group, the employed group had significantly more years of education ($p = 0.044$), shorter disease durations ($p = 0.012$), lower PANSS scores (total, positive, and negative) ($p < 1.0\times10^{-6}$), higher CDRS total scores ($p < 1.0\times10^{-6}$), and lower JCDSS total

scores ($p = 0.014$). The groups were not significantly different in age ($p = 0.130$), sex ($p = 0.210$), work history ($p = 0.301$), age at onset ($p = 0.086$), DUP ($p = 0.396$), marital status ($p = 0.486$), or SAI-J total score ($p = 0.172$).

3.4. Employment-related factors in multivariable logistic regression analysis

Our multivariable logistic regression analysis determined that half-year changes in SOFAS and GAPS scores had a strong positive correlation with each other. The Pearson correlation coefficients were 0.642 for the T0-to-T1 changes ($p < 1.0\times10^{-6}$) and 0.662 for the T1-to-T2 changes ($p < 1.0\times10^{-6}$). We therefore conducted multivariable logistic regression analyses using SOFAS scores alone and GAPS scores alone.

In our logistic regression analysis using only SOFAS scores, the model significantly ($\chi^2 = 113.553$, $df = 11$, $p < 1.0\times10^{-6}$) and correctly predicted the employment status of 82.5% of the subjects (Cox and Snell $R^2 = 0.443$). The critical employment-related factors were T1-to-T2 SOFAS score improvements (OR: 1.730, 95% CI: 1.136–2.634, $p = 0.011$), low-to-moderate

daily CP-equivalent doses (OR: 3.425, 95% CI: 1.470–7.981, $p = 0.004$), male sex (OR: 3.697, 95% CI: 1.462–9.349, $p = 0.006$), low PANSS negative symptom scores (OR: 0.799, 95% CI: 0.736–0.867, $p < 1.0\times10^{-6}$), high CDRS total scores (OR: 1.046, 95% CI: 1.018–1.075, $p = 0.001$), and short disease durations (OR: 0.936, 95% CI: 0.893–0.980, $p = 0.005$) (Table 2.1).

In our logistic regression analysis using only GAPS scores, the model significantly ($\chi^2 = 108.883$, $df = 11$, $p < 1.0\times10^{-6}$) and correctly predicted the employment status of 80.9% of the subjects (Cox and Snell $R^2 = 0.430$). The critical employment-related factors were low-to-moderate CP-equivalent doses (OR: 3.335, 95% CI: 1.454–7.649, $p = 0.004$), male sex (OR: 3.203, 95% CI: 1.315–7.800, $p = 0.010$), low PANSS negative symptom scores (OR: 0.796, 95% CI: 0.733–0.864, $p < 1.0\times10^{-6}$), high CDRS total scores (OR: 1.042, 95% CI: 1.016–1.069, $p = 0.002$), and short disease durations (OR: 0.947, 95% CI: 0.904–0.991, $p = 0.018$) (Table 2.2).

4. Discussion

We hypothesized that daily antipsychotic drug doses and early symptomatic or social function responses to treatment would be related to future employment in schizophrenia patients. This study partly confirmed our hypotheses. First, social functioning improvements in the period 6 to 12 months after beginning treatment significantly contributed to future employment, though improvements in the first 6 months did not. Second, low-to-moderate antipsychotic drug doses were also an employment-related factor.

This is the first report to specifically identify social functioning improvements in the period 6 to 12 months after beginning treatment as a factor leading to future employment in society for schizophrenia patients. This is consistent with previous reports of the relationship between early social functioning improvement and recovery in schizophrenia patients (Álvarez-Jiménez et al., 2012; Lambert et al., 2008). There is a pressing need to identify the factors related to employment in schizophrenia patients, as

shown by the low employment rate (20%) of patients in this study and the similarly low rates in previous studies (Anthony et al., 1987; Brekke et al., 1993; Gaite et al., 2002; Marwaha et al., 2004; Ministry of Health, Labour and Welfare 2010; Rogers et al., 1988). Therefore, our findings indicate that improvements in social functioning during early-stage schizophrenia treatment promote future employment in society. Further research into employment-related factors in patients with schizophrenia is needed.

This study also showed that psychiatric symptom improvements during the first year of treatment were not contributing factors to future employment in schizophrenia patients. This finding is inconsistent with some previous studies that reported that symptomatic responses to the first 2 weeks to 3 months of treatment may predict recovery in schizophrenia patients (Ascher-Svanum et al., 2008; Lambert et al., 2008; Verma et al., 2012). However, our finding is partly consistent with the suggestion from Tsang et al. (2010) that positive symptoms do not predict employment status. Velligan et al. (2009), however, reported that negative symptoms predict

functional outcomes. Further research is needed to investigate the relationship between symptomatic response to initial treatment and future employment status in schizophrenia patients with consideration of positive and negative symptoms.

This study showed that low-to-moderate daily antipsychotic drug doses, defined as CP-equivalent doses lower than 600 mg/day, were an employment-related factor in schizophrenia patients. This is the first report to identify the relationship between daily antipsychotic drug doses and employment. Several studies have reported that cognitive impairment is correlated with increasing antipsychotic drug doses (Sakurai et al., 2013; Takeuchi et al., 2013). Our findings are therefore consistent with reports that the inability to work in society is strongly associated with cognitive impairment in schizophrenia patients (McGurk et al., 2004; Nuechterlein et al., 2011). Furthermore, it has been reported that prescribing continuous and excessive antipsychotic drug doses leads not only to oversedation and extrapyramidal symptoms but also to dopamine supersensitivity psychosis,

which makes schizophrenia refractory (Chouinard et al., 2008; Iyo et al., 2013; Yamanaka et al., 2016). Although some unemployed patients with schizophrenia may meet the diagnostic criteria for treatment-resistant schizophrenia (TRS), which necessitates the administration of high CP-equivalent doses (Juarez-Reyes et al., 1995; Lally et al., 2016), our finding suggests that prescribing excessive antipsychotic drug doses, defined as CP-equivalent doses greater than 600 mg/day, could worsen employment prospects for schizophrenia patients. This finding implies that psychiatrists should optimize prescribed antipsychotic dosages to avoid cognitive impairments and oversedation.

This study also identified low PANSS negative symptoms scores, male sex, short illness durations, and high CDRS total scores as employment-related factors for schizophrenia patients. This is consistent with previous reports of the relationship between employment in society and negative symptoms (Fervaha, 2014; Galderisi, 2013), sex (Tsang et al., 2010), and illness durations (Kaneda et al., 2009; Tsang et al., 2010; Wieselgren

and Lindstorm, 1996). Our finding concerning CDRS total scores is consistent with a previous report that highly resilient patients could recover from schizophrenia (Hofer et al. 2016). Resilience is a self-healing power (Karatsoreos and McEwen, 2011). Moreover, our finding suggests that resilience may regulate vocational and social functions (Bozikas et al., 2016). Given our finding, future studies should investigate the impact of resilience on employment in patients with schizophrenia.

Our study had several limitations. First, it was cross-sectional, so many unemployed schizophrenia patients might have met the diagnostic criteria for TRS, considering that they showed higher PANSS scores and higher CP-equivalent doses than the employed patients (Juarez-Reyes et al., 1995; Lally et al., 2016). Previous studies have documented two TRS patterns, one involving poor responses to initial treatment (Lally et al., 2016; Robinson et al., 1999; Yamanaka et al., 2016), and the other involving responsiveness to initial treatment but the occurrence of recurrent relapses and the later development of dopamine supersensitivity psychosis (Iyo et al., 2013; Oda et

al., 2015). We could not distinguish the two types of TRS, because we only examined responsiveness to treatment during the first year. To resolve this limitation, prospective cohort studies or randomized controlled trials are needed. Second, the time-series SOFAS and GAPS scores were retrospectively assessed using medical records and interviews with patients and their families. This might have introduced selection and recall bias. Third, the study used only a few recruitment sites and consequently involved a small and homogeneous sample of participants. Further studies with international sites and larger sample sizes are needed to account for cultural differences.

In conclusion, we identified two employment-related factors for schizophrenia patients: social functioning improvements in the period 6 to 12 months after beginning treatment and low-to-moderate daily antipsychotic doses. These findings suggest that strong efforts to improve social functioning early in treatment and to optimize antipsychotic doses could promote future employment for schizophrenia patients.

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Figure Legends

Fig. 1. The schema of assessment

To identify employment-related clinical factors, GAPS and SOFAS were assessed at the first visit (T0), 6 months after beginning treatment (T1), and 12 months after beginning treatment (T2). Daily antipsychotic drug doses, psychiatric status, and demographic information were assessed at the interview time. *Abbreviations*: SOFAS = Social and Occupational Functioning Assessment Scale; GAPS = Global Assessment of Psychological Scale.

Fig. 2.1. SOFAS-measured clinical responses of employed and unemployed patients to initial treatment

Mean SOFAS score change from the baseline (T0) and 95% CIs at T1 and T2. The solid line indicates the employed group, and the dotted line indicates the unemployed group. The employed group had significantly greater SOFAS score changes than the unemployed group. The mean inter-group difference

was 4.732 (95% CI: 0.837–8.627, $p = 0.018$) at T1 and 7.048 (95% CI: 2.652–11.44, $p = 0.002$) at T2. (*$p < 0.05$, **$p < 0.01$). *Abbreviations*: CI = confidence interval; SOFAS = Social and Occupational Functioning Assessment Scale; T0 = SOFAS score at first meeting with psychiatrist; T1 = SOFAS score 6 months after beginning treatment; T2 = SOFAS score 12 months after beginning treatment.

Fig. 2.2. GAPS-measured clinical responses of employed and unemployed patients to initial treatment

Mean GAPS score change from the baseline (T0) and 95% CIs at T1 and T2. The solid line indicates the employed group, and the dotted line indicates the unemployed group. The employed group had significantly greater GAPS score changes than the unemployed group. The mean inter-group difference was 7.147 (95% CI: 2.776–11.52, $p = 0.0015$) at T1 and 9.338 (95% CI: 4.554–14.12, $p = 0.0002$) at T2. (*$p < 0.05$, **$p < 0.01$). *Abbreviations*: CI =

confidence interval; GAPS = Global Assessment of Psychological Scale; T0 = GAPS score at first meeting with psychiatrist; T1 = GAPS score six months after beginning treatment; T2 = GAPS score 12 months after beginning treatment.

Table 1

Demographics and clinical characteristics.

	Total (N = 235)	**Employment** (n = 129)	**Unemployment** (n = 106)	***p*-value**
Age (y)	40.1 (9.9)	39.2 (8.5)	41.2 (11.2)	0.130
Sex, male/female, *n*	121/114	70/59	51/55	0.210
Years of education	13.4 (2.5)	13.8 (2.1)	13.0 (2.8)	0.044
Work experience, +/-, *n*	189/35	104/17	85/18	0.301
Age at onset (y)	25.3 (7.3)	25.3 (7.3)	23.7 (7.3)	0.086
DUP (m)	21.3 (43.3)	18.9 (37.1)	23.9 (49.1)	0.396
Disease duration (y)	14.4 (9.6)	12.9 (8.3)	16.1 (10.6)	0.012
Marital status, +/-, *n*	64/165	35/88	29/77	0.486
GAPS	52.8 (18.6)	60.2 (17.8)	44.4 (15.6)	$<1.0\times10^{-6}$
SOFAS	59.2 (17.1)	70.5 (12.3)	46.2 (11.7)	$<1.0\times10^{-6}$
CP-equivalent dose (mg)	528.6 (376.4)	398.1 (278.9)	670.3 (416.5)	$<1.0\times10^{-6}$
PANSS, total	62.0 (19.8)	51.7 (15.0)	74.4 (17.5)	$<1.0\times10^{-6}$
PANSS, positive	14.0 (5.5)	12.2 (4.5)	16.2 (5.8)	$<1.0\times10^{-6}$
PANSS, negative	17.6 (7.0)	13.9 (5.4)	22.0 (6.0)	$<1.0\times10^{-6}$
PANSS, general	30.5 (9.2)	25.7 (7.0)	36.2 (8.1)	$<1.0\times10^{-6}$
CDRS	53.2 (18.6)	58.9 (16.7)	46.5 (18.6)	$<1.0\times10^{-6}$
JCDSS	4.4 (4.4)	3.8 (4.2)	5.2 (4.7)	0.014
SAI-J	13.4 (4.4)	13.8 (4.3)	13.0 (4.4)	0.172

All data in this table were assessed at the interviews. Data are means (standard deviations). We examined categorical data chi-square tests and continuous data with unpaired *t*-tests.

Abbreviations: DUP = duration of untreated psychosis; y = years; m = months; GAPS = Global Assessment of Psychological Scale; SOFAS = Social and Occupational Functioning Assessment Scale; CP = chlorpromazine; PANSS = Positive and Negative Syndrome Scale; CDRS = Connor–Davidson Resilience Scale; JCDSS = Japanese version of the Calgary Depression Scale for Schizophrenia; SAI-J = Japanese version of Schedule for Assessments of Insight.

Table 2.1

Independent variables affecting employment status in a multivariable logistic regression analysis using only SOFAS scores.

Variables	Adjusted odds ratio	95% CI	*p*-value
SOFAS T1-to-T2 change	1.730	1.136-2.634	0.011
SOFAS T0-to-T1 change	1.070	0.807-1.418	0.638
CP-equivalents < 600 mg	3.425	1.470-7.981	0.004
Male sex	3.697	1.462-9.349	0.006
PANSS, negative	0.799	0.736-0.867	$<1.0\times10^{-6}$
CDRS	1.046	1.018-1.075	0.001
Disease duration (y)	0.936	0.893-0.980	0.005
Years of education	1.032	0.866-1.230	0.724
SAI-J, total	1.046	0.941-1.163	0.404
Work history (+)	1.445	0.494-4.230	0.502
JCDSS	1.085	0.982-1.198	0.107

T0-to-T1 and T1-to-T2 SOFAS score changes represented clinical responses to initial treatment.

($\chi^2 = 113.553$, $df = 11$, $p < 1.0\times10^{-6}$, correctly judged 82.5% of the subjects, Cox and Snell $R^2 = 0.443$)

Abbreviations: CI = confidence interval; SOFAS = Social and Occupational Functioning Assessment Scale; CP = chlorpromazine; PANSS = Positive and Negative Syndrome Scale; CDRS = Connor–Davidson Resilience Scale; JCDSS = Japanese version of the Calgary Depression Scale for Schizophrenia; SAI-J = Japanese version of Schedule for Assessments of Insight. T0 = first meeting with psychiatrist; T1 = 6 months after beginning treatment; T2 = 12 months after beginning treatment.

Table 2.2

Independent variables of employment status in a multivariable logistic regression analysis using only GAPS scores

Variables	Adjusted odds ratio	95% CI	*p*-value
GAPS T1-to-T2 change	1.387	0.927-2.076	0.112
GAPS T0-to-T1 change	0.984	0.782-1.238	0.890
CP-equivalents < 600 mg	3.335	1.454-7.649	0.004
Male sex	3.203	1.315-7.800	0.010
PANSS, negative	0.796	0.733-0.864	$<1.0\times10^{-6}$
CDRS	1.042	1.016-1.069	0.002
Disease duration (y)	0.947	0.904-0.991	0.018
Years of education	1.034	0.904-0.991	0.698
SAI-J, total	1.018	0.93-1.13	0.731
Work history (+)	1.354	0.47-3.48	0.567
JCDSS	1.067	0.971-1.174	0.179

(T0-to-T1 and T1-to-T2 GAPS score changes represented clinical responses to initial treatment)

($\chi^2 = 108.883$, $df = 11$, $p < 1.0\times10^{-6}$, correctly judged 80.9% of the subjects, Cox and Snell $R^2 = 0.430$)

Abbreviations: CI = confidence interval; GAPS = Global Assessment of Psychological Scale; CP = chlorpromazine; PANSS = Positive and Negative Syndrome Scale; CDRS = Connor–Davidson Resilience Scale; JCDSS = Japanese version of the Calgary Depression Scale for Schizophrenia; SAI-J = Japanese version of Schedule for Assessments of Insight. T0 = first meeting with psychiatrist; T1 = 6 months after beginning treatment; T2 = 12 months after beginning treatment.

Fig. 1.

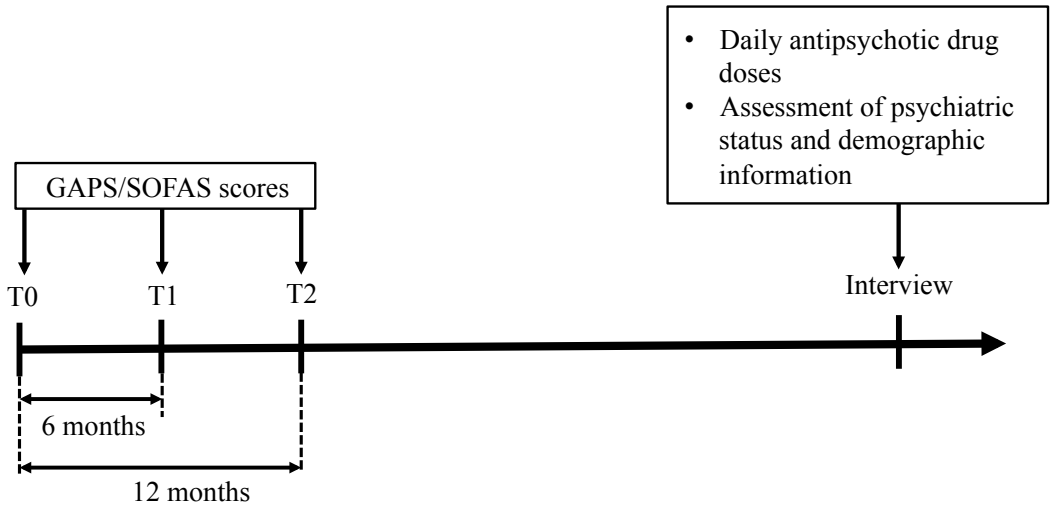

• Daily antipsychotic drug doses
• Assessment of psychiatric status and demographic information
GAPS/SOFAS scores
T0
T1
T2
Interview
6 months
12 months

Fig. 2.1. SOFAS

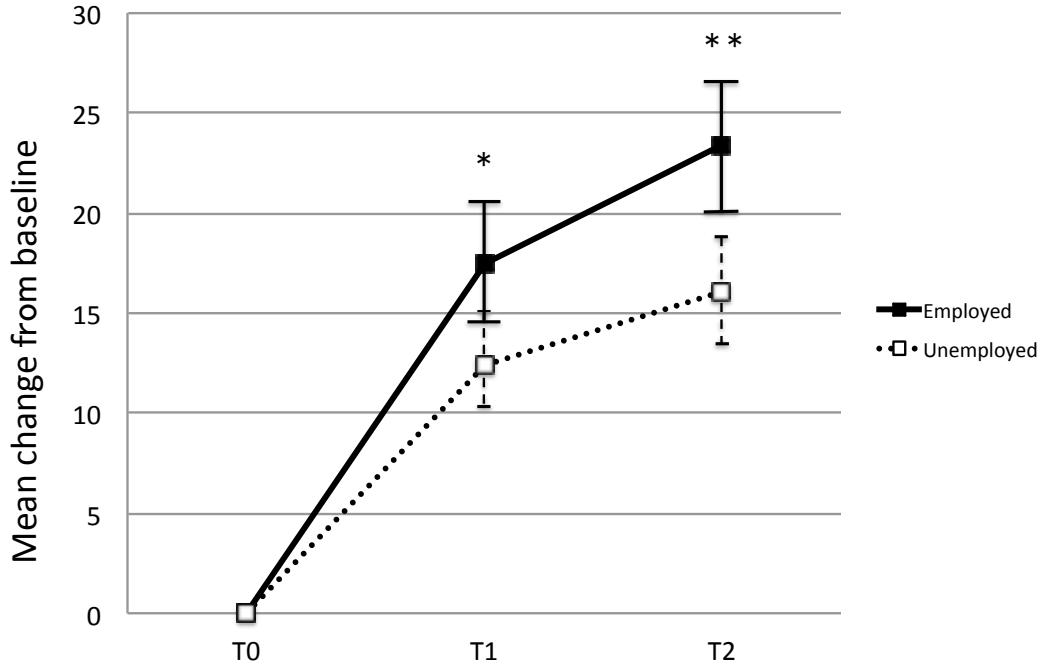
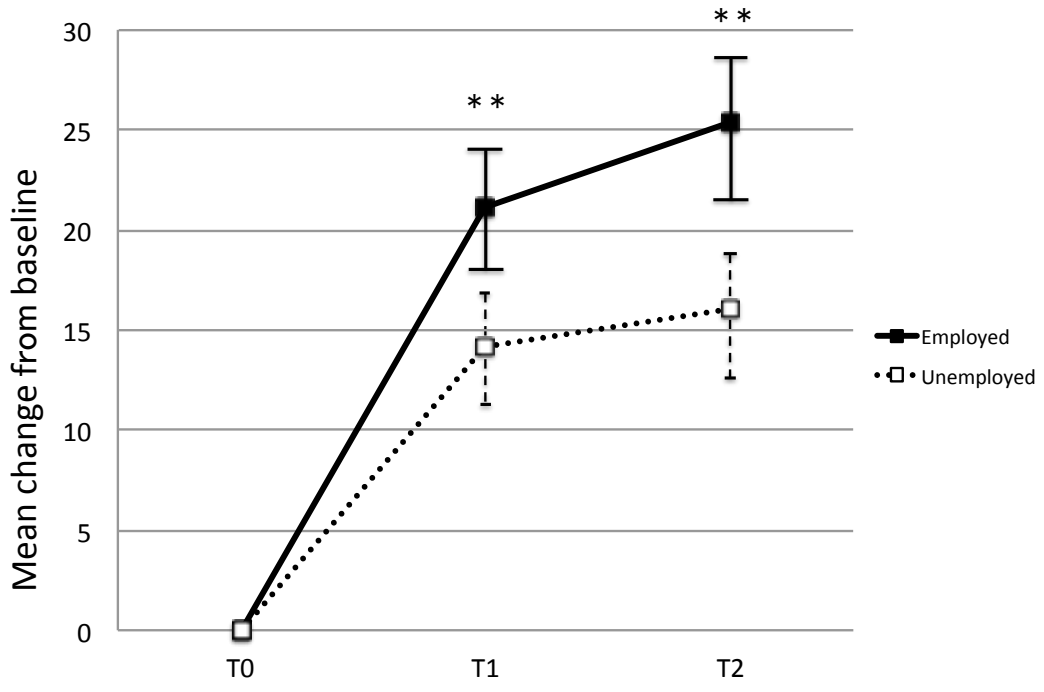


Fig. 2.2. GAPS



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