Predicting employment status and subjective quality of life in patients with schizophrenia

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ABSTRACT

Although impaired social functioning, particularly poor employment status, is a cardinal feature of patients with schizophrenia and leads to decreased quality of life (QOL), few studies have addressed the relationship between these two clinical issues. The aim of this study was to determine whether employment status predicts subjective QOL and to evaluate a model in which functional capacity mediates the relationship between general cognitive performance and employment status. Ninety-three patients with schizophrenia were administered a comprehensive battery of cognitive tests, the UCSD Performance-based Skills Assessment-Brief version (UPSA-B), the Social Functioning Scale (SFS), and the Subjective Quality of Life Scale (SQLS). First, we evaluated a model for predicting the employment/occupation subscale score of the SFS using path analysis, and the model fitted well ($\chi^2 (4) = 3.6$, $p = 0.46$; CFI = 1.0; RMSEA < 0.001, with 90% CIs: 0–0.152). Employment status was predicted by negative symptoms and functional capacity, which was in turn predicted by general cognitive performance. Second, we added subjective QOL to this model. In a final path model, QOL was predicted by negative symptoms and employment status. This model also satisfied good fit criteria ($\chi^2 (7) = 10.3$, $p = 0.17$; CFI = 0.987; RMSEA = 0.072, with 90% CIs: 0–0.159). The UPSA-B and SFS scores were moderately correlated with most measures of cognitive performance. These results support the notion that better employment status enhances subjective QOL in patients with schizophrenia.

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1. Introduction

The impairment of functional outcomes is a core problem in schizophrenia and may worsen subjective and objective quality of life (QOL) for patients. Specifically, subjective QOL is an important patient-reported outcome, reflecting individuals' perceptions of psychological wellness and satisfaction (Karow et al., 2014).

Functional outcome is evaluated by some related, but clinically distinct, manifestations such as cognitive function, functional capacity/skills, and social functioning (Green et al., 2000; Green et al., 2004). Cognitive abilities are measured using standardized neuropsychological tests in a laboratory setting. The assessment of functional capacity/skill is associated with an individual's ability to manage his or her everyday activities. Accordingly, performance based measures, such as the UCSD Performance-based Skills Assessment (UPSA) and its brief version, the UPSA-B (Mausbach et al., 2007), have been developed to evaluate the ability to perform daily activities, including counting money, making calls, and managing medical appointments (Mausbach et al., 2007; Patterson et al., 2001). Social functioning generally means functioning in the real world, such as independent living, interpersonal relationships, and work (Harvey et al., 2011; Leifker et al., 2011). Employment status has been considered as a particularly important functional outcome of individuals with schizophrenia (Nuechterlein et al., 2011).

Reducing psychiatric symptoms, particularly negative symptoms, is also considered to improve QOL, thus enhancing therapeutic alliance and treatment satisfaction (Karow et al., 2012a). Although negative symptoms have been shown to affect QOL in patients with schizophrenia (Brissos et al., 2011; Woon et al., 2010), only a minority of patients exhibit substantial improvement in QOL, even after achieving symptom remission (Karadayi et al., 2011; Schennach-Wolff et al., 2009). QOL has also been associated with functional outcomes, including employment status, independent living, engagement in daily activities, and maintaining personal relationships (Galuppi et al., 2010; Karadayi et al., 2011). In sum, cognitive function and psychiatric symptoms are considered to play a major role in social functioning in patients with schizophrenia (Bowie et al., 2008).

General cognitive function is assessed by performance on neuropsychological tests of most cognitive domains (Dickinson et al., 2004) and has

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been shown to correlate with everyday functioning (Green et al., 2000). However, a conceptual model of the link between cognitive function and social functioning suggests a discrepancy between cognitive performance in the laboratory setting and community outcomes (Bowie and Harvey, 2006; Green et al., 2004). Therefore, it is reasonable to assume that functional abilities/capacity, as evaluated by co-primary measures (e.g., UPSA-B), mediates cognitive function and social functioning (Bowie et al., 2006; Green et al., 2012). Previous studies have shown a role of functional capacity as a mediator of cognitive dysfunctions on employment status (Bowie et al., 2006; Bowie et al., 2010).

Although statistical modeling has been employed to examine the relationships among cognitive function, functional abilities, and social functioning (interpersonal skills, community activities, and work skills) (Bowie et al., 2006), there is little information on specifying a model to include pathways to QOL (Hwang et al., 2009; Savilla et al., 2008). We seek to extend understandings on pathways to QOL by developing a comprehensive model of the relationships among cognitive function, functional capacity, employment status, psychiatric symptoms, and QOL.

The purpose of this study was to determine clinical predictors of social functioning and QOL in Japanese patients with schizophrenia. We focused on employment status as one of the most important aspects of social functioning. We hypothesized that the effect of cognitive performance on employment status would be mediated by functional abilities, while employment status and negative symptoms would predict QOL.

2. Methods

2.1. Participants

A total of 93 patients with schizophrenia (53 male, 40 female) participated in this study. Patients were outpatients treated at the Department of Psychiatry of Osaka University Hospital. A consensus diagnosis, according to Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) criteria, was made by experienced senior psychiatrists using the Structured Clinical Interview for DSM-IV (SCID) for schizophrenia (American Psychiatric Association, 1994). Psychotic symptoms (positive symptoms, negative symptoms, and general psychopathology) were evaluated using the Positive and Negative Syndrome Scale (PANSS) (Kay et al., 1987).

All participants provided written informed consent after the study procedures were fully explained. All procedures were conducted according to the Declaration of Helsinki and approved by the ethics committee of Osaka University.

2.2. Assessment of cognitive performance

Cognitive performance was assessed using a comprehensive neuropsychological battery, which has been employed in previous studies (Dickinson et al., 2014; Ohi et al., 2015). This included the following cognitive domains: verbal memory, n-back/controlled attention, visual memory, processing speed, card sorting/reasoning, and span/working memory. The following neuropsychological tests were used: the Japanese Adult Reading Test (JART) (Hashimoto et al., 2013; Matsuoka et al., 2006); the Wechsler Adult Intelligence Scale, Third Edition (WAIS-III) Similarities, Digit Span, Arithmetic, Picture Completion, and Digit Symbol Coding subtests (Japanese WAIS-III Publication Committee, 2006; Wechsler, 1997); the Wechsler Memory Scale-Revised (WMS-R) Logical Memory 1, Logical Memory 2, Verbal Paired Association, Visual Paired Association 1, and Visual Paired Association 2 tests (Sugishita, 2001; Wecheler, 1987); the Continuous Performance Test (CPT, 2–4 digits); the Wisconsin Card Sorting Test (WCST) categories achieved and number of total errors;

the Rey Auditory Verbal Learning Tests (AVLT) total recalls (I–V trials); Category Fluency; and Letter Fluency. A general cognitive composite (g), was calculated in the same manner, as described in previous studies (Dickinson et al., 2011; Dickinson et al., 2014; Ohi et al., 2015). Scores on different measures were converted to z-scores using control means and standard deviations (data not shown). Then, g composites were derived from the mean of the z-scores of the cognitive measures.

2.3. Assessment of functional capacity and social functioning

We assessed functional capacity with the UCSD Performance-based Skills Assessment-brief (UPSA-B) (Mausbach et al., 2007). The UPSA-B was developed as an abbreviated version of the UPSA that assesses daily living skills based on role-play performance among patients with mental illnesses (Patterson et al., 2001). The UPSA-B requires a shorter administration time and contains two of the five subdomains of the full version. It measures everyday functional skills of patients using role-play tasks for finance (e.g., counting money and reading a bill) and communication (e.g., dialing a number from memory and calling to reschedule a doctor's appointment) (Mausbach et al., 2007; Sumiyoshi et al., 2014). Higher scores indicate greater ability in every-day activities (scores range from 0–100).

Social functioning was assessed using the SFS part included in the modified Social Functioning Scale/Social Adaptation Scale (modified SFS/SAS). The modified SFS/SAS was created in the MATRICS Psychometric and Standardization Studies (MATRICS-PASS; Green et al., 2008; Kern et al., 2008; Nuechterlein et al., 2008) for the MATRICS Consensus Cognitive Battery. The Japanese version of the modified SFS/SAS was produced by Sumiyoshi and Sumiyoshi (2011), and its utility was recently reported (Sumiyoshi et al., 2015). The SFS part was administered as a self-report questionnaire. Individuals were asked to rate their actual level of activity and ability in areas of social function. Investigators (clinical psychologists or trained research assistants) also reviewed these ratings to confirm the validity of the report. The SFS consists of seven subscales: social engagement, interpersonal communication, independence-performance, independence-competence, recreation, pro-social, and employment/occupation. The SFS total scores were derived from the sum of these subscale scores. Higher scores indicate better real-world functioning in the community. The SFS and the Japanese version were originally developed by Birchwood et al. (1990), and Nemoto et al. (2008), respectively.

2.4. Assessment of subjective QOL

Subjective QOL was evaluated using the Schizophrenia Quality of Life Scale (SQLS). The SQLS is a self-report questionnaire, which provides scores on three subscales: dysfunction of psycho-social activity, dysfunction of motivation/energy, and level of symptoms/side effects (Wilkinson et al., 2000). Lower scores indicate better QOL. The SQLS has been shown to be reliable, valid, and practical in patients with schizophrenia (Kaneda et al., 2002).

2.5. Statistical analyses

We applied path analysis to evaluate path models. The PANSS positive and negative symptoms subscale scores, g composite score (general cognitive performance), the UPSA-B total score, and employment/occupation subscale of the SFS, and SQLS were included in the path models. These models were developed through an iterative procedure applied in a previous study (Bowie et al., 2006). The non-significant paths with the smallest contribution to the