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# The effect of service satisfaction and spiritual well-being on the quality of life of patients with schizophrenia

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ABSTRACT

Quality of life (QOL) has been considered an important outcome measure in psychiatric research and determinants of QOL have been widely investigated. We aimed at detecting predictors of QOL at baseline and at testing the longitudinal interrelations of the baseline predictors with QOL scores at a 1-year follow-up in a sample of patients living in Residential Facilities (RFs). Logistic regression models were adopted to evaluate the association between WHOQoL-Bref scores and potential determinants of QOL. In addition, all variables significantly associated with QOL domains in the final logistic regression model were included by using the Structural Equation Modeling (SEM). We included 139 patients with a diagnosis of schizophrenia spectrum. In the final logistic regression model level of activity, social support, age, service satisfaction, spiritual well-being and symptoms' severity were identified as predictors of QOL scores at baseline. Longitudinal analyses carried out by SEM showed that 40% of QOL follow-up variability was explained by QOL at baseline, and significant indirect effects toward QOL at follow-up were found for satisfaction with services and for social support. Rehabilitation plans for people with schizophrenia living in RFs should also consider mediators of change in subjective QOL such as satisfaction with mental health services.



## 1. Introduction

Although the concept of quality of life (QOL) is of growing interest in schizophrenia research, few studies have investigated predictors of QOL among patients living in Residential Facilities (RFs). In the past years, QOL has become an important outcome measure for those patients, although the associations between predictors and QOL are rather unclear. Several cross-sectional studies have investigated the relationship between the subjective QOL of people with severe mental disorders and socio-demographic and clinical characteristics (Norman et al., 2000; Fitzgerald et al., 2001; Becchi et al., 2004; Caron et al., 2005a, 2005b; Hofer et al., 2006; Narvaez et al., 2008; Hsiao et al., 2012; Fujimaki et al., 2012). In addition, some studies have explored the mediating role of self-related factors, such as lower self-esteem, lack of perceived social support and low self-efficacy in QOL appraisal (Bechdolf et al., 2003; Ritsner et al., 2012).

Nevertheless, little is known about the impact of other subjective variables on self-reported QOL of patients with schizophrenia, especially of those living in RFs (Picardi et al., 2006). Two factors seem particularly worthy of investigation in multi-factorial models: the first is satisfaction with care received (Ruggeri et al., 1994), a multidimensional concept which has been found to be associated with a higher number of unmet needs for care and lower QOL (Ruggeri et al., 2003). The second factor is represented by spiritual and religious well-being: in a recent study the QOL

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spiritual domain of patients with residual schizophrenia explained more than 64% of the variance of overall QOL score (Shah et al., 2011). Current evidence suggests that positive religious coping is predictive of better psychological domain score of QOL (Nolan et al., 2012) and is related to better treatment outcomes (Rosmarin et al., 2013).

However, the studies aimed at identifying those factors which influence the QOL of patients with schizophrenia did not explain the complex relationship between different set of variables and the QOL. To date, one of the most promising methods to clarify the putative causal determinants of QOL is the analysis of latent variables (Ruggeri et al., 2001). In particular, the Structural Equation Modeling (SEM) approach has been used in cross-sectional studies among patients in chronic stage of schizophrenia (Bechdolf et al., 2003; Hwang et al., 2009).

To the best of our knowledge, no studies have applied the SEM to explore the longitudinal associations between service satisfaction and spiritual and religious well-being in patients with schizophrenia living in RFs. Our primary objective was to determine predictors of QOL at one point in time. Our secondary objective was to test the longitudinal correlations between baseline predictors and QOL scores at 1-year follow-up.

## 2. Methods

### 2.1. Participants and procedures

The current study was conducted within the framework of the PERDOVE study —(Epidemiological Project in Residential Facilities on Patients Discharge and Outcomes Evaluation). This is the first prospective study carried out in Italy aimed at collecting comprehensive data about the course and outcomes among a sample of 403 patients living in 23 medium-long term RFs. The study sample included patients with schizophrenia spectrum disorders. A full description of the PERDOVE study sample is given elsewhere (De Girolamo et al., 2013). Inclusion criteria were: a primary psychiatric diagnosis according to DSM-IV-TR and age between 18 and 64 years; exclusion criteria were a primary diagnosis of organic mental disorder and age over 65 years. The study was approved by the local research Ethics Committee, and all participants provided written informed consent prior to evaluation.

As a first step, we selected from the PERDOVE sample, patients with a diagnosis of schizophrenia spectrum disorders ($N=272$). These patients were asked to fill-in the WHOQoL-Bref scale, and 171 accepted. Among these, we selected those participants who completed the QOL assessment at both time points (e.g., baseline and at 1-year follow-up) obtaining a final sample of 139 patients, that is 51% of the PERDOVE sample of patients with schizophrenia. Patients who refused to fill in the QOL assessment and those who accepted did not differ in their socio-demographic, clinical and cognitive characteristics.

### 2.2. Measures

#### 2.2.1. Quality of life

The Italian version of the WHOQoL-Bref (de Girolamo et al., 2000) was used to estimate the subjective QOL of patients at baseline and follow-up. This instrument includes 26 items on a five-point Likert scale, covering four main domains (physical, psychological, social and environment). Higher scores reflects better QOL.

#### 2.2.2. Psychopathology

The level of psychopathology was assessed with the Brief Psychiatric Rating Scale [BPRS 4.0; Ventura et al., 1993]; the Health of Nation Outcome Scale [HoNOS-12; Wing et al., 1998] was used to assess illness severity. The Personal and Social Functioning Scale [FPS; Morosini et al., 2000] was used to assess patients' level of overall functioning.

#### 2.2.3. Cognitive functioning

Cognitive functioning was assessed with the Repeatable Battery for the Assessment of Neuropsychological Status [RBANS; Ponteri et al., 2007].

#### 2.2.4. Spirituality and religiousness

Spiritual and religious well-being was assessed with the Spiritual Well-being scale [SWBS; Paloutzian and Ellison, 1982], which consists of 20 items rated on a seven-point Likert scale providing an overall measure.

#### 2.2.5. Satisfaction toward care services

The Verona Service Satisfaction Scale [VSSS-54; Ruggeri et al., 1994], was used to measure satisfaction with mental health services; the items are rated on a seven-point Likert scale with global score reflecting higher satisfaction.

#### 2.2.6. Social support

The degree of patients' social support was measured asking, to a close informant, the number of close relationships currently entertained by each resident.

#### 2.2.7. Daily activities

Level of activities was assessed by two items: type of daily activities (demanding activities or not) and time spent doing nothing per day (h).

### 2.3. Statistical analysis

In order to detect clinically meaningful changes in QOL measures, we dichotomized each subscale score at the median value, in order to classify individuals in lower (below the median) or higher (above the median) subjective QOL. Associations between potential determinants of QOL were assessed with the $\chi^2$ test for categorical variables and with $t$-test or Mann–Whitney $U$ test, for continuous variables. The associations of the significant variables were then assessed with logistic linear regression models (stepwise methods for covariate model selection), in which QOL score (high vs. low) was the dependent variable.

We performed SEM with categorical and ordinal variables to test the longitudinal correlations between predictors of QOL at baseline and QOL at follow-up (Bollen, 1996; Hancock and Mueller, 2006). Yule's transformation was adopted to estimate Pearson's correlation coefficients (Kupek, 2006). Missing data were handled by multiple Bayesian imputation. The goodness of fit of the model was checked by several measures: $\chi^2$ test, relative $\chi^2$ test and comparative fit index (CFI), root mean square error of approximation (RMSEA), Tucker–Lewis coefficient (TLI), and Akaike information criterion (AIC).

Variables were assessed as follows. The latent construct “quality of life” was measured using four subscales of the WHOQoL-Bref. The exogenous variables “satisfaction with services” and “spiritual well-being”, measured respectively with the VSSS and the SWBS, were categorized in two classes (below and above the median score values); “symptoms' severity” was measured by BPRS total scores (low vs. moderate); “activity level” and “social support” variables were measured, respectively, by the item “daily time spent doing nothing” (less or more than 3 h) and “number of close relationships” ($\leq 1$ vs. $>1$).

All statistical analyses were carried out with SPSS 21.0, SEM was implemented by package AMOS 21.0. Statistical significance was set at $p<0.05$.

## 3. Results

### 3.1. Patients' characteristics

The majority of the patients were male ($N=89$, 63.7%), a total of 85% of patients were retired or with a disability pension. The mean age was 49 years (S.D.=9) and they had a long history of illness (mean=24 years, S.D.=10). The level of psychopathology assessed with the BPRS was moderate (mean=58, S.D.=17); the HONOS mean total score (mean=18.2, S.D.=7.8) indicated a low symptoms' severity. The levels of cognitive functioning was highly comparable with those of patients with schizophrenia spectrum disorders (mean=69.5, S.D.=9.8), as suggested by RBANS clinical normative data (Iverson et al., 2009).

Patients who had been discharged during the 1-year follow-up were also assessed, with the active collaboration of treating clinicians at Community Mental Health Centres or RFs responsible for the care of these patients. At the 1-year follow-up, 11 patients had been discharged home, 12 transferred to other RFs or supported housing and one was in prison.

### 3.2. Associations between QOL scores at baseline and predictors

Associations between predictors and baseline QOL domains are shown in Table 1. Among socio-demographic variables, only age (those $<40$) was significantly associated with higher QOL psychological domain scores.