

# Validity, reliability and factor analysis of Persian version of schizophrenia quality of life scale

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## ABSTRACT

**Context:** Exact measurement of quality of life (QOL) in schizophrenia patients for evaluation of the patient's deterioration and also to assess the efficacy of therapeutic Interventions has become a daily task, which requires accurate assessment tools. **Aims:** This study was aimed to assess the psychometric properties of a Persian version of schizophrenia QOL scale (SQLS) as a common transcultural instrument. **Settings and Design:** One hundred and fifty schizophrenia patients who referred to Psychiatric Clinic in Noor Hospital (Isfahan, Iran) have been selected using simple sampling method. **Subjects and Methods:** Aside with SQLS, short form-36 general health (SF-36) and World Health Organization QOL-brief-26 (WHOQOL-BREF-26). Questionnaires were completed by the cases for determination of correlation coefficients. **Statistical Analysis Used:** The data were analyzed using descriptive statistics, factor analysis, Cronbach's coefficient alpha, Pearson correlation coefficient by Statistical Package for Social Sciences software, version 18 (SPSS-18). **Results:** Total reliability of the questionnaire was reported by using Cronbach's coefficient alpha 0.84, reliability of individual relationships subscales was 0.91, signs 0/87, symptoms 0/72 and motivation/energy 0/61. Correlation coefficients of SF-36 with a total scale of SQLS and correlation coefficient of WHOQOL-BREF-26 with a total scale of SQLS were acceptable. Exploratory factor analysis using varimax rotation identified four principle components (interpersonal relationship, symptoms, signs, motivation, and energy), which will determine QOL at 52.7% variance. **Conclusions:** Persian version of the SQLS can be used as a simple, reliable and valid tool in Iranian population.

**Key words:** Quality of life, Persian version, psychometric, schizophrenia

## INTRODUCTION

About 1% of people may be afflicted with the schizophrenia,<sup>[1]</sup> which leads to academic performance failure, working disability, identity corruption, impaired interpersonal relationships and social functioning. Despite effective drug

therapies and controlling of many sign and symptoms of the schizophrenia, about half of these patients are afoul to sever disability and serious disordering in their quality of life (QOL).<sup>[2-6]</sup>

A branch of QOL, called "health-related QOL" (HRQOL) has recently attracted the researcher's attention.<sup>[7]</sup> HRQOL includes patient's perceptions and attitudes toward dimensions of their life, which are influenced by diseases.<sup>[8]</sup> In regard to

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the schizophrenia, it was shown that their social and financial compatibility and QOL deteriorate along with progression of the disease.<sup>[9,10]</sup> Various tools designed to evaluate the QOL in different patients groups. Since QOL, in addition to objective indexes is based on personal understanding of communication and financial equipment, and this is different in various cultures, so questionnaires must be compatible to native culture of subjects.

Schizophrenia QOL scale (SQLS) is one of the useful and appropriate instruments for evaluating QOL of schizophrenic patients, which was first designed by Wilkinson *et al.* It contains 30 items in three subscales, psychosocial, motivation energy and symptom side-effects. Its construct validity was measured by analyze of variance, showed covariance of 40.6%, and the total and subscales reliability was estimated 0.87–0.93 by Cronbach's coefficient alpha.<sup>[11]</sup> In 2002, a study was conducted by Kaneda *et al.*, to investigate some psychometric characteristics of this instrument using drug induced extra-pyramidal symptom scale, brief version of World Health Organization quality of life bref-26 (WHOQOL-BREF-26) and short form-36 health survey (SF-36). Analyze of variance showed covariance of 55.8% of psychosocial, motivation energy and symptom side-effects domains of this scale. The results showed that test reliability using Cronbach's coefficient alpha was 0.73–0.93.<sup>[12]</sup> In 2006, Kim *et al.*, translated this tool based on their cultural criteria in Korea and studied its psychometric characteristics. A total of 174 patients with schizophrenic were chosen based on Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition, and they filled out questionnaires positive and negative symptoms of schizophrenia (PANSS) and WHOQOL-BREF-26 in a cross-sectional study. They reported SQLS as a reliable and valid tool to study the QOL in schizophrenic patients.<sup>[13]</sup> In 2003, Jie *et al.*, conducted a study on 98 schizophrenic patients in China, the results showed that total and subscales reliability of questionnaire was 0.57–0.76 using Cronbach's coefficient alpha, and they reported this scale as a valid and simple tool to study the QOL among schizophrenic patients in China.<sup>[14]</sup> In the current study, we were going to determine the psychometric properties of Persian version of SQLS.

## SUBJECTS AND METHODS

This was a psychometric study for determining psychometric properties of SQLS in patients with schizophrenia in Psychiatry Department of Noor Hospital in Esfahan (Iran) in 2013. The studied population included 150 patients with schizophrenia who were selected using convenient sampling according to the inclusion criteria of: suffering from schizophrenia with the diagnosis of a psychiatrist at least in resent year, age of 18–60 years, consent to participate in study, having cognitive ability to complete the questionnaires, lacking of mental retardation and no history of substance abuse or dependence. A consent form including information of the goal and methodology of the study completed by the participants at beginning of the study and then all three data collection questionnaires filled in a self-reported manner.

The data collections instruments included: SQLS, SF-36 health status questionnaire and WHOQOL-BREF-26.

### Schizophrenia quality of life scale

This instrument designed by Wilkinson *et al.* it has 30 items in three subscales of psychosocial (15 items), motivation energy (7 items) and symptom side effects (8 items), each item includes five-point Likers scale. Total score ranges from 0 to 100, higher scores indicate lower QOL. It takes 15 min to complete; this instrument has been revised and used in England, Singapore according to their cultures. Its construct validity has been reported as  $r = 0.30-0.44$  using SF-36 tools and  $r = 0.27-0.46$  using SCL90-R. Its reliability is also 0.95 using Cronbach's coefficient alpha.<sup>[11]</sup>

### Short form-36 health status questionnaire

Short form-36 was made in 1993 by Ware *et al.*, to study general health status. It contains subscales of physical functioning, role limitations resulting from problems and mental health. This questionnaire is a self-report instrument and obtaining higher scores means better QOL. Reliability of this instrument has been reported between 0.73 and 0.96, and it can be completed within 10–15 min.<sup>[15]</sup>

### World Health Organization quality of life assessment-brief, short form-26

World Health Organization quality of life-brief-26 questionnaire was designed in 1996 by WHO, it contains 26 items in 4 main items: physical health-psychological aspect, social relationships and life condition. Its construct validity has been reported by Bonimi *et al.*, between 83% and 95%.<sup>[16]</sup> Two first questions were not related to each of aspects and generally measure condition of health and QOL. After required calculations, in each subscales a score equal to 4–20 was achieved, that 4 is worst, and 20 is the best sign of subscales. In a study of Nejat *et al.*, on the validity of WHOQOL-BREF-26 in Iranian population inter cluster correlation and Cronbach's coefficient alpha were upper than 0.7 in all domains except in social relationships that were 0.55.<sup>[17]</sup>

Persian version of SQLS prepared using backward-forward translation method, at first it translated into Persian and backward translated to English and again forward translated to Persian. Then, its face and content validities were studied by specialists in this field (2 psychiatrists, a psychologist, and a linguist). Collected data were analyzed using SPSS version 18 [SPSS Inc: Chicago]. Reliability of the SQLS determined using test retest methods, and correlation coefficients were used to determine concurrent validity of the instrument. Exploratory factor analysis and varimax rotation were used for the factor analysis.

## RESULTS

One hundred and fifty schizophrenia patients with the mean (standard deviation) age of 35 (9.9) filled out SQOL questionnaire. 99 (66%) were male and 51 (34%) were

female. 88 (58.7%) of participants were single, 66 (37.3%) were married, and 6 of them (4%) were divorced. Regarding the educational status of participants; 27 of patients (16.7%) were elementary, 20 (13.3%) middle school, 74 (49%) were high school and 31 (20.7%) were in academic level.

Table 1 shows mean, SD, Skewness and kurtosis of total scale and subscales of SQLS.

As shown in Table 2, total reliability of the questionnaire and its subscales using Cronbach's coefficient alpha.

### Content validity

Persian version of SQLS prepared using backward-forward translation method, at first it translated into Persian and backward translated to English and again forward translated to Persian. Then, its face and content validities were studied by specialists in this field (2 psychiatrists, a psychologist, and a linguist).

While translating the questionnaire, attempts were made to translate the questions in a way to be understandable for the patients from different classes. Furthermore, based on the views of specialists; all the subscales, problems, limitation, (physical-mental) effects, and (personal-social) concerns of the patients were reflected in this instrument.

### Concurrent validity

In order to determine concurrent validity; SQOL questionnaire, SF-36 questionnaire, and WHOQL-BREF-26 were filled out by the participants. The results of correlation coefficients of SQOL with SF-36 and WHOQL-BREF-26 reported in Table 3.

As shown in Table 3, a significant relationship was found between WHOQL-BREF-26 and SF-36 scores and total subscale of SQLS ( $P < 0.01$ ).

**Table 1: Mean, SD, skewness, kurtosis of SQLS**

Items	Factor 1	Factor 2	Factor 3	Factor 4	Total scale
Mean	29.26	27.34	15.88	13.13	85.62
SD	9.89	9.27	4.93	3.43	19.94
Skewness	-0.37	-0.33	-0.11	-0.01	-0/49
Kurtosis	-0.91	-0.78	-0.91	-0.34	-0.38

SD=Standard deviation, SQLS=Schizophrenia quality of life scale, QOL=Quality of life

**Table 2: Total reliability of SQLS questionnaire and its subscales**

Items	Number of questions	Cronbach's coefficient alpha
Total scale	30	0.84
Interpersonal relationship	10	0.91
Symptoms	10	0.87
Signs	6	0.72
Motivation/energy	4	0/61

SQLS=Schizophrenia quality of life scale, QOL=Quality of life

In order to determine factors of SQLS, exploratory factors analysis was used. Before performing the analysis method, Kaiser-Meyer-Olkin (KMO) criteria factors were studied to determine the justifiability of factor analysis.  $KMO = 0.89$  means proper correlation of factors, also KMO Bartlett test was statistically significant ( $P < 0.01$ ,  $\chi^2 = 2195.082$  d.f. =435).

Exploratory factor analysis identified four main factors using varimax rotation and excluding items with factor loading of below 0.3, which included: individual relationships (14-16-18-19-22-24-26-27-28-29); signs (1-2-4-5-6-7-8-9-10-11); symptoms (3-17-21-23-25-30); motivation/energy (12-13-15-20) that explained 52.7% of the common variance of QOL [Table 4].

## DISCUSSION

Health-related quality of life of life indicates physical, psychological, and social functions of people in response to diseases and treatment. SQLS is an instrument for measuring of QOL in patients with schizophrenia. The findings of the present study showed that total reliability of SQLS it's subscales as 0.84 and between 0.61 and 0.91 Cronbach's coefficient alpha, respectively. Wilkinson *et al.* obtained the total reliability of SQLS between 0.87 and 0.93.<sup>[11]</sup> In 2008, Luo *et al.* in Singapore reported this coefficient as 0.70<sup>[18]</sup> and in 2003, Jie *et al.* in China reported it as 0.57–0.76.<sup>[14]</sup> These results were congruent with the present study, and test users can trust the instrument in terms of decision-making and interpretation of results.

In order to study concurrent validity SQLS, WHOQL-BREF-26 and SF-36 questionnaire were filled out by the participants. The correlation coefficient between SF-36 questionnaire and SQLS was 0.99 with interpersonal relationship 0.92, with signs 0.86, symptoms 0.77 and motivation/energy 0/35. The correlation coefficient between WHOQL-BREF-26 and SQLS was 0.66 with interpersonal relationship 0/66, with signs 0/65, symptoms 0.53 and motivation/energy 0.56.

There is a relationship between WHO-brief-26 questionnaire and psychosocial and symptom side subscales, but they have not significant relationship with energy fatigue subscale. In 2009, Kuo *et al.* not founded any significant relationship between Global Assessment Functioning, PANSS and SQLS.<sup>[19]</sup> Luo *et al.* reported significant coefficients between SF-36 and psychosocial and symptom side effects subscales of SQLS<sup>[18]</sup> which is similar to the results of this study. This study shows a high correlation between total scale and subscales of psychosocial, sign, symptom and motivation/energy with WHOQL-BREF-26.

Results related to factor analysis of SQLS confirmed the presence of four factors of interpersonal relations, symptoms, signs, motivation and energy with 52.7% of common variance. This study was congruent with preliminary studies in 2000 by Wilkinson *et al.* that reported three factors with variance 44.6%,<sup>[11]</sup> in 2002 by Kaneda *et al.* that found three factor

**Table 3: Correlation coefficients of total SQLS and its subscales and side by SF-36 and WHO-brief-26**

Items	Interpersonal relationship	Symptoms	Signs	Motivation/energy	Total scale SQOL
SF-36	0.92**	0.86**	0.77**	0.35	0.99**
WHOQOL-BREF-26	0.66**	0.65**	0.53**	0.56**	0.66**

\*\*P<0.01. SQLS=Schizophrenia quality of life scale, QOL=Quality of life, SF-36=Short form-36, WHO=World Health Organization, SQOL=Schizophrenia quality of life

**Table 4: Factor loading of SQLS in four obtained factors**

Items	Factors			
	Interpersonal relationship	Signs	Symptoms	Motivation/energy
Lack energy to do things		0.44		
Bothered by shaking/trembling		0.56		
Feel unsteady walking			0.71	
Feel angry		0.60		
Troubled by dry mouth		0.63		
Can't be bothered to do things		0.61		
Worry about future		0.65		
Feel lonely		0.63		
Feel hopeless		0.70		
Muscles get stiff		0.72		
Feel jumpy and edgy		0.71		
Able to carry out daily activities				0.43
Take part in enjoyable activities				0.30
Take things people say the wrong way	0.49			
Like to plan ahead				0.59
Find it hard to concentrate	0.63			
Tend to stay at home			0.88	
Difficult to mix with people	0.57			
Feel down and depressed	0.76			
Feel I can cope				0.63
Blurred vision			0.30	
Feel very mixed up	0.62			
Sleep is disturbed			0.42	
Feelings go up and down	0.72			
Get muscle twitches			0.70	
Concerned won't get better	0.67			
Worry about things	0.71			
Feel people avoid me	0.56			
Get upset thing about the past	0.72			
Get dizzy spells			0.58	
Eigen value	5.9	4.9	2.5	2.4
Variance (%)	19.8	16.4	8.4	8.1
Total variance (%)			52.7	

SQLS=Schizophrenia quality of life scale, QOL=Quality of life

with variance 55.8%<sup>[12]</sup> and in 2009 by Kuo et al. who found seven factors with variance 68.1%.<sup>[19]</sup> Variety in the type and number of factors can dependent on cultural-social issues, type of patient population and sample volume are studied.

As a final conclusion based on this finding the Persian version of SQLS can be used as a reliable and valid instrument for evaluation of QOL in Iranian population.

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### Conflicts of interest

There are no conflicts of interest.

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