Original Article

Domains and Determinants of Quality of Life in Schizophrenia and Systemic Lupus Erythematosus

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ABSTRACT

Background: The World Health Organization Quality of Life-Bref (WHOQOL-Bref) scale was designed to measure quality of life (QOL) in both medical and psychiatric illnesses. There have been a few studies to date that compare aspects of QOL in medical and psychiatric illnesses. **Aim:** The aim of the study was to compare QOL in patients with systemic lupus erythematosus (SLE), a chronic medical illness and schizophrenia, a chronic psychiatric disorder. **Materials and Methods:** In a prospective design, 50 patients with SLE and 50 patients with schizophrenia were assessed on measures of QOL by using the WHOQOL-Bref scale, demographic factors, disease severity, and psychiatric comorbidity. **Results:** There was a significant difference between the SLE group and the schizophrenia group on the social domain of the WHOQOL-Bref scale but not on other domains. Patients with SLE had lower scores, except on social domain. Disease severity correlated with scores on the physical domain and environmental domain in both illnesses. The presence of psychiatric comorbidity was associated with significantly lower QOL scores in SLE. The presence of insight was associated with nonsignificantly lower QOL scores in schizophrenia. There was a significant association between QOL scores and both income and religious belief system in SLE, while age and duration of illness correlated with QOL scores in schizophrenia. **Conclusion:** Although the QOLs in schizophrenia and SLE were comparable on all domains except the social domain, the factors that mediate QOL in both these illnesses are different.

Key words: *Insight, psychiatric comorbidity, quality of life, schizophrenia, systemic lupus erythematosus*

INTRODUCTION

The concept of quality of life (QOL) is an essential part of health economics, medical decision making, and the planning of health-care programs.[1] It is a multidimensional construct of the patient's perspective and encompasses spheres of emotional well-being, interpersonal relationships, material well-being, personal development, physical well-being, self-determination, social inclusion, and human/legal rights.[2] The concept encourages treatment programs to set a higher standard of how a typical life should be rather than being concerned with merely the sustenance of life as a laudable goal.

The two major approaches for assessing QOL are as follows: Those that measure the psychometric health profile based on different life domains[3] and the utility approach, based on the theory of rational decision making in conditions of uncertainty,[4] that measures an individual's preferences for a particular health status as a measure of QOL.[5] The scales that measure QOL usually have a predefined set of domains and work on

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certain assumptions, importantly that an individual's or group's QOL is primarily mediated by the presence or absence of physical disability and limitation.[6] This aspect is also reflected in the utility measures of QOL, such as quality-adjusted life-years,[7] disability-adjusted life-years,[8] and health-adjusted life-years,[9] which lay emphasis on the physical domain of illness. Furthermore, it is conceived that it is only the physical and emotional domains that contribute to health-related QOL and not the social and environmental domains.[5]

Although patients with schizophrenia experience physical symptoms, it forms a small proportion of the distressing symptomatology of the disorder. The measurement of QOL in schizophrenia is a reflection of the patient's perspective influenced by the severity of psychotic symptoms, his or her idiosyncratic world views, and the effort of adjusting to his or her environment. The dimensions that determine QOL in schizophrenia may hence be different from those that determine QOL in a medical illness. The comparison of QOL in medical and psychiatric illnesses is hence of relevance.

Systemic lupus erythematosis (SLE) and schizophrenia are medical and psychiatric illnesses, respectively, which share many common features such as chronicity, relapsing and remitting course, significant socio-occupational dysfunction, economic burden, and stigma. The WHOQOL-Bref scale[10] is a generic scale of QOL that has been devised to measure QOL in both medical and psychiatric illnesses. It taps into different domains of QOL, not just those related to schizophrenia, and hence allows comparisons with other illnesses; it is also of relevance to resource allocation and health planning.

The aims of this study were to compare the different domains and determinants of QOL in patients with a medical illness SLE and in patients with a chronic psychiatric disorder (schizophrenia) by using the WHOQOL-Bref scale and to evaluate the impact of disease severity, psychiatric comorbidity, and insight on QOL.

MATERIALS AND METHODS

In a cross-sectional design, 50 patients with SLE and 50 patients with schizophrenia were assessed independently by two of the authors (R.R. and J.M.). Patients with SLE were selected from the Immunology Clinic at St. John's Medical College Hospital, Bangalore, Karnataka, India. Patients with schizophrenia were selected from the psychiatry outpatient clinic of the hospital and from adjoining halfway homes in Bangalore. The data were collected from two studies that were approved by the ethics review board of St. Johns Medical College. Written informed consent was obtained from subjects prior to participation in the study. Disease severity was measured by using SLE disease activity index (SLEDAI) and systemic lupus international collaborative clinics/ American college of rheumatology (SLICC/ACR) damage index in patients with SLE and by using the positive and negative syndrome scale (PANSS)[11] in patients with schizophrenia. The PANSS scores in the schizophrenia group were categorized as 'mild-moderate' and 'markedly-severe' on the basis of the PANSS total score cutoff of 75.[12] The assessment of schizophrenia and psychiatric comorbidity was done by using the Structured Clinical Interview for DSM Diagnosis (SCID)-I for *DSM-IV-TR*. Insight was defined as present or absent on the basis of PANSS insight item score ≤2. QOL was measured by using the WHOQOL-Bref scale. The QOL data were analyzed in two different ways: (1) the WHOQOL-Bref scores were analyzed as a continuous variable and (2) scores were categorized as those below, within, and above the mean±2SD on each of the four domains derived from normative data.[3] Statistical analysis was done by using the software Statistical Package for the Social Sciences (SPSS) version 15. Chi-square and *t* tests were used. The effect of demographic factors on QOL was analyzed by using linear mixed modeling and linear regression.

RESULTS

The sample was composed of patients with schizophrenia (*n*=50) and SLE (*n*=50). The WHOQOL-Bref scores were missing for two patients with schizophrenia. The mean age of the sample was 35.2±10.87 years.

Demographics
Schizophrenia
The schizophrenia group was composed of 31 men and 19 women, with mean age being 39.3±9.17 years, mean duration of illness 201.55±106.55 weeks, and mean years of education 14.84±2.18 years. Other demographic factors include employment, religious background, residence, monthly family income, marital status, and family history of mental illness [Table 1].

Systemic lupus erythematosus
The SLE group was composed of 3 men and 47 women, with mean age being 31.1±10.96 years, mean duration of illness 35.94±31.29 weeks, and mean years of education 13.9±3.52 years. Other demographic factors include employment, religious background, residence, monthly family income, marital status, and family history of mental illness [Table 1].

The two groups were significantly different in terms of age ($P<0.001$), gender distribution ($P<0.001$), duration of illness ($P<0.001$), income ($P<0.001$), residence ($P=0.001$), marital status ($P<0.001$), and family history of mental illness ($P<0.001$). The WHOQOL-Bref scores were normally distributed (Shapiro Wilk statistic >0.8). The effect of baseline variables on the WHOQOL-Bref scale was analyzed in an Analysis of Covariance (ANCOVA) model with diagnosis (SLE *vs* schizophrenia) as fixed factors and "propensity score" calculated using gender, religion, employment status, residence, income, marital status, family history of mental illness, duration of illness, education, and age as a covariate.

Quality of life
Schizophrenia
The scores of the four domains of the WHOQOL-Bref scale were physical health domain (mean±SD 60.83±18.84), psychological well-being (mean±SD 58.29±23.69), social domain (mean±SD 50.52±29.04), and environmental domain (mean±SD 60.98±29.97) [Table 2].

Systemic lupus erythematosus
The scores of the four domains of the WHOQOL-Bref scale were physical health domain (mean±SD 57.3±25.17), psychological well-being (mean±SD 56.84±17.76), social domain (mean±SD 60.7±28.98), and environmental domain (mean±SD 62.78±19.62) [Table 2].

The ANCOVA revealed a significant difference between schizophrenia and SLE on WHOQOL-Bref scores for the social domain ($P=0.04$; partial $\eta^2=0.04$). There was no significant difference between schizophrenia and SLE groups on WHOQOL-Bref scores for physical health domain ($P=0.33$), psychological well-being ($P=0.68$), and environmental domain ($P=0.21$).

Effect of gender on QOL
The WHOQOL-Bref scores in women in the two groups (19 schizophrenia vs 47 SLE) were compared. Women in the schizophrenia group had a lower score on the social domain (mean±SD 45.79±28.34 vs 60.72±28.13; $P=0.056$) at a trend level of significance, while they had nonsignificantly higher scores on the physical health domain (mean±SD 62.95±16.75 vs 56.96±24.90; $P=0.34$), psychological domain (mean±SD 59.32±21.59 vs 56.62±17.93; $P=0.604$), and environmental domain (mean±SD 63.21±18.62 vs 62.51±19.48; $P=0.894$).

Disease-specific effect of demographic variables on QOL in schizophrenia
There was no significant effect of gender, duration of illness, income, residence, education, marital status, and family history of mental illness on any of the domains of the QOL in schizophrenia in a linear regression.

Table 1: Demographics of the sample

Continuous variables	Study groups		t test	*P*
	Schizophrenia	SLE		
Age (in years)	39.3±9.17	31.1±10.96	4.06	<0.001
Education (in years)	14.84±2.18	13.9±3.53	1.60	0.11
Duration of illness (in weeks)	201.55±109.46	35.94±31.29	10.19	<0.001

Categorical variables	Study groups		Chi-square	*P*
	Schizophrenia	SLE		
Sex				
Male	31	3	*	<0.001
Female	19	47		
Religion				
Hindu	30	39	6.72	0.08
Christian	16	6		
Muslim	4	4		
Other	0	1		
Employment status				
Employed	9	13	0.83	0.36
Unemployed	40	37		
Residence				
Urban	49	37	15.67	0.001
Rural	0	10		
Semi-urban	1	0		
Income				
1000–3000	1	20	42.82	<0.001
3000–10 000	5	18		
>10 000	44	12		
Marital status				
Married	5	28	28.41	<0.001
Unmarried	36	22		
Separated	9	0		
Family history of psychiatric illness				
Present	22	4	*	<0.001
Absent	28	46		

*Fisher's exact test; SLE - Systemic lupus erythematosus

Table 2: Quality-of-life domain scores (WHOQOL-Bref domains)

WHOQOL-Bref domains	Diagnosis	Mean	SD
Domain 1 (Physical domain)	Schizophrenia	60.83	18.84
	SLE	57.30	25.18
Domain 2 (Psychological domain)	Schizophrenia	58.29	23.69
	SLE	56.84	17.76
Domain 3 (Social domain)	Schizophrenia	50.52	29.04
	SLE	60.70	28.98
Domain 4 (Environmental domain)	Schizophrenia	60.98	22.97
	SLE	62.78	19.62

SLE - Systemic lupus erythematosus

Disease-specific effect of demographic variables on QOL in SLE
Marital status had a significant effect on the psychological domain ($b=-0.339$, $t(38)=-2.045$, $P=.048$), and a trend toward significance on the physical health domain ($b=-0.340$, $t(38)=-2.016$, $P=0.051$) of QOL in SLE. There was no significant effect of gender, duration of

illness, income, residence, education, and family history of mental illness.

Effect of disease severity on QOL
Schizophrenia
The correlation between PANSS total score and WHOQOL-Bref physical health domain was at a trend level of significance ($P=0.072$). There was a significant correlation between PANSS general psychopathology scores, and the scores on WHOQOL-Bref physical health domain ($P=0.02$) and environmental domain ($P=0.031$) were at a trend level for scores on psychological well-being ($P=0.066$) and social domain ($P=0.053$). Scores on PANSS positive subscale trended to a significant correlation with scores on physical health domain ($P=0.072$).

SLE
The scores on SLEDAI correlated with scores on WHOQOL-Bref physical health domain ($P=0.032$). Scores on SLICC/ACR Damage Index correlated significantly with scores on environmental domain ($P=0.002$) and at a trend level for physical health domain ($P=0.080$).

Effect of psychiatric comorbidity on QOL in SLE
The SLE group was categorized as those with a comorbid SCID-I diagnosis and those without. The subgroup without psychiatric comorbidity had significantly higher scores on physical health domain (mean±SD 64.68±24.53 vs 49.92±24.05; $P=0.037$), psychological well-being (mean±SD 65.56±14.32 vs 48.12±16.75; $P<0.001$), social domain (mean±SD 71.96±24.81 vs 49.44±28.89; $P=0.005$), and environmental domain (mean±SD 71.16±16.30 vs 54.40±19.34; $P=0.002$).

Effect of insight on QOL in schizophrenia
The schizophrenia group was categorized as those with insight (PANSS insight item score ≤2) and those without insight (PANSS insight item score >2). The subgroup with insight had lower scores on QOL in physical health domain (mean±SD 59.86±19.94 vs 63.75±15.45; $P=0.542$), psychological well-being (mean±SD 56.83±24.22 vs 62.66±22.41; $P=0.466$), and environmental domain (mean±SD 59.08±24.56 vs 66.67±16.98; $P=0.327$) and higher scores on social domain (mean±SD 51.39±31.62 vs 47.92±20.31; $P=0.724$), but these differences were not statistically significant. There was no correlation between scores on the PANSS insight item and WHOQOL-Bref scores in any domain.

Effect of demographic factors on QOL in schizophrenia and SLE
In the schizophrenia group, there was a significant association between psychological well-being and duration of illness ($P=0.025$) and between environmental domain and age ($P=0.044$). There was no significant association between scores on the four domains and gender, religion, employment, residence, income, marital status, and family history of mental illness.

In the SLE group, there was a significant association between psychological well-being and income ($P=0.017$), social domain and religious group ($P=0.032$), social domain and income ($P=0.041$) and a trend level of significance for the association between environmental domain and income ($P=0.060$). There was no significant association between scores on the four domain and age, gender, duration of illness, employment, residence, marital status, and family history of mental illness.

Comparison of QOL scores with normative data
The QOL scores were categorized as "below," "within," and "above" the mean±2SD for each domain derived from normative data.[3] The mean for the normative data was 73.5 (SD=18.1) for the physical health domain, 70.6 (SD=14.0) for psychological well-being, 71.5 (SD=18.2) for social relationships, and 75.1 (SD=13.0) for the environmental domain.

A nonsignificantly greater proportion of patients with SLE had QOL scores below 2SD of the normative scores on physical health domain (11 SLE + 5 schizophrenia; $P=0.171$), while a nonsignificantly greater proportion of patients with schizophrenia had QOL scores below 2SD on psychological well-being (10 schizophrenia + 7 SLE; $P=0.137$), social domain (18 schizophrenia + 12 SLE; $P=0.275$), and environmental domain (15 schizophrenia + 12 SLE; $P=0.653$). Interestingly, three patients in the schizophrenia group had QOL scores >2SD of the normative data on domain 2.

DISCUSSION

The study explored the differences in the domain of QOL as measured using the WHOQOL-Bref scale in patients with SLE and schizophrenia in order to represent a medical and a psychiatric illness, respectively. The QOL scores on three of the four domains of the WHOQOL-Bref scale, namely, physical health, psychological well-being, and environmental domain, were comparable in patients with SLE and patients with schizophrenia, though the schizophrenia group had higher scores. Patients with schizophrenia had significantly lower scores on the social domain. This finding is consistent with a study comparing QOL in schizophrenia and multiple sclerosis, which also found that both groups had comparable scores on all four domains.[13] Furthermore, in the study, patients with schizophrenia had consistently higher QOL scores on all four domains except the social domain.[13]

The two groups were significantly different in terms of the demographic variables of gender, duration of illness, income, residence, education, marital status, and family history of mental illness. These differences reflect the inherent demographic characteristics of SLE and schizophrenia. SLE predominantly afflicts young women while schizophrenia afflicts both genders, is associated with lower premorbid IQ, and more likely to have a family history of mental illness.[14,15] The patients with schizophrenia were sampled from halfway homes, thus representing a subgroup with higher family income and predominantly urban residence.

Disease severity had differential effects on QOL domains depending on the illness. While severity of psychosis as measured by the PANSS total score showed a correlation with scores on the physical domain of the WHOQOL-Bref scale at a trend level, the scores on the general psychopathology subscale, which predominantly taps into somatic symptoms including anxiety and depression, had a significant correlation to the physical health and environmental domains. This is consistent with the results of a pooled analysis.[16] No significant correlations were observed with the positive and negative symptom subscales of the PANSS. Meltzer *et al.*[17] reported the association between negative symptom score and QOL. The study, however, enrolled schizophrenia patients treated with clozapine. Clozapine is unique among the antipsychotics resulting in fewer extrapyramidal side effects, and patients experience improved subjective well-being than with other antipsychotics.[18] A significant association between the somatic item on Brief Psychiatric Rating Scale and QOL scores was shown in another study.[19] Our findings may also be reminiscent of the relative importance given to physical symptoms and disability in designing the structure of the scale.[6]

Severity of the illness in SLE had a strong correlation with the physical health and environmental domains of QOL. The severity of SLE at the time of assessment as measured by the SLEDAI correlated with the physical health domain while the morbidity due to SLE as measured by the SLICC/ACR Damage Index correlated significantly with the environmental domain and with physical health domain at a trend level.

The association between SLEDAI and the physical health domain but not with the social and environmental domains is consistent with the study by Khanna *et al.*,[20] though they additionally reported an association between SLEDAI and the domain of psychological well-being. The lack of correlation with psychological well-being scores maybe due to the fact that in this study, a significant proportion (50%) of the patients with SLE had psychiatric comorbidity.

The presence of psychiatric comorbidity in SLE led to a significantly lower QOL in all four domains. Similar, worsening of QOL in the presence of psychiatric comorbidity has been seen in patients with other chronic inflammatory diseases such as rheumatoid arthritis[21] and chronic noninflammatory diseases such as type 2 diabetes.[22] QOL improves significantly with adequate intervention to address psychological distress.[22] The finding hence underlines the impact of psychiatric comorbidity on QOL in a medical condition and reflects the importance of identifying and treating the comorbid psychiatric condition in order to improve QOL.

The presence of insight in schizophrenia was associated with lower QOL scores in the physical, psychological, and environmental domain, but higher scores on the social domain. Lower QOL scores were associated with increased insight in another study of schizophrenia.[23] This finding has implications for insight-oriented treatments in schizophrenia and that improving insight is not uniformly beneficial.

The demographic determinants of QOL were different for the two conditions. While duration of illness and age were significantly correlated with QOL in schizophrenia, income and religious belief system were important determinants of QOL in SLE. The association between age and QOL scores is equivocal, with some studies showing a negative correlation[17,24-26] while others show no correlation.[27] Longer duration of illness was also implicated as a determinant of QOL in another study of schizophrenia.[25] The differences in the cost of treatment of the two illnesses and in the degree of psychological coping that different religious belief systems offer are hence important considerations in medical illnesses while age and duration of illness are important in psychiatric illnesses.

On comparison of the QOL scores with the cutoffs derived from normative data,[3] there was no difference between the proportion of patients with SLE and schizophrenia who had scores below 2SD of the mean of the normative data. Three patients with schizophrenia, interestingly, had scores on the domain of psychological well-being that were 2SD greater than the mean of the normative data. One possible explanation for this finding and the lack of difference in QOL scores in schizophrenia and SLE is the limitations related to the measurement of QOL. These include issues related to self-report bias, the lack of a universally accepted measure, the lack of reliability and validity data for many of the scales, and the difficulty generalizing findings among different scales. Furthermore, the validity of the measurement of QOL in illnesses with compromised cognitive abilities has been questioned, such as in Alzheimer's disease[28] and in severe mental illness

where the disease process could alter the perception of quality of life, such as in schizophrenia.[29-33] The limitation of measuring QOL solely on the basis of subjective reports has been frequently highlighted.[34,35] The Riedel-Spellmann-Musil (RSM) scale is an effort to bridge the discrepancy between subjective and objective assessments of QOL[36] and may prove to be a useful tool in future research.

In conclusion, medical and psychiatric illnesses are associated with comparably lower QOL, the determinants of QOL are different in the two illnesses, and disease severity, psychiatric comorbidity, and level of insight impact QOL. Identifying and treating psychiatric comorbidity in medical illnesses may improve the QOL of patients with medical illness.

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