Original Article

Quality of Life and It's Relation to Disease Activity in Egyptian Patients with Systemic Lupus Erythematosus

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ABSTRACT

Objective: The aim of the present work is to study the effect of Systemic Lupus Erythematosus(SLE) and its activity on the quality of life in SLE patients. **Subjects and Methods:** In this study, we investigated One Hundred SLE patients as regards disease activity and its impact on the quality of life (QoL). Disease activity was measured by SLE Disease Activity Index (SLEDAI), and quality of life was measured by Short Form–36 health questionnaire (SF-36). **Results:** Mucocutaneous, hematological and renal manifestations were present in most of the patients and arthritis in 20% . Participants with mild to moderate activity represented 47% of the SLE population in our study and 25% had severe activity. No activity was present in 28%. All domains of SF-36 were found lower in SLE patients with correlation of some domains with disease activity measured by SLEDI. This correlation was found significant with physical functioning component, role limitation due to physical health and role limitation due to emotional problems and pain. **Conclusion:** Physical and emotional domains of QoL are impaired to a larger extent in active lupus. However, social, environmental QoL don't correlate with the disease activity status in lupus patients. These findings may provide useful information to improve our understanding and provide better support to SLE patients beside rapid meticulous control of disease activity. **[Egypt J Rheumatology & Clinical Immunology, 2015; 3(2): 95-103]**

INTRODUCTION

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease that involves almost all organs in the body. The great diversity of clinical manifestations in SLE ranges from mild arthritis through pericarditis, nephritis and neuropsychiatric manifestations[1] and its clinical course is characterized by periods of remissions and relapses[2]. In addition to disease activity and damages, the disease changes Quality of Life (QoL) affecting employment, social functioning, physical and psychological aspects[3]. Common SLE symptoms known to contribute to poor QoL include fatigue, depression, pain, sleep disturbances and cognitive dysfunction[4]. Measuring of HRQoL provides patients with an opportunity to participate in their treatment and facilitates better communication with the team of health professionals involved in their care, allows for a more comprehensive assessment and in some cases may be a more sensitive indicator of treatment response than measures of disease activity or damages[5].

The most commonly used measure of HRQoL is The Short Form (SF)-36, which is a generic 36-item self-report questionnaire, included eight subscales: (physical and social functioning, role limitations due to physical and emotional problems, mental health, emotional well-being, energy/vitality, body pain and general health perception). The SF-36 has been shown to be a valid and reliable instrument in SLE and has been used in numerous studies in SLE[6].

PATIENTS AND METHODS

Our study included 100 patients with SLE based on four or more criteria of American College of Rheumatology ACR for SLE reviewed at 1997 after obtaining their informed consent and within the approved ethical protocol of hospital committee.

Patients were recruited From outpatient clinic and patients admitted to Internal Medicine Department at Tanta University Hospitals in the period from March 2014 to August 2014. Patients were taken from Rheumatology, Hematology and Nephrology outpatient clinic when available, their data were collected, blood samples for investigations and questionnaire were applied to them. Informed Consent was obtained from all patients after full explanation of benefits and risk.

Privacy of all patients' data was granted by code number for every patient file that includes all investigations.

Inclusion criteria

- Patients previously diagnosed as Systemic Lupus Erythematosus (SLE), according to classification criteria of the American College of Rheumatology ACR published 1997.[7] A patient has to have four or more of these criteria to be classified as having SLE.
- The duration of the disease at least six months.

Exclusion criteria

- Patients with Rheumatic diseases other than SLE as Rheumatoid arthritis and Mixed connective tissue disease.
- Patients with co-existing comorbidities not related to SLE.
- Patients with dementia or psychosis.
- Data collection:

All SLE patients were subjected to a predesigned questionnaire sheet which was used for data collection and include the following:

1- Baseline information about socioeconomic and demographic data: Include age, sex, residence, education, employment and marital state.
2- Full history taking: Personal history, history of present illness include, duration and onset of disease, associated complications as Diabetes Mellitus, Cardiac or renal disease and family history of SLE.
3- Thorough clinical examination: General and local examinations were done for all systems and particularly for presence of malar rash, discoid rash, photosensitivity, oral ulcers, hair loss, peripheral edema, arthritis, serositis, fever, hematological or renal affection and hypertension.
4- In addition, the patients were subjected to the following investigations:
    - Full blood count.
    - Complete urine analysis.
    - 24 hours urinary protein excretion.
    - Serum Creatinine and blood urea.
    - Erythrocyte sedimentation rate (ESR).
    - Anti-nuclear antibody (ANA).
    - Anti-ds DNA antibodies.
    - Serum Complement (C3 & C4).
    - C-Reactive Protein (CRP).
    - Reports of renal Biopsy if found will be recorded.
5- Assessment of disease activity through Calculation of SLEDAI score[8]: Patients with SLEDAI score less than 6 were considered clinically inactive, patients with score were 6-12 considered to have mild to moderate disease activity while patients with score 12 or more were considered to have severe disease activity[8].
6- Quality of life (QoL) assessment by Short Form (SF)-36 questionnaire: In our study QoL was assessed using The Arabic version of Medical Outcomes Survey Short Form 36 (SF-36) questionnaire[9,10]. The SF-36 is a generic instrument with scores that are based on responses to individual questions. This is a standard and valid questionnaire in assessment of QoL in SLE[11]. It consists of 36 questions grouped into 8 domains measuring different aspects of QoL include:
    - General health (GH), subjective perception of health status.
    - Physical function (PF), limitations in physical activities because of health problems.
    - Role–physical (RP), limitations in usual role activities because of physical health problems.
    - Bodily pain (BP), influence of pain on daily activities.
    - Vitality (VT), energy level and fatigue.
    - Role–emotional (RE), limitations in usual role activities because of emotional problems.
    - Mental health (MH), psychological distress and well-being.
    - Social function (SF), limitations in social activities because of physical or emotional problems.

We use The Arabic version of The SF-36 questionnaire to allow our patients with their different educational levels to answer all questions without limitation of language, few modifications in language were done to make it more simple without any change in the meaning of any question, also some social data were added, we explain the aim of our study and ensure privacy of all data to all patients.

The questionnaire was self administered for educated patients and patients capable of reading and writing and for those who are illiterate all items were explained to them and it was done by us

Scoring Rules for the SF- 36 Questionnaire[(10)]:

Questionnaire consists of eight domains; each domain contains number of items as follow:

- Physical function 10 items.
- Role limitations due to physical health 4 items.
- Role limitations due to emotional problems 3 items.
- Energy/ fatigue 2 items.
- Emotional well being (Mental health) 5 items.
- Social functioning 2 items.
- Pain 2 items.
- General health 5 items.

Each item takes a score; obtained results were converted into a scale from 0 to 100, where 0 means the lowest quality of life and 100 means the highest one. We add some modifications in language to the classic Arabic version of questionnaire to make the language simpler without change in the meaning of any question, also we add some social data to cover all factors may affect QoL. The questionnaire was self-administered for educated and patients capable of reading and writing while for those who are illiterate

all items were explained to them in an interview and it was done by us.

Figuring Scores

All questions are scored on a scale from 0 to 100, with 100 representing the highest level of functioning possible. Aggregate scores are compiled as a percentage of the total points possible, using the RAND scoring table (STEP I chart). The scores from those questions that address each specific area of functional health status (STEP II chart) are then averaged together, for a final score within each of the 8 dimensions measured. (Pain, physical functioning etc.)

Statistical Analysis

- The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA. For numerical values, the range mean and standard deviations were calculated. The differences between two mean values were used using student's t test. Differences of mean values between more than two groups were tested by analysis of variance (F). When the analysis of variance was found significant, Bonferroni test was used to compare between each two groups.
- For categorical variable the number and percentage were calculated The relations between SELDI and various component of quality of life was calculated using Pearson's correlation coefficient.
- The association between Lupus nephritis and components of quality of life was calculated using Spearman's rank correlation. The level of significant was adopted at $p<0.05$.

RESULTS

Our study conducted on 100 patients with SLE. Demographic characters of study participants show that, the mean age of participants was 29.62±10.84 years. The majority of cases aged 20-40 years (66%). Females represented 84% of cases (Table 1).

As regarding the Social data of study participants; concerning educational level, 48% had secondary or university education while 20% were illiterate. Unemployment was reported by 30% and 31% were housewives. Marital status as single was reported by 37 participants while 58 were currently married and 51 participants reported having children. The majority of study participants were rural residence as reported by 77 participants and 90 of them had living accommodation with family either parents or spouse and children (Figure 1).

The duration of illness in the majority of the participants was 1-3 years (41%) with mean 2.62±1.83 years. Three patients had family history of SLE. Malar rash was presented in 61 of patients, photosensitivity was presented in 43, Alopecia in 40. Twenty eight of the patients were presented with oral ulcers while only eight patients had discoed rash. Arthritis was present in 20 SLE patients, 49 of the patients had persistent proteinuria >0.5 grams/day or greater than 3+ and 20 had cellular casts. Serositis (cardiopulmonary involvements) was present in 31 patients as follow: pleural effusion in 12 patients, ascitis in 9, and pericardial effusion in 8 while pleurisy / pericaditis were presented in two patients. Nine patients presented with vasculitis, 50 patients had hemolytic anemia, 18 had leucopenia and 16 had thrombocytopenia. Steroid induced diabetes present in (4 patients) and one patient presented with a vascular necrosis of knee (Table 2).

All domains were affected by SLE with general health and physical function were the most affected followed by social function and pain components. Role limitation due to physical health and emotional problems were found to be severely affected among 64% and 63% of participants, respectively. Social functioning was reported to be affected moderately by 60% of patients. Pain was affected severely by 43% of patients On the other hand, energy/fatigue and mental health were the least affected as reported to be mildly affected or not affected at all by 51% and 45%, respectively (Table 3).

There was a significant relationship between SLEDI score and physical functioning, role limitation due to emotional problems and pain. These components were found to be less affected with cases with inactive SLE as measured by SLEDI and became much affected with increased activity of lupus as measured by SLEDI. Other component of quality of life did not show statistically significant differences in relation to SLEDI score level (Figure 2).

SELDI showed negative weak correlation with physical functioning. This correlation was found statistically significant ($p=0.001$). Again, significant negative correlation was reported among study participants in relation to role limitation due to physical health and role limitation due to emotional problems ($r = -0.215$ and -0.258, respectively) ($p=0.031$ and 0.009, respectively).

Pain was significantly associated with SELDI score. This association was weak positive correlation with a correlation coefficient of 0.302 ($p=0.002$). SELDI showed no significant correlation with energy/fatigue, mental health, social functioning and general health components of quality of life (Table 4).

Table 1. Demographic characters of studied patients.

Demographic characters	Number (n=100)
Age in years	
<10	1
10-	14
20-	39
30-	27
40-	13
50-	6
Mean±SD	29.62±10.84
Gender:	
Males	16
Females	84

Table 2. Distribution of studied patients in relation to clinical data.

Clinical data	Number (n=100)	Clinical data	Number (n=100)
Duration of illness in years:		Serositis:	
<1	7	Pleural effusion	12
1-	41	Ascitis	9
3-	38	Pericardial effusion	8
5-	9	Pleurisy/pericarditis	2
7+	5	Vasculitis	9
Mean±SD	2.62±1.83	Hematological manifestations:	
Family history of lupus	3	Hemolytic anemia	50
Mucocutaneous lesions:		Leucopenia	18
Malar Rash	61	Thrombocytopenia	16
Photosensitivity	43	Steroid induced Diabetes Mellitus	4
Alopecia	40	A vascular necrosis of knee	1
Oral Ulcers	28	Renal disorders:	
Discoid Rash	8	Proteinurea	49
Arthritis	20	Casts	20
		Pus in urine (>10)	17
		RBCs in urine (>10)	15

Table 3. Effects of systemic lupus erythematosus on quality of life of studied patients.

Quality of life subscales	Severely affected (<50%)	Moderately affected (50-74%)	Mildly affected (75-99%)	Not affected (100%)
Physical functioning	51	29	17	3
Role limitations due to physical health	64	12	6	18
Role limitations due to emotional problems	63	15	0	22
Energy/ fatigue	23	26	40	11
Mental health	28	37	39	6
Social functioning	23	60	13	4
Pain	43	38	15	4
General health	23	51	25	1

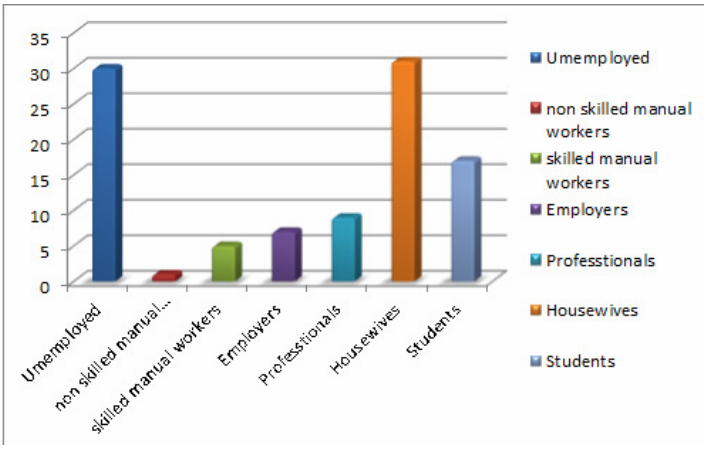

Figure 1. Social data of study participants.

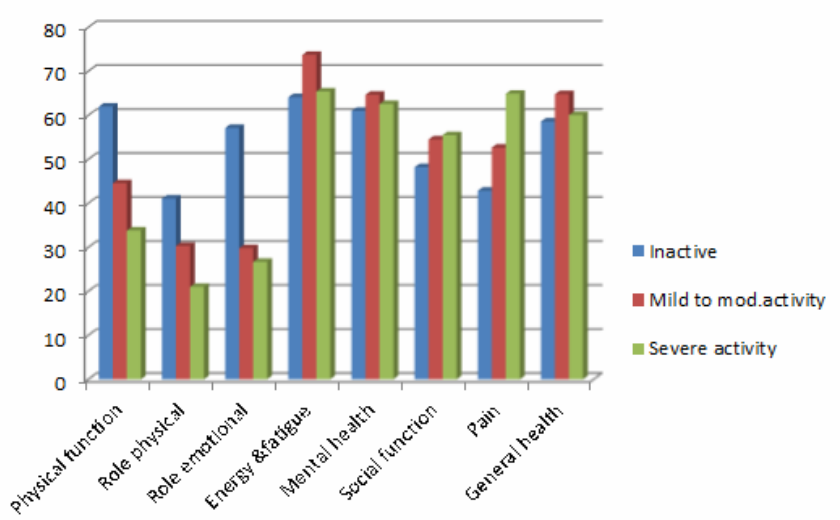

Figure 2. Comparison of mean value of different components of quality of life in relation to SLEDI.

Table 4. Correlation between systemic lupus erythematosus disease activity index (SLEDI) and components of quality of life.

Components of quality of life	SLEDI	
	r	P
Physical functioning	-0.391	0.001*
Role limitations due to physical health	-0.215	0.031*
Role limitations due to emotional problems	-0.258	0.009*
Energy/ fatigue	-0.007	0.947
Emotional well being	-0.004	0.966
Social functioning	0.191	0.057
Pain	0.302	0.002*
General health	0.073	0.473

P value < 0.05 *Significant

DISCUSSION

Systemic lupus erythematosus (SLE) is a female predominant autoimmune disease characterized by multi-organ disorders[12].

Throughout the course of their disease, individuals with systemic lupus erythematosus (SLE) face considerable physical, psychological, and social challenges affecting their quality of life [(13)].With improvements in survival in SLE attention has also been focused on the reductions in health related quality of life (HRQoL) associated with this condition[(14)]. HRQoL is a multidimensional concept including physical, functional, social, and emotional well-being. Studies have demonstrated that patients with SLE have poor HRQoL and recommended that a measure of quality of life/self-reported functioning should be included in SLE outcome studies[15,16].

A widely used generic measure, the Medical Outcomes Survey Short-Form 36 (SF-36), used to reveal the effect of SLE on HRQOL. The SF-36 questionnaire is widely used to monitor general population health status, to evaluate the efficacy of interventions, to monitor health status in patients with chronic disease and to determine the relative burdens of various diseases. Our study designed to assist the effect of Systemic Lupus Erythematosus (SLE) and its activity on the quality of life. The study included 100 patients with SLE based on four or more criteria of American College of Rheumatology for SLE reviewed at 1997.[7]

We depend on short form 36 questionnaire (SF 36) to assist quality of life, and use Arabic version of the SF 36 questionnaire [(9,10)] to allow patients with their different educational levels to answer all questions without limitation of language.

We prefer to use the SF 36 as a generic questionnaire in this study to assist the individual's quality of life and study all factors may affect it and not only those specific to the diseases, as the major predictors of poor QoL in SLE are non-disease specific variables such as pain, fatigue and mood changes[17], another reason to choice SF 36 was that the questionnaire has been translated to Arabic.

However many disease specific questionnaires had been used in measuring QoL in SLE patients, it measure the specific effect of the disease only and not sensitive to measure quality of life in patients with multiple chronic conditions. Also, translation of disease specific questionnaires is still not validated to many languages and specially to Arabic[18], this limits their use in the present study.

In our study 84% of SLE patients were female, which matched with incidence of disease as SLE is reported with female to male ratio 11:1[19]; 58 were married , 37 were single, 4 of them were divorced and only one was widow . The age of the patients ranged from 10-60 years with mean age (29.62±10.8).

Patients aged less than 20 years had higher quality of life score than other age groups with mean (62.50±22.16). This can be explained by the effect of social support that allow young individuals to live in a family cover, specially 77% of our patients live in rural areas where social and family relations remains high.

This result was in disagreement with Burckhardt et al.[20], who found no correlation between age and QoL in SLE patients and Gilboe et al.[21], who reported a negative correlation between age and physical health when he studied SLE patients as regard QoL.

Males were found to have lower scores in role limitations due to emotional problems on measuring quality of life with mean (18.75+27.13).

We found that other factors as marital state, education, duration of disease had no significant effect on QoL of our patients and this were in agreement with results of Moldovan et al.[22], who did not find any relationship between quality of life and socioeconomic status, including, marital status, education level, and household income in SLE patients .

On the other hand, Jolly et al.[23], found that the longer duration of illness associated with lower QoL scores in SLE patients.

Many studies discuss the effect of SLE on the employment state and productivity of patients, many European studies have shown that SLE can lead to loss of employment[24,25], few have shown that SLE can reduce overall productivity outside of paid employment[26].

In our study, 30% of the studied patients were unemployed, while other patients varying from housewives, skilled and non-skilled manual workers, students and 7% of them were employees.

Moc et al. (2008) [(27)] found that, 37% of patients were unemployed and lost their ability to work due to direct or indirect consequences of SLE. He explained this by effect on SLE on physical function and work productivity.

The most frequent clinical manifestations throughout the course of the disease in our study were mucocutaneous lesions. Malar rash present in 61% of patients, photosensitivity in 43% of them, alopecia in 40 %, oral ulcers in 28% and discoid rash presented in only 8% of the studied patients.

Among the studied patients, arthritis was found in 20% of them. While renal involvement affect most of cases as proteinuria present in 49% of them, casts in 20%, hematuria and pyuria in 17% and 15% patients respectively.

As regard hematological manifestations in our patients, hemolytic anemia present in 50% of them, leucopenia and thrombocytopenia in 18 and 16% respectively.

In our study, we observed a progressive decrease in all SF-36 scores, these progressive changes in HRQoL could be explained by many factors such as SLE progression along the years, continuously coping with a chronic illness, and practical management items that may be required.

Other possible explanations are that, most of our SLE patients were young adults females, and in ages at which physical, psychological and social stability had not yet been reached and the disease affect them at a crucial time in their lives when they are trying to establish relationships, start families and launch careers.

We found that general health and physical function were the most affected components in 99% and 97% of patients respectively, followed by pain and social function in 96% of them then mental health, energy and fatigue component was affected in 88% of patients. Role limitations due to physical function and role limitations due to emotional problems were the last affected in our patients in 82% and 78% respectively.

Duarte et al.[28] and Fonseca et al.[29], detected statistically significant lower scores in quality-of life dimensions of SLE patients measured by SF 36, related to physical impairment, bodily pain and general health were statistically significantly different in the SLE group when compared to the control subjects. SF-36 mean scores were below 70% in all eight domains of the index and physical function domains showed lower scores than mental function domains.

In our study we found that fatigue has been extensively associated with poorer health related quality of life in SLE patients.

In contrast to our results, Benitha et al.[30] and Kuriya et al.[31], who found that the patients with systemic lupus erythematosus presented with low scores particularly in two domains, Role Physical and Role emotional, while other parameters that assessed psychological and physical functioning were also low, but still relatively higher.

Renal involvement occurs in up to 30% of SLE patients during the course of their disease and is associated with increased morbidity and mortality[32] so, it was important to assist quality of life in patients suffering from renal involvement.

In our study, we didn't found any relation between quality of life and renal affection measured by renal biopsy in patients who did biopsy. These findings were in agreement with a study done by Cho et al.[33] and Medeiros et al.[34], they found that there was no significant difference in HRQoL between SLE patients with and without renal involvement.

In contrast to us, Zhu et al.[35], who reported low quality of life in SLE patients with renal flare.

However, studies assessing the relationship between SLE disease activity and damage and QoL show equivocal results, some showing no relationship, while others report worsening QoL with increasing disease activity [(36)]. We studied QoL in our patients and the effect of SLE with its activity on them in order to identify and improve these factors affecting their QoL as possible.

Disease activity was measured using systemic lupus disease activity index SELEDI. We found that 28% of the studied patients were clinically inactive, 47% had mild to moderate activity and 25% had severe activity. We found that, clinically active patients had significant lower scores in physical function, role limitations due to emotional problems and pain component of quality of life.

We found a significant relationship between disease activity measured by SLEDI score and physical functioning, role limitation due to emotional problems and pain components measured by SF 36, other component of quality of life did not show statistically significant differences in relation to disease activity.

Our results were in agreement with Wang et al.[37] and Hanly et al.[38], they studied SLE patients as regard QoL and found that, disease activity negatively correlates with the physical and psychological domains, while the social and environmental domains are not related to disease activity.

Kulczycka et al.[39], found that statistically significant negative correlations were found only between the activity of SLE and physical function, mental health, vitality and energy. There were no statistically significant correlations between the activity of the disease and other domains of SF-36. Stoll et al.[11], found that worsen quality of life with increase disease activity, which were agreed with our results.

In contrast to us, Da Costa et al.[40] and Fortin et al.[41], they found that, there was no correlation between disease activity and HRQoL. Also, Duarte et al.[28] and Doria et al.[42], they found that disease activity and disease damage do not correlate highly with quality of life in SLE.

Conclusion

In conclusion, the current study revealed that QoL of the studied SLE patients was found to be poor, affected by disease activity in some domains so, it's better to keep SLE patients always inactive to provide better QoL. These findings may provide useful information to improve our understanding to the burden of patients with SLE and related health policies.

Limitations of the study:

Other psychological factors such as depression and anxiety, the presence of fibromyalgia which have been reported to be associated with low HRQoL were not recorded in our study since the objective of our study was to examine mainly the association between disease severity and HRQoL.

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