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Original Investigation

Perception of quality of life in patients with systemic lupus erythematosus. A five-year study

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ABSTRACT

Introduction: Systemic lupus erythematosus is an autoimmune, inflammatory, and chronic disease that considerably affects the perception of health-related quality of life.

Objective: To determine the perception of quality of life in patients with systemic lupus erythematosus.

Methodology: Descriptive and correlational study; universe of 143 patients and a sample of 127 patients to whom the Short Form 36 questionnaire was applied to determine perception of health-related quality of life; the SLEDAI questionnaire to determine clinical activity, the SLICC to identify organic damage and the Morisky Green test to identify pharmacological adherence. Pearson's correlation coefficient was used to determine the association between the study variables.

Results: Mean age of 32.83 years, predominance of female patients (92.91%) and with disease progression of between one and 5 years (69.29%). Of the patients, 75.59% had at least one associated comorbidity and 80.31% were considered pharmacological adherents. The overall quality of life perception score was 61.02 points in women and 59.03 points in men. In general, the most affected dimensions were the emotional role in women and vitality in men.

Conclusions: The increase in disease progression time, the presence of associated comorbidities and pharmacological non-adherence were variables that determined a decrease in the mean scores of perception of quality of life. There was a strong negative correlation between clinical activity of the disease and perception of quality of life.

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Percepción de calidad de vida en pacientes con lupus eritematoso sistémico. Estudio de cinco años

RESUMEN

Introducción: El lupus eritematoso sistémico es una enfermedad autoinmune, inflamatoria y crónica que afecta considerablemente la percepción de calidad de vida relacionada con la salud.

Objetivo: Determinar la percepción de la calidad de vida en pacientes con lupus eritematoso sistémico.

Metodología: Estudio descriptivo y correlacional; universo de 143 pacientes y muestra de 127 pacientes a los cuales se les aplicó el cuestionario*Short Form* 36 para determinar la percepción de calidad de vida relacionada con la salud; el cuestionario *Sledai*, a fin de establecer la actividad clínica, el *SLICC*, con el propósito de identificar el daño orgánico; y el test de *Morisky Green*, a efectos de evaluar la adherencia farmacológica. Se utilizó coeficiente de correlación de Pearson para determinar la asociación entre las variables del estudio.

Resultados: Promedio de edad de 32,83 años, predominio de pacientes femeninas (92,91%) y con tiempo de evolución entre uno y cinco años (69,29%). El 75,59% de los pacientes presentó al menos una comorbilidad asociada y el 80,31% se consideró adherente farmacológico. La puntuación de percepción de calidad de vida global fue de 61,02 puntos en mujeres y 59,03 puntos en hombres. De forma general, las dimensiones más afectadas fueron el rol emocional en las féminas y la vitalidad en los hombres.

Conclusiones: El aumento del tiempo de evolución de la enfermedad, la presencia de comorbilidades asociadas y la no adherencia farmacológica constituyeron variables que determinaron una disminución de las puntuaciones medias de percepción de calidad de vida. Hubo correlación negativa fuerte entre actividad clínica de la enfermedad y percepción de calidad de vida.

Palabras clave:
Calidad de vida
Enfermedades autoinmunes
Enfermedades reumáticas
Lupus eritematoso sistémico

Introduction

Systemic lupus erythematosus (SLE) is an autoimmune, chronic, and systemic disease with unknown cause, although hormonal changes, heredity, chemicals, and environment are described as playing a key role in the perpetuation of its etiopathogenic mechanisms.[1] The systemic inflammatory process is responsible for the high range of clinical manifestations that distinguish the disease.[2]

It is reported that SLE affects people of any age, sex, and race; however, a female predominance is described, in a ratio that ranges between 8 and 10:1; more than 90% of diagnosed cases are females. According to different investigations, the incidence oscillates between 2 and 7 cases per year per 100,000 inhabitants, and its prevalence is between 20 and 100 cases per 100,000 inhabitants. The age of onset is described more frequently between 17 and 35 years; however, cases diagnosed in children and patients over age 50 are also reported.[3–5]

Trigger factors are pointed out in SLE: immunological, infectious, and viral disorders, chemical substances, radiation, and certain medications.[2] Each one of them plays a fundamental role in the maintenance of an inflammatory process resulting in T-lymphocytes hyperreactivity that stimulates B lymphocytes to increase the production of autoantibodies, the main element that causes affection and damage in subjects with SLE.[6]

SLE presents a wide variety of clinical manifestations. It not only affects the musculoskeletal system but can cause damage and dysfunction in other organs and systems. Systemic involvement includes cardiovascular, respiratory, renal, neurological, ocular, digestive, and urogenital damage, among others.[7] Disease complications are more significant since they occur mainly in young patients of childbearing age.[2] The presence of clinical manifestations and complications constitute elements that affect the perception of health-related quality of life (HRQoL). Recent studies show growing interest in the study of the HRQoL of patients with immunological diseases and the factors that affect it.[8,9] Nonetheless, in Ecuador, research aimed at identifying the perception of HRQoL is not frequent.

Considering the wide variety of clinical manifestations and complications of SLE, their repercussion on the perception of HRQoL by the patients, and the scarcity of studies in Ecuador related to this topic, we decided to carry out this research, to determine the perception of HRQoL by patients with SLE.

Methods

A basic investigation was carried out that included a descriptive and correlational design, cross-sectional, and mixed approach. The universe consisted of 143 patients diagnosed with SLE according to the American College of Rheumatology criteria, between September 2015 and July 2020. To calculate the sample size, the formula in defined populations was used:

none $Z2 \times p \times q \times N$
none $n = \overline{}$
none $E2\ (N - 1) + Z2 \times p \times q$

The nomenclature is as follows:

- n = sample
- Z = confidence percentage
- E = error percentage
- p = positive variability
- N = population
- q = negative variability

Subsequently, it was determined that the sample was made up of 127 subjects. For its conformation, the simple random sampling method was used to guarantee that all patients had the same possibility of participating in the investigation. Enrolled patients met both inclusion and exclusion criteria defined for the study.

Inclusion criteria

- Patients over 20 years, with a diagnosis of SLE according to the American College of Rheumatology criteria
- Patients who expressed, by signing the informed consent, their desire to participate in the research

Exclusion criteria

- Patients diagnosed with SLE under 20 years of age
- Pregnant women diagnosed with SLE
- Patients who agreed to sign the informed consent as an indicator of their desire to participate in the research.

For research development, three variables were defined: general characteristics, which included five subdimensions (age at diagnosis, sex, ethnic self-identification, occupation, and educational level); general features of the disease with four subdimensions (time of diagnosis of the disease, presence and type of comorbidities, and pharmacological adherence); and perception of quality of life, which included the results of the questionnaires used in the research.

Five instruments were used to collect information; the first was a questionnaire designed specifically for the study, which was submitted to the criteria of seven experts; after the second round of review, they issued a positive criterion for its application. The questionnaire consisted of a total of 13 questions, aimed at obtaining information related to patient and disease general characteristics. Before its definitive application, a pilot test was carried out on 10 patients to identify and solve possible semantic conflicts.

The other instruments used were the Morisky–Green[10] test to identify therapeutic adherence, the Short Form 36 (SF-36) questionnaires to determine the perception of HRQoL, lupus activity (SLEDAI), and organic damage (Systemic Lupus International Collaborating Clinics - American College of Rheumatology (SLICC-ACR index).

SF-36 is a generic questionnaire, validated in Spanish, that measures relevant generic health concepts by age, disease, and treatment groups, based on terms of physical and psychological functioning. The questionnaire measures eight dimensions: physical function (physical limitations), physical role (interference in work and daily activities), body pain (pain intensity and its effect on activities), general health (personal assessment of health), vitality (feeling of energy), social function (interference with usual social life), emotional role (interference with work or other daily activities), and mental health (depression, anxiety, emotional, and behavior control). The general score ranges from 0 to 100 points, where the higher the score obtained, the HRQoL of the assessed patients is better. In the current investigation, version 2 of the questionnaire was used.[1,2]

The Morisky Green test is a widely used instrument to determine the attitude and behavior of patients towards the therapeutic scheme prescribed. It analyzes four questions with a dichotomous answer option and several final combinations. However, only one combination of answers is correct (No-Yes-No-No). The purpose is to measure pharmacological adherence and only those who answer the correct sequence of answers are considered adherent.[10]

The SLEDAI index is an instrument used to quantify disease activity using clinical and laboratory elements. The instrument evaluates 24 items that are grouped into four topics. The presence of neurological, vascular, musculoskeletal, renal, hematological, cutaneous, pleuropericardic, immunological, and systemic manifestations is determined. Each item is scored considering the presence of lupus activity at the time of evaluation or in the last 10 days. The overall score of the questionnaire fluctuates between 0 and 105 points and the disease activity is classified depending on the score, as follows[1,2]:

- Remission (0 points)
- Mild (1–5 points)
- Moderate (6–10 points)
- High (11–20 points)
- Very high (>20 points).

The SLICC-ACR index was developed by Gladman et al. in 1996 and focuses on determining the organic damage secondary to disease activity. The index is made up of 39 items grouped into 12 dimensions. Each item is scored depending on the presence or absence of certain damage at least 6 months before assessment. The score can range from 0 (absence of organic damage) to 47 (severe organ damage); a score of 1 is considered as damage; the higher the score, the greater the damage, and the more unfavorable prognosis.[1–3]

Collected information was processed automatically with the statistical package SPSS (version 20.5 for Windows). Absolute frequencies and percentages were determined for qualitative variables and measures of central tendency and dispersion for quantitative ones. The confidence level was determined at 95% with a margin of error of 5% and statistical significance set at p-value ≤ 0.05. Results were expressed through tables to facilitate understanding.

During research development, the standards and procedures stipulated in the Declaration of Helsinki II for conducting research in humans were considered. All patients were previously informed of the objectives and methods of the study and were only included in the sample after informed consent was obtained. Obtained data were treated with complete confidentiality and only used for research purposes; no personal information of any patient was provided. Participation in the study was voluntary and patients had the opportunity to withdraw if they considered necessary, without demeriting the care provided. All information in the database was destroyed after the final report of the investigation was performed.

Results

The analysis of the general characteristics of the patients included in the study (Table 1) showed an average age at diagnosis of 32.83 years (SD 16.17) with a female predominance (118 cases; 92.91%), compared to only nine males (7.09%). On the other hand, 61.42% of the cases defined themselves as mestizo, while 57.48% were engaged in home duties. According to the educational level, there was a high-school preponderance (53.54%), followed by elementary (41.73%).

Table 2 shows the results of the analysis of the general characteristics of the disease: patients with a diagnosis between 1 to 5 years (69.29%) predominated; 75.59% of them presented at least one associated comorbidity: fibromyalgia (51.04%), arterial hypertension (37.50%), and hyperthyroidism (30.21%) were the most common. Similarly, 80.31% of the subjects were classified as pharmacological adherents, based on the Morisky–Green test responses.

Table 3 depicts the analysis of the perception of HRQoL in terms of patient and disease general features. It is observed that females had a better average perception of HRQoL (61.02 points) than males (59.03 points). In females, the dimensions with the best results were the physical role (67.59 points) and social function (62.69 points), while those with the lowest scores were the emotional role (57.84) and physical function (59.31). In males, the emotional role stood out positively (65.39 points), while vitality was negative (52.21 points).

Regarding the time of evolution of the disease, the longer it was, the lower the general mean scores of HRQoL perception were. Thus, patients with SLE evolution time of less than 1 year reached a general mean of 67.04 points, those between 1 and 5 years reached a mean of 61.81 points, while cases with evolution greater than 5 years only reached a mean HRQoL perception score of 56.47 points. In this sense, vitality stands out as the dimension with the highest score (68.13 in patients with less than 1 year of evolution) and as the one with the lowest average score (51.42) in patients with more than 5 years of evolution (Table 3).

Analysis of the mean HRQoL perception score according to the presence of comorbidities and pharmacological adherence showed better HRQoL in patients without comorbidities (62.43 points) and with pharmacological adherence (60.89 points), compared to the cases that reported associated comorbidities (57.63 points) and those who did not adhere to the medication (55.36 points), respectively (Table 3).

The SLEDAI results showed a predominance of patients with SLE and mild disease activity (50.39%), data that showed statistical significance, followed by patients with moderate disease activity (31 cases; 24.41%; $p = 0.076$), and patients on remission (15 cases; 11.81%, $p = 0.088$). Twelve cases (9.45%) with high clinical activity and five patients (3.94%) with very-high clinical activity were identified. In general, 62.20% of the subjects showed mild activity or remission; the remaining 37.80% presented moderate and very-high activity according to SLEDAI (Table 4). The results of the SLICC showed a predominance of patients with mild damage, followed by moderate and absence of damage, results that did not show statistical significance.

When analyzing the result of the Pearson correlation between the SLEDAI and the SF-36 scores, a strong negative correlation was found (−0.83), with a p-value = 0.01, meaning that as the clinical activity of SLE increases, the scores of the HRQoL questionnaire decrease.

Discussion

The results of the investigation, regarding the general characteristics of the patients, coincide with other publications: the predominance of female patients has been reported by Guibert et al.,[11] Gil et al.,[7] and Solis et al.[6] Several hypotheses try to explain this preponderance, and the common element in all these theories is the participation of hormonal disorders that affect the functionality of the immune system, which generates an increase in the production of autoantibodies and favors tissue damage. Another element reported in the literature is the involvement of women of childbearing age.[2] Solis et al.[12] described age between 15 and 49 years as the highest frequency of presentation of the disease. This age range not only represents the increase in the incidence of SLE but also has the greatest impact on the HRQoL of patients since this is precisely these age range in which full body functions are reached.[13]

Another common element in patients with SLE is the presence of associated comorbidities. Different investigations report cardiovascular, neurological, renal, or respiratory as the most common in the course of the disease[4,6,14]; these constitute a risk factor for overlapped complications that generate disease activity that can be life-threatening. Coronado et al.[15] concluded that the presence of arterial hypertension and diabetes mellitus constitute a factor that induces metabolic imbalance that causes tissue damage and alterations of the immune system, including the differentiation of T lymphocytes into the Th1 subtype, which augments lupus clinical activity.[16,17]

A positive result was the high percentage of pharmacological adherence, a fundamental element to achieve control of the clinical activity of the disease, with a high influence on reducing the risk of associated complications and death. Solis et al.[18] described the relevance of insisting on the creation of healthy habits in patients with rheumatic diseases, among which pharmacological adherence stands out as a central element of disease control.

Additionally, Prados et al.[19] described pharmacological adherence as one of the elements that can affect the clinical activity of SLE and reported that to achieve adequate control of disease activity, it is necessary to maintain stable values of medication that guarantee the stability of immune sys-

Table 1 – Distribution of patients diagnosed with SLE, according to general characteristics.

General characteristic	Total sample of 127 patients with SLE		
	Frequency	%	*p
Average age of diagnosis of the disease (years)	32.83 years SD 16.17		
Sex			
Male	9	7.09	----
Female	118	92.91	----
Occupation			
Students	6	4.73	0.095
Housewives	73	57.48	0.043
Workers	29	22.83	0.077
Unemployed	8	6.30	0.094
Retirees	11	8.66	0.091
Educational level			
Illiterate	0	0.00	----
Elementary	53	41.73	0.058
High-school	68	53.54	0.047
Higher	6	4.73	0.095
Ethnic self-identification			
Whites	32	25.20	0.075
Mestizo	78	61.42	0.038
Blacks	6	4.73	0.095
Indigenous	11	8.66	0.091

Source: SF-36 questionnaire.[2]

SD, standard deviation; SLE, systemic lupus erythematosus.

* $p \leq 0.05$.

Table 2 – Distribution of patients diagnosed with SLE, according to disease characteristics.

Disease characteristic	Total sample of 127 patients with SLE		
	Frequency	%	*p
Time of diagnosis of the disease			
Under 1 year	13	10.24	0.09
From one to 5 years	88	69.29	0.030
More than 5 years	26	20.47	0.079
Presence of comorbidities			
Yes	96	75.59	----
No	31	24.41	----
Type of associated comorbidities	$n = 96$ with comorbidities		
Arterial hypertension	36	37.50	0.062
Ischemic heart disease	13	13.54	0.088
Hypothyroidism	29	30.21	0.06
Diabetes mellitus	21	21.88	0.078
Fibromyalgia	49	51.04	0.049
Sjögren’s syndrome	17	17.71	0.082
Pharmacological adherence			
Adherent	102	80.31	----
Non-adherent	25	19.69	----

Source: SF-36 questionnaire.[2]

SD, standard deviation; SLE, systemic lupus erythematosus.

* $p \leq 0.05$.

Table 3 – Distribution of patients according to means of perception of HRQoL and general characteristics of the patients and of the disease.

General characteristics of the patients and the disease	Total sample of 127 patients diagnosed with SLE									Overall score (mean)
	Physical function	Physical role	Body pain	General health	Vitality	Social function	Emotional role		Mental health	
Sex										
Male	62.42	60.11	59.29	61.24	52.21	59.86	65.39	53.35		59.23
Female	59.31	67.59	58.85	62.63	59.67	62.69	57.84	59.61		61.02
Time of diagnosis of the disease										
Under 1 year	67.32	65.43	68.08	66.89	68.13	70.16	63.52	66.75		67.04
Between 1 and 5 years	65.45	65.09	62.18	62.39	61.06	62.34	58.46	57.49		61.81
More than 5 years	58.78	60.47	61.03	59.86	51.42	57.83	52.21	50.19		56.47
Presence of comorbidities										
Yes	58.87	58.06	59.34	58.11	59.56	56.38	57.63	56.43		58.05
No	63.12	60.19	62.16	63.42	66.36	61.51	62.49	60.21		62.43
Pharmacological adherence										
Adherent	62.07	59.49	61.57	63.48	64.69	63.28	60.89	61.35		62.10
Non-adherent	56.37	56.04	57.03	57.41	56.45	56.02	55.36	55.93		56.33

Source: SF-36 questionnaire.[2]

SLE, systemic lupus erythematosus.

Table 4 – Distribution of patients according to the clinical activity of SLE according to SLEDAI results.

Clinical activity according to SLEDAI	Total sample of 127 patients with SLE		
	Frequency	%	*p
Remission	15	11.81	0.088
Mild activity	64	50.39	0.049
Moderate activity	31	24.41	0.076
High activity	12	9.45	0.09
Very-high activity	5	3.94	0.096

Source: SF questionnaire.[2]

SLE, Systemic lupus erythematosus.

* $p \leq 0.05$.

tem functioning. Such stability relies fundamentally on the decrease in the production of proinflammatory cytokines and autoantibodies.[20]

The application of the SF-36 questionnaire allows the identification of the perception of HRQoL in subjects with SLE. The general scores showed an average perception of HRQoL, being slightly higher in females compared to males. Multiple studies report this generic instrument as one of the most frequently used to determine the perception of HRQL in these patients.[21]

It is described that even though SLE predominantly affects females, its activity is usually more severe in males, which determines the worst perception of this group of patients.[2] In this sense, Hernández et al.[22] also described a perception of lower HRQoL in males diagnosed with SLE. Although no consensus hypothesis explains this type of result, a certain protective role of estrogens, whose greater blood volume in females would be the main suggested explanation.

The result obtained for a mean HRQoL perception is like other studies.[1,3] This result can be interpreted by the wide range of clinical manifestations and complications described during the clinical course of the disease. The impact on HRQoL is magnified by the age of onset of the disease and the disability that it can represent to carry out activities of daily living.[18]

Similarly, mean HRQoL perception scores were obtained in each of the dimensions or items investigated, which coincides with other published studies. However, it is important to point out that the specific affection of each one of the dimensions of the questionnaire depends, according to the opinion of the authors, on the expectations, activities, and points of view of each patient, so they may vary from one study to another.

Obtained results allow us to identify that the increase in disease evolution time, the presence of associated comorbidities, and pharmacological non-adherence are factors that condition a decrease in the perception of HRQoL: the longer the disease evolution time, the greater the cumulative damage and affection of patient health status. Regarding the presence of comorbidities, these affect the functioning of different organs and systems and enable an increased risk of appearance of complications; all the aforementioned increases in subjects who do not have pharmacological adherence.

Clinical disease activity (SLEDAI) showed a predominance of patients in remission or with mild activity. This result is important since there is evidence that the greater the control of the clinical activity of the disease, the lower the risk of complications. Concerning cumulative damage (SLICC), the result is difficult to compare with other investigations, since it depends on several factors, some of them already analyzed, such as the time of evolution of the disease, the presence of associated comorbidities, and pharmacological adherence, among others. It is important to monitor clinical, immunological, and hematological elements that guarantee the knowledge of the functioning of target systems such as cardiovascular, renal, and neurological, among others.[2,4,23]

The determination of the perception of HRQoL in patients with SLE should be a permanent element in each of the follow-up consultations. It would be advisable to include the determination of negatively influencing factors or conditions, such as the clinical activity of the disease, associated comorbidities, and pharmacological adherence, so that organic damage can be minimized during the disease course (SLICC).

Conclusions

Mean HRQoL perception scores were obtained in patients with SLE. The increase in the time of evolution of the disease, the presence of associated comorbidities, and non-pharmacological adherence were variables that determined a decrease in the mean HRQoL perception scores. There was a strong negative correlation between the results of the SLEDAI and the perception of HRQoL.

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Conflicts of interest

The authors declare the absence of any conflict of interest.

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