- *Basic Research*

Effect of Self-Care Guidelines on Health Outcomes and Self-Efficacy among Patients with Systemic Lupus Erythematosus

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Abstract

Background: Systemic Lupus Erythematosus is a chronic autoimmune disease. In addition to various clinical manifestations, it has spiritual, psycho-social and economic consequences. Self-care is crucial for managing lupus erythematosus, as patients can improve their prognosis by learning about the illness and closely monitoring their health with care providers. **Aim:** The study was aimed to evaluate the effect of self- care guidelines on health outcomes and self-efficacy among patients with systemic lupus erythematosus. **Design:** A quasi-experimental design was utilized. **Setting:** This study was conducted at Rheumatology unit, affiliated to South Valley University Hospitals. **Subjects:** A purposive sample of 150 patients diagnosed with systemic lupus erythematosus. **Tools:** Data were collected using four tools: **Tool (I):** A structured interviewing questionnaire**, Tool (II):** Systemic Lupus Erythematosus Assessment Tool, **Tool (III):** Lupus Patient Reported Outcomes: (Lupus PRO) and **Tool (IV):** General Self Efficacy Scale-GSE. **Results:** There was a highly statistical significance difference between total mean knowledge scores, as well as total level of self-care reported practice and self-efficacy at pre, post and follow up after implementation of the self-care guidelines among patients with systemic lupus erythematosus. **Conclusion**: There was a large effect size of self-care guidelines on patients' health outcomes and self-efficacy at pre, post and follow-up phase after implementation of self-care guidelines. **Recommendations**: Ongoing educational programs for patients with SLE in order to enhance their health status.

Keywords: Health Outcomes, Self-Care guidelines, Self-efficacy, Systemic Lupus Erythematosus.

Introduction:

Systemic Lupus Erythematosus (SLE, or lupus) is a major public health issue. It is a chronic autoimmune illness in which the immune system targets normal human tissues as if they were alien, producing inflammation and tissue destruction throughout the body. It is distinguished by recurrent flare-ups of severe symptoms affecting any organ, which can lead to potentially fatal consequences **(Albano & Gallicchio, 2023)**.

The specific aetiology of lupus is uncertain. A person who gets lupus most often inherits the risk from one or both parents and then develops the illness when exposed to a trigger. Being exposed to sunlight, being sick with an illness, having surgery, or being pregnant can all be triggers **(Choi & Costenbader, 2022)**. Skin rashes, arthralgia, and tiredness are common symptoms; nevertheless, SLE can advance to significant organ involvement and end-stage renal failure. SLE patients have periods of low or no disease activity (remission) and times of increasing activity (flares) **(Ameer et al., 2022)**.

Self-care guidelines are interventions that aim to provide patients with practises that allow them to participate and take responsibility in disease management in order to function optimally. These practises include acquiring knowledge and a combination of independent sign / symptom monitoring, medication management, enhancing problem-solving and decision-making skills for medical treatment, managing and changing physical activity, dietary habits, and smoking behaviour (**Mohamed et al., 2020**).

Self-efficacy is a confidence strength that is essential for self-management behaviour, allowing individuals to effectively regulate the main SLE-related symptoms. It has been demonstrated to be significant in connection to human functioning in a variety of domains, including mental and physical health, human development, dealing with environmental risks, and burglary. Self-management entails a continuous series of behavioural choices and decisions. These choices and decisions are heavily influenced by self-efficacy expectations. Interventions to improve self-management behaviour and health functioning should focus on increasing self-efficacy expectations **(Ugarte-Gil et al., 2023)**.

Previous research revealed that education and counselling provided to patients and their families had a significant impact on patient outcomes and improved self-efficacy, which is critical in illness treatment. As SLE treatment progresses, patients are required to

participate in self-care regimens to regulate their symptoms, reduce flares, and reduce comorbidities. Proper self-care lowers mortality and disability, improves quality of life, and reduces health-care costs. As a result, self-care recommendations are an essential component of the standard of care for chronic illness (**Twumasi et al., 2020**).

Nurses can play a significant role in the treatment of SLE, particularly during periods of illness aggravation. Because the nurse assists patients in coping with the condition in their daily lives, educates them on how to deal with lupus symptoms, reduces SLE exacerbations, and offers comprehensive health education regarding lifestyle modifications (**Elmetwaly et al., 2021**).

The nurse assists the patient and family by providing the required assistance, emotional support, and educational activities related to lifestyle and rehabilitation to enhance their quality of life. Avoiding overexposure to sunlight, managing stress, quitting smoking, and eating a diet low in saturated and trans fats are all significant lifestyle changes (**Sumpter et al., 2022 and García et al., 2023**).

Systemic lupus erythematosus has a detrimental impact on many elements of a patient's life, including mental health, quality of life, and everyday functioning, which can lead to lower employment rates and a significant financial burden. According to prior research, patients with a high degree of self-care may have better health outcomes; thus, the patient must learn self-care knowledge and abilities, as well as identify appropriate strategies to control surrounding settings, in order to maintain optimal health. Because the major causes of mortality from SLE are its consequences, such as end-stage renal disease and cardiovascular disease, rather than the illness itself (**Gomez et al., 2021**).

Significance of the study:

SLE is associated with high morbidity, death, and expense for both the individual patient and society. When compared to whites, African Americans have a 3- 4 times higher prevalence of lupus, a higher risk of getting lupus at a younger age, and lupus-related disease activity, organ damage, and death. Evidence-based self-care programmes that include both social support and health education have been shown to lower pain, enhance function, and postpone impairment in lupus patients (**Tanaka et al., 2022**).

Systemic Lupus Erythematosus is a difficult condition to diagnose, treat, and manage. In Egypt, it has been reported that around 85 patients per month are brought to the rheumatology department at Cairo University Hospital with various indications and symptoms (**Sedky et al., 2023**). SLE is a potentially fatal autoimmune rheumatic illness that can affect nearly every organ system. SLE has a negative impact on many facets of the patient's life. In the industrialized world, the prevalence of SLE is 24 per 100,000 people. Furthermore, few epidemiological studies from Egypt have been published, with small sample sizes and no data from several geographic regions of the nation provided (**El Saman et al., 2020**).

A thorough awareness of the condition will enable patients to recognize how to comply with therapy, maintain optimal self-care, and adhere to safeguards that will aid in reducing the predicted problems. As a result, patients with SLE require nursing education to increase their awareness of their condition and help them overcome systemic difficulties (**Sedrak et al., 2020**).

In Egypt, SLE presented a wide range of clinical and immunological symptoms; the total estimated prevalence of adult SLE in Egypt was 6.1/100,000 population (1.2/100,000 males and 11.3/100,000 females) (**Gheita et al., 2021**). Furthermore, from the first of January 2022 to the end of December 2023, 245 patients were hospitalized at South Valley University Hospitals in Egypt owing to SLE according to (**Annual Statistic of South Valley University Hospitals, 2023**). The study's scope is to reduce morbidity, mortality, financial costs, and the duration of hospital stay. Therefore, the aim of this study was to evaluate the effect of self- care guidelines on health outcomes and self-efficacy among patients with systemic lupus erythematosus.

Aim of the Study:

This study aimed to evaluate the effect of self-care guidelines on health outcomes and self-efficacy among patients with systemic lupus erythematosus.

Operational definition:

Health outcomes: They are consequences of health care provision and results of self-care guidelines that are measured by the systemic lupus erythematosus assessment tool, which involves knowledge in relation to the SLE assessment tool and the SLE self-care reported practices assessment tool. In addition to lupus patient-reported outcomes questionnaire.

Hypothesis:

H_1: The total mean score of knowledge and self-care reported practice regarding SLE will expect to be improved at post and follow-up implementation of self-care guidelines as compared to pre implementation of self-care guidelines among patients with SLE.

H_2: There will be an improvement in the total mean score of lupus patient reported outcomes (Lupus PRO) at post and follow-up implementation of self-care guidelines among patients with SLE.

H_3: Self-efficacy level will expect to be higher post and follow-up implementation of self-care guidelines as compared to pre implementation of self-care guidelines among patients with SLE.

H_4: There will be a large effect size of self-care guidelines on patients' health outcomes and self-efficacy at pre, post and follow-up phase after implementation of self-care guidelines.

Subject and Methods

Research Design

This study utilized a quasi-experimental research design.

Setting

The study was carried out at South Valley University Hospitals' affiliated rheumatology department.

Subjects

Using a purposive technique, 150 systemic lupus erythematosus patients who met the inclusion criteria—adults who were conscious, between the ages of 20 and 55, of either gender, had not previously taken part in any SLE education program, and were willing to participate in the study—were selected for the study. A statistical

equation was used to calculate the sample size and total population size for the 245 people with SLE who were diagnosed in the previous year (2022) based on the flow rate discovered through the statistical analysis of South Valley University Hospitals **(Thompson, 2012)**.

$$n = \frac{N \times p\,(1 - p)}{[(N - 1) \times (d^2 \div Z^2) + (p\,(1 - p))]}$$

n=Sample size= 149.9 $\sim$ 150
N= Total society size = 245
D= Error percentage= (0.05).
P= Percentage of availability of the character and objectivity (Probability) = (50%).
Z= The corresponding standard class of significance (Confidence level) 95%= (1.96).

Tool of Data Collection:

To accomplish the aim of the study, the researchers used four tools to collect data.

Tool (I): A structured interviewing questionnaire: it was used to assess data regarding demographic characteristics and health related data. After reviewing pertinent and recent related literature and research studies based on **Mohamed et al., (2020),** the researchers created and developed it, which was then written in straightforward Arabic. It was further divided into the following two sections:

 1st part: Demographic characteristics among the studied patients with SLE: There were closed ended questions about age, gender, marital status, level of education, place of residence, occupation, and monthly income as well as other demographic details for the SLE patients under study.

2nd part: It was curious about health-related data such as family history of systemic lupus, relation, duration of the disease, and other chronic diseases in addition to previous hospitalization.

Tool (II): Systemic Lupus Erythematosus Assessment Tool: It was adapted by the researchers based on **Elsayed & Mesbah, (2018)** and **Mohamady et al., (2022)**. It was served to assess knowledge and self-care reported practices in relation to SLE. Moreover, it was split into the following two parts:

1ˢᵗ part: Knowledge in relation to SLE Assessment Tool: It was devoted to assessing patients' knowledge regarding SLE. There were closed-ended questions in it. (16 multiple choice and 6 true or false questions). The questions covered areas such as function of the immune system, SLE meaning, causes, types, high risk groups, clinical manifestations, diagnostic measures, medical treatment, nursing management, complications, nutrition, body weight, smoking, exercise, reactional activities, and stress management through (Pre, post & follow up implementation of the self-care guidelines). This tool consisted of 22 items with a total grade 22. One grade was given for correct answers and zero grades were given for wrong answers. Patients' responses were calculated in the scoring system. The scoring system is displayed in the following table.

Knowledge regarding SLE				
No of items	**Range**	**Poor** < 50 %	**Average** ≥ 50% < 75%	**Good** ≥ 75 %
22	0-22	0-10	11-16	17-22

2ⁿᵈ part: SLE Self Care Reported Practices Assessment Tool: it handled clients' self-care practices. There were three dimensions to it with **(18)** subitems. **The first dimension** included risk management related practice which involved **(8)** items related to ocular care, skin care, oral ulcers, dental care, hair loss, pain, fatigue, and physical inactivity. **The second dimension** embraced treatment and follow up related practice, which involved **(4)** items related to adherence with prescribed medication time, dose, follow up time, and regularly performing prescribed labs.

The third dimension covered life-style related practice which involved **(6)** items related to nutrition, body weight, smoking, exercise, reactional activities, and stress management. This tool consisted of **(18)** items with a total grade of **(36)**. The tool used a 3-point Likert Scale (always, sometimes, and never), in which these were respectively scored 2, 1, and 0. The mean score was calculated by adding up these scores and dividing the result by the number of items. The means and standard deviation were calculated after these scores were converted into a percent score. The scoring system is displayed in the following table.

SLE Self Care Reported Practices Assessment Tool				
No of items	**Range**	**Poor** < 50 %	**Average** ≥ 50% < 75%	**Good** ≥ 75 %
18	0-36	0-17	18-26	27-36

Tool (III): Lupus Patient Reported Outcomes: (Lupus PRO): It was adopted from (**Jolly et al., 2012**) to measure both health-related quality of life (HRQoL) and non-health-related quality of life (NRQoL) aspects pertinent to SLE disease. Additionally, it was used to evaluate the effect of lupus or its treatment on patients' health, quality of life, and the medical care that the patient received in the past 4 weeks. This tool consisted of **(43)** items with a total grade **(172)**. The Lupus PRO uses a 5-point Likert response scale, with 0 denoting never or not applicable, 1 denoting A little of the time, 2 denoting Some of the time, 3 denoting Most of the time, and 4 denoting All the time. Additionally, some items' reverse scoring is regarded as a negative item. Each item's grades were added up, and the result was a percent score. The Lupus PRO domains and scoring system are displayed in the table below.

Lupus Patient Reported Outcomes						
Domains	**Reverse Coding**	**No of items**	**Range**	**Low** < 50 %	**Moderate** ≥ 50% < 75%	**High** ≥ 75 %
Lupus symptoms	Yes	3	0-12	0-5	6-8	9-12
Cognition	Yes	2	0-8	0-3	4-5	6-8
Lupus Medications	Yes	2	0-8	0-3	4-5	6-8
Procreation	Yes	2	0-8	0-3	4-5	6-8
Physical health	Yes	5	0-20	0-9	10-14	15-20
Pain vitality	Yes	5	0-20	0-9	10-14	15-20
Emotional health	Yes	6	0-24	0-11	12-17	18-24
Body image	Yes	5	0-20	0-9	10-14	15-20
Desires-goals	Yes	4	0-16	0-7	8-11	12-16
Social support	No	2	0-8	0-3	4-5	6-8
Coping	No	3	0-12	0-5	6-8	9-12
Care satisfaction	No	4	0-16	0-7	8-11	12-16
Total	Mixed	43	0-172	0-85	86-128	129-172

Tool (IV): General Self Efficacy Scale-GSE:

It was revised by **Warner et al. (2011)** and adopted from **Schwarzer & Jerusalem (2010)**. It was a psychometric scale that was created to evaluate perceived self-efficacy in order to forecast how well people would cope with day-to-day difficulties as well as with the challenges of adapting to stressful life events and illnesses like SLE. It had ten **(10)** items and a score of forty **(40).** According to a 4-point scale, the patients' responses to each statement were: 1 = not at all true, 2 = hardly true, 3 = somewhat true, and 4 = exactly true. The responses for all ten **(10)** items were added up to create a final score with a range of **(10)** to **(40),** and the scoring system was then divided into the following categories:

General Self Efficacy Scale				
No of items	**Range**	**Low** < 50 %	**Moderate** ≥ 50% < 75%	**High** ≥ 75 %
10	0-40	0-19	20-29	30-40

Operational design:

Preparatory phase

Using textbooks, articles, medical websites, periodicals, and magazines that address the subject of SLE and the role of the nurse in each stage of care, it involved a review of recent references, various studies, and theoretical knowledge of various aspects of the problems in order to develop the tools for data collection.

Validity

A jury panel of five experts from the Adult Health Nursing Department at Helwan University evaluated the tools' face and content validity using an opinion questionnaire sheet to gauge the tools' validity. Members of the jury group evaluate tools for thoroughness, accuracy, and language clarity. Corrections, additions, and/or omissions of the same items were made as a result of their advice. According to the jury group, 10% of tool modifications were carried out.

Construct validity is how well a measurement tool measures the construct it was designed to measure. Bartlett's test of sphericity was used to assess the factorability of the items and the Kaiser-Meyer-Olkin (KMO) measure to assess sampling adequacy and assess whether partial correlations between variables were small **(Shrestha, 2021).** The validity result is discussed in the following table.

Questionnaire	KMO Test	Bartlett's test of sphericity
Knowledge regarding SLE	0.988	0.000[**]
SLE Self Care Reported Practices	0.971	0.000[**]
Lupus Patient Reported Outcomes	0.894	0.000[**]
General Self Efficacy Scale-GSE	0.878	0.000[**]
Interpretation (All)	Marvelous adequate sampling for validity	Interrelationship among variables was present

Reliability

The degree to which the tools' items are correlated with one another was tested, and the reliability of the tools was assessed using internal consistency. There are two different ways to gauge internal consistency. One of the most widely used reliability statistics for gauging internal consistency is Cronbach's alpha coefficient, which is the first one. The second statistic is split half reliability, which is determined by dividing questions equitably by item numbers. The two halves of the instrument are then correlated using Pearson's r or Spearman's rho. Results for reliability are discussed in the following table.

Questionnaire	No of items	Alph Cronbach test	Split-half
1.Systemic Lupus Erythematosus Assessment Tool			
a. Knowledge regarding SLE	22	0.994	0.921
b. SLE Self Care Reported Practices	18	0.960	0.966
2.Lupus Patient Reported Outcomes	43	0.887	0.866
3.General Self Efficacy Scale-GSE	10	0.895	0.855
Interpretation (All)	Confirming excellent the internal consistency		

Ethical considerations

The South Valley University Faculty of Nursing's research ethics committee granted ethical approval (SVU-NUR-PSY-5-1-5-2023). The Ethical Committee at South Valley University's Faculty of Nursing gave its approval to a research proposal. The study adhered to accepted ethical standards for clinical research. Each participant in the study gave informed oral and written consent prior to the collection of data. Each patient was made aware of the significance and purpose of the study. They received guarantees that their privacy and anonymity would be upheld along with the freedom to leave the study at any time and without explanation. Respect was shown for morals, values, culture, and beliefs.

Pilot study:

It was done on 15 patients, (10%) of the 150 patients who were studied overall. The purpose of the pilot study was to evaluate the tools' clarity, applicability, and effectiveness. It also aims to guarantee that the study materials are straightforward, applicable, and doable. Additionally, it aids in the estimation of the time required to gather information and identify obstacles. After reviewing the patient's answers, no changes were made, and the pilot study sample was added to the overall sample.

Field work (Procedure)

After outlining the purpose of the study, the hospital director and nursing director of South Valley University Hospitals received a formal letter from the dean of the nursing faculty at South Valley University asking for permission to conduct the study. Four phases of the study were carried out: assessment, planning, implementation, and evaluation. From the beginning of May 2023 to the end of July 2023, the phases lasted three months. The South Valley University Hospitals' Rheumatology department had researchers on hand two days a week, on Sunday and Wednesday, from 9:00 am to 2:00 pm. For the pre-implementation of the self-care guidelines, the study tools took between 30 and 45 minutes to complete, and between 25 and 35 minutes for post-implementation of the self-care guidelines.

Phase I: Assessment phase

At the South Valley University Hospitals' Rheumatology department, the researchers conducted interviews with the study's participants, introduced

themselves, explained the study's purpose and procedure to each participant, and discussed the anticipated results before obtaining their informed consent. Before the self-care guidelines were implemented, the tools were filled out by the study subjects or the researchers if the subjects couldn't read or write.

Phase II: Planning phase

The researchers created a self-care guideline in accordance with the analysis of pre implementation of the self-care guidelines findings obtained during the assessment phase on identifying the actual educational needs of patients with SLE and pertinent literature. The researchers' preparation of the self-care guidelines' content was based on a review of the literature **(Elsayed & Mesbah, 2018; Mohamady et al., 2022).**

Based on the requirements of the patient being studied, the study's goals were established. As a guide for the patient, a structured booklet with illustrations was created and written in straightforward Arabic. Three phases—pre-self-care guideline, one month after the guideline's implementation, and three months later—were used to fill out and finish the study tools.

Phase III: Implementation phase

The self-care guidelines were implemented for the ten patient subgroups during this phase, and all groups received exposure to five sessions in addition to the Preliminary session. It took 45 minutes for each session, with 10 minutes for revision, 30 minutes for discussion, and 5 minutes for a summary. The researchers met the study subjects during this session, and they also formally obtained their consent to participate in the study by outlining the study's general and specific objectives, content, and method of evaluation.

The following steps were followed to develop the self-care guideline:

I: Stating general and specific objectives:

I. a. General objective of the self-care guidelines:

The overall objective was to evaluate the effect of self-care guidelines on health outcomes and self-efficacy among the studied patients with systemic lupus erythematosus.

II. b. Specific objectives of the self-care guidelines:

By the end of the self-care guidelines, the studied patients were able to:

(1) Knowledge and understanding skills; it included **(a)** Identifying function of the immune system, **(b)** Defining SLE, **(c)** Listing causes, types, and high risk group, **(d)** Enumerating clinical manifestations, **(e)** Stating diagnostic measures, **(f)** Discussing the medical treatment, **(g)** Summarizing nursing management, **(h)** Describing the most common complications, the suitable nutrition, body weight, and **(i)** Recognizing steps to maintain a healthy life style. **(2)** Intellectual skills: it included **(a)** Reporting risk management related practice, treatment and follow up related practice. **(3) General and transferable skills**: it included **(a)** Protecting and enhancing self-efficacy.

II: Planning the self-care guidelines: The self-care guidelines' content was divided into theoretical and practical sections, with five additional teaching sessions added to the initial one.

II. a. Theoretical part:

Session (1): It covered immune system function, SLE definition, causes, types, high risk groups, clinical manifestations, diagnostic measures, medical care, and nursing management.

Session (2): It covered knowledge in relation to complications, nutrition, body weight, smoking, exercise, reactional activities, stress management, and strategies for self-efficacy.

II. b. Practical part:

Session (3): It included risk management related practice that involved (8) items related to ocular care, skin care, oral ulcers, dental care, hair loss, pain, fatigue, and physical inactivity.

Session (4): It included treatment and follow up related practice, which included (4) items related to adherence with prescribed medication time, dose, follow up time, and regularly performing prescribed labs.

Session (5): It included life-style related practice that involved (6) items related to nutrition, body weight, smoking, exercise, reactional activities, and stress management. In addition to summarizing all theoretical and practical sessions.

To ensure that the stated goal of the self-care guidelines was understood and achieved, group discussion was encouraged along with ongoing feedback. Between the researchers and the patients, an open line of communication was established in order to address any concerns, reaffirm the knowledge acquired, and take the appropriate action. The researchers emphasized and summarized the crucial point in the previous session.

III: Learning environment: The self-care guidelines were conducted in the Rheumatology unit that was affiliated to South Valley University Hospitals.

IV: Teaching methods: Various methods of instruction and learning were employed, including lectures and group discussions with the aid of audiovisual materials like a PowerPoint presentation (using tab), and photographs. Additionally, posters that discussed risk management practices and lifestyle practices were used as examples.

V: Arranging the subgroup: The total sample was divided into fifteen subgroups, with 10 patients in each session for better understanding.

Phase IV: Evaluation phase

The second assessment one month and three months after the final session, the same tools (Systemic Lupus Erythematosus Assessment Tool, which consisted of Knowledge in Relation to SLE Assessment Tool & SLE Self Care Reported Practices Assessment Tool in addition to Lupus Patient Reported Outcomes and General Self Efficacy Scale-GSE) were distributed again for each patient to be answered to evaluate the effect of self-care guidelines implementation.

Administrative design:

The director of South Valley University Hospitals and the head of the rheumatology department both gave their official approvals prior to the study's execution. They received official letters outlining the purpose of the study from the South Valley University Hospitals' Faculty of Nursing.

Statistical design:

With the help of the SPSS statistical package version 25, data entry and analysis were carried out. Continuous variables were expressed as (mean SD), whereas categorical variables were expressed as numbers and percentages. In qualitative data, the association between row and column variables was examined using Chi-Square ($x2$). The mean of normally distributed quantitative variables in more than two groups was compared using the ANOVA test. The correlation between the quantitative variables was calculated using Pearson correlation.

Two-tailed p values less than 0.05 were deemed statistically significant for all tests, and p values less than 0.01 were deemed extremely significant. P-values greater than 0.05 were not regarded as significant.

Using Eta square (2), the effect size is calculated. the conceptual framework for calculating effect size. The Eta-square value ranges from 0.01 to 0.06 where the effect is deemed weak, 0.06 to 0.14 where the effect is deemed medium, and 0.14 where the effect is deemed large.

Results:

Table (1): Shows that **(54%)** of the studied patients ' ages ranged between 20- ≤ 35 years old with the Mean ±SD =36.56 ± 6.82. Additionally, majority of them were a female, with a male to female ratio= 0.1:1, married, didn't working and hadn't insufficient monthly income with the percentage of (92%, 90.7%, 81.3% & 86%) respectively. Regarding level of education, more than half **(52%)** of the studied patients held a technical institute degree. Finally, in relation to place of residence, nearly three-quarters **(73.3%)** of them were from urban areas.

Table (2): Shows that **(12%)** of the studied patients had a family history of SLE. Out of this percentage, **(66.7%)** of them had a family relation of the 2nd degree. Considering the duration of the disease, **(57.3%)** of the studied patients suffered from a disease lasting ≤ 6 months. Additionally, **(47.3% & 26.7%)** of the studied patients suffered from hypertension and had a history of previous hospitalization respectively.

Table (3): Reveals that, during the follow up implementation of the self-care guidelines, the studied patient gained a higher mean score of knowledge **(20.45 ± 3.34)**

followed by post phase **(18.57 ± 5.08),** as compared with the phase of the pre-implementation of the self-care guidelines **(5.71 ± 6.80).** Moreover, there was a highly statistically significant difference between the total mean knowledge scores pre, post and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Figure (1): Illustrates that, during the follow up implementation of the self-care guidelines, the studied patient gained a higher percentage of good knowledge **(90.7%)** followed by post phase **(80.7%)**, as compared with the pre-implementation of the self-care guidelines phase **(12.7%)**. Moreover, there was a highly statistically significant difference between the total knowledge level pre, post and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Table (4): Shows that, during the follow up implementation of the self-care guidelines, the studied patient gained a higher mean score of self-care reported practice **(32.80 ± 7.27)** followed by post phase **(31.20 ± 8.38)**, as compared with the pre-implementation of the self-care guidelines phase **(17.09 ± 10.75).** Moreover, there was a highly statistically significant difference between the total mean of self-care reported practice scores pre, post, and follow up implementation of the self-care guidelines at P value of 0.000**.

Figure (2): Illustrates that, during the follow up implementation of the self-care guidelines, the studied patient gained a higher percentage of good self-care reported practice **(82.7%)** followed by post phase **(77.3%)**, as compared with the implementation of the self-care guidelines test phase **(14%)**. Moreover, there was a highly statistically significant difference between the total level of self-care reported practices pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Table (5): Reveals that, during the follow up implementation of the self-care guidelines, the studied patient gained a higher mean lupus PRO score **(144.6 ±-13.7)** followed by post phase **(138 ± 8.1)**, as compared with the pre implementation of the self-care guidelines phase **(79.3 ± 22.7)**. Moreover, there was a highly statistically significant difference between the total mean lupus PRO score pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Figure (3): Illustrates that, during the follow up implementation of the self-care guidelines phase, the studied patient gained a higher percentage of lupus PRO **(88.7%),** followed by post phase **(87.3%)**. Moreover, there was a highly statistically significant difference between the total level of lupus PRO pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Table (6): Shows that, there was a highly statistically significant difference between the total self-efficacy pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Figure (4): Illustrates that, during the follow up implementation of the self-care guidelines phase, the studied patient gained a higher percentage of self-efficacy **(45.3%)** followed by post phase **(44.7%)**, as compared with the pre-implementation of the self-care guidelines phase **(15.3%).** Moreover, there was a highly statistically significant difference between the total level of self-efficacy pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.

Table (7): Shows that self-care guidelines regarding the care of patients with SLE had a positive large effect size on the total knowledge, self-care practice, lupus PRO and self-efficacy during pre, post & follow up implementation of the self-care guidelines among the studied patients at $\eta 2$= 0.608, 0.386, 0.760 & 0.167 respectively.

Table (8): Reveals that there was a high statistically significant positive correlation between cumulative knowledge, self-care practice, lupus PRO, and self-efficacy at r= ranged from (0.823 to 0.975) and with a P value = 0.000**.

Table (1): Percentage distribution of demographic characteristic among the studied patients with SLE (n=150)

Demographic data	N	%
Age		
20- ≤ 35	81	**54.0**
36 - ≤ 45	42	28.0
46 - ≤ 55	27	18.0
Mean ± SD	**36.56 ± 6.82**	
Gender		
Male	12	8.0
Female	138	**92.0**
Male to female ratio	**0.1:1**	
Marital status		
Single	14	9.3
Married	136	**90.7**
Level of education		
Secondary school	51	34.0
Technical institute of nursing	78	**52.0**
Bachelor's degree of nursing	21	14.0
Place of residence		
Urban	110	**73.3**
Rural	40	26.7
Occupation		
Working	28	18.7
Not-working	122	**81.3**
Monthly income		
Insufficient	129	**86.0**
Sufficient	21	14.0

Table (2): Percentage distribution of health-related data among the studied patients with SLE (n=150)

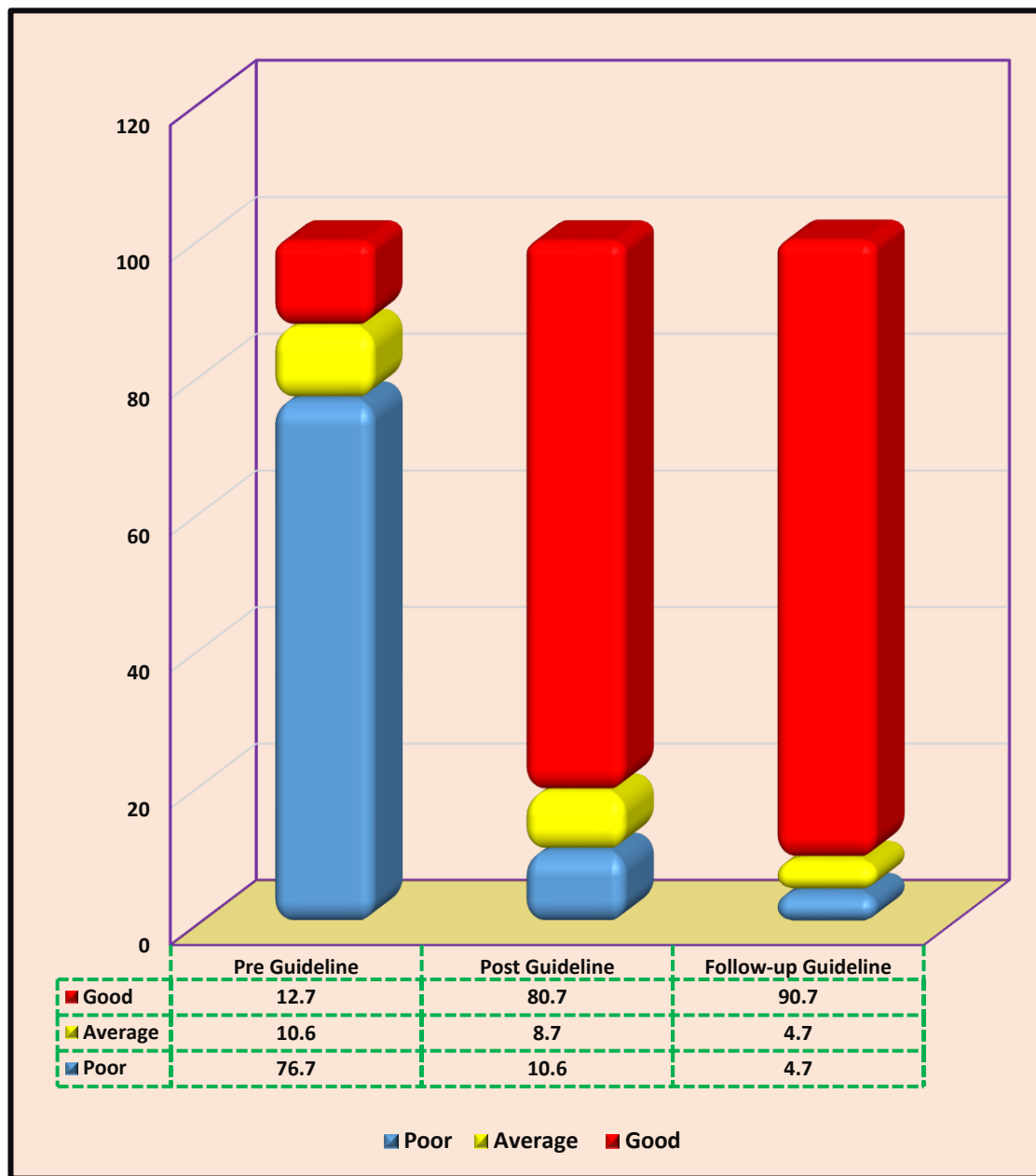| Health related data	N	%
Family history of SLE		
Yes	18	**12.0**
No	132	88.0
Relation (n= 18)		
1st degree	6	33.3
2nd degree	12	**66.7**
Duration of the disease		
≤ 6 months	86	**57.3**
>6 ≤ 12 months	64	42.7
Chronic disease		
Diabetes Mellitus	38	25.3
Hypertension	71	**47.3**
Renal disease	15	10.0
Rheumatic disease	26	17.3
History of previous hospitalization		
Yes	40	26.7
No	110	73.3

Table (3): Comparison between mean knowledge scores pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

Variables	Score	Pre- guidelines	Post- guidelines	Follow-up guidelines	F Test	P Value
		Mean ± S D	Mean ± S D	Mean ± S D		
Function of immune system	1	0.19 ± 0.391	0.90 ± 0.301	0.95 ± 0.225	277.4	0.000**
SLE meaning	1	0.26 ± 0.440	0.84 ± 0.368	0.91 ± 0.292	137.4	0.000**
Causes	1	0.23 ± 0.420	0.81± 0.391	0.88 ± 0.326	133.5	0.000**
Types	1	0.21 ± 0.411	0.89 ± 0.318	0.93 ± 0.262	213.5	0.000**
High risk group	1	0.25 ± 0.433	0.79 ± 0.411	0.86 ± 0.348	105.7	0.000**
Clinical manifestations	2	0.57 ± 0.907	1.74 ± 0.536	1.88 ± 0.365	186.1	0.002**
Diagnostic measures	1	0.27 ± 0.447	0.89 ± 0.310	0.95 ± 0.225	181.8	0.000**
Medical treatment	2	0.60 ± 0.920	1.88 ± 0.383	1.98 ± 0.140	263.3	0.000**
Nursing management	2	0.25 ± 0.667	1.82 ± 0.464	1.90 ± 0.301	516.0	0.000**
Complications	2	0.47 ± 0.849	1.81 ± 0.483	1.94 ± 0.289	289.2	0.000**
Healthy lifestyle	8	2.41 ± 1.67	6.19 ± 1.57	7.29 ± 0.999	469.1	0.000**
Total	**22**	**5.71 ± 6.80**	**18.57 ± 5.08**	**20.45 ± 3.34**	**347.5**	**0.000****

*Significant p ≤ 0.05   **Highly significant p ≤ 0.01   F Test: ANOVA Test

Figure (1): Percentage distribution of the total knowledge level pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

	Pre Guideline	Post Guideline	Follow-up Guideline
■ Good	12.7	80.7	90.7
■ Average	10.6	8.7	4.7
■ Poor	76.7	10.6	4.7

■ Poor   ■ Average   ■ Good

$\chi^2 = 247.7$, P=0.000

Table (4): Comparison between self-care reported practices pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

Variables	Score	Pre- guidelines	Post- guidelines	Follow-up guidelines	F Test	P Value
		Mean ± S D	Mean ± S D	Mean ± S D		
Risk management related practice						
Ocular care	2	0.97 ± 0.70	1.77 ± 0.628	1.79 ± 0.619	76.8	0.000**
Skin care	2	1.11 ± 0.636	1.75 ± 0.637	1.79 ± 0.619	54.8	0.000**
Oral ulcers	2	1.01 ± 0.650	1.70 ± 0.610	1.79 ± 0.619	69.7	0.000**
Dental care	2	1.08 ± 0.585	1.63 ± 0.671	1.79 ± 0.619	52.5	0.000**
Hair loss	2	0.83 ± 0.673	1.65 ± 0.667	1.79 ± 0.619	94.4	0.002**
Pain	2	0.86 ± 0.705	1.62 ± 0.672	1.72 ± 0.646	72.8	0.000**
Fatigue	2	0.97 ± 0.723	1.71 ± 0.468	1.83± 0.380	109	0.000**
Physical inactivity	2	0.99 ± 0.66	1.71 ± 0.468	1.83 ± 0.380	114	0.000**
Total	**16**	**7.81 ± 4.78**	**13.53 ± 4.47**	**14.31 ± 4.33**	**91.8**	**0.000****
Treatment and follow-up related practice						
Adherence with prescribed medication time	2	1.00 ± 0.676	1.74 ± 0.455	1.85 ± 0.355	122	0.000**
Adherence with prescribed dose	2	1.12 ± 0.694	1.78 ± 0.431	1.88 ± 0.326	99.0	0.000**
Adherence with prescribed follow up time	2	1.16 ± 0.743	1.75 ± 0.451	1.87 ± 0.341	73.8	0.000**
Regularly performing prescribed labs	2	0.99 ± 0.700	1.77 ± 0.440	1.83 ± 0.380	117	0.000**
Total	**8**	**4.27 ± 2.61**	**7.03 ± 1.67**	**7.43 ± 1.34**	**116.3**	**0.000****
Lifestyle related practice						
Nutrition	2	0.78± 0.732	1.78 ± 0.431	1.83 ± 0.380	181	0.000**
Body weight	2	0.93 ± 0.652	1.77 ± 0.440	1.85 ± 0.362	153	0.000**
Smoking	2	0.84 ± 0.686	1.78 ± 0.431	1.83 ± 0.374	176	0.000**
Exercise	2	0.72 ± 0.715	1.78 ± 0.431	1.84 ± 0.368	214	0.000**
Recreational activities	2	0.94± 0.668	1.77 ± 0.440	1.87 ± 0.341	154	0.000**
Stress management	2	0.79 ± 0.678	1.76 ± 0.444	1.86± 0.348	200	0.000**
Total of lifestyle	**12**	**5.01± 3.90**	**10.63 ± 2.58**	**11.07 ± 2.09**	**195.1**	**0.000****
Total of all dimensions	**36**	**17.09 ± 10.75**	**31.20 ± 8.38**	**32.80 ± 7.27**	**140.7**	**0.000****

*Significant p ≤ 0.05   **Highly significant p ≤ 0.01   F Test: ANOVA Test

Figure (2): Percentage distribution of the total self-care reported practices level pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)
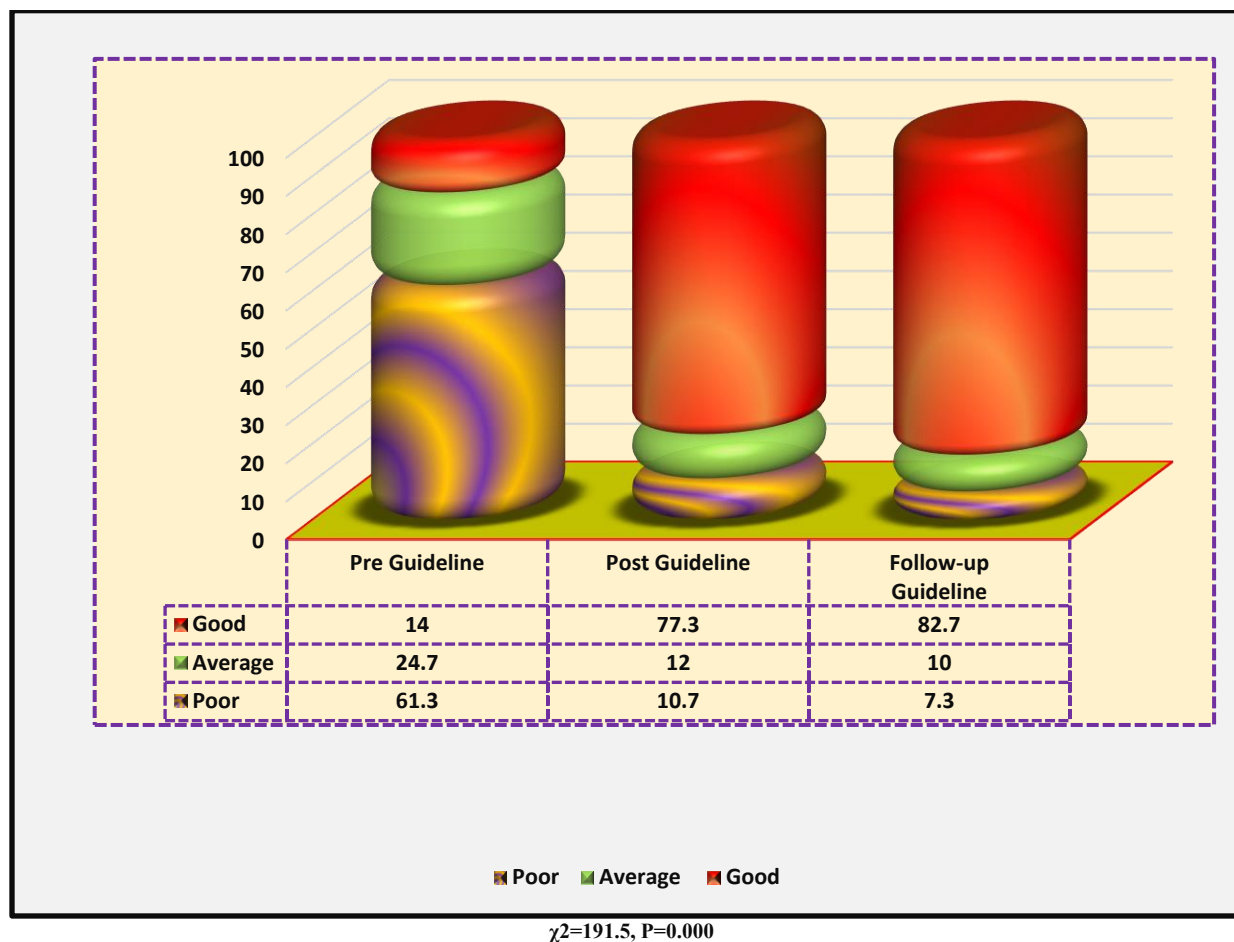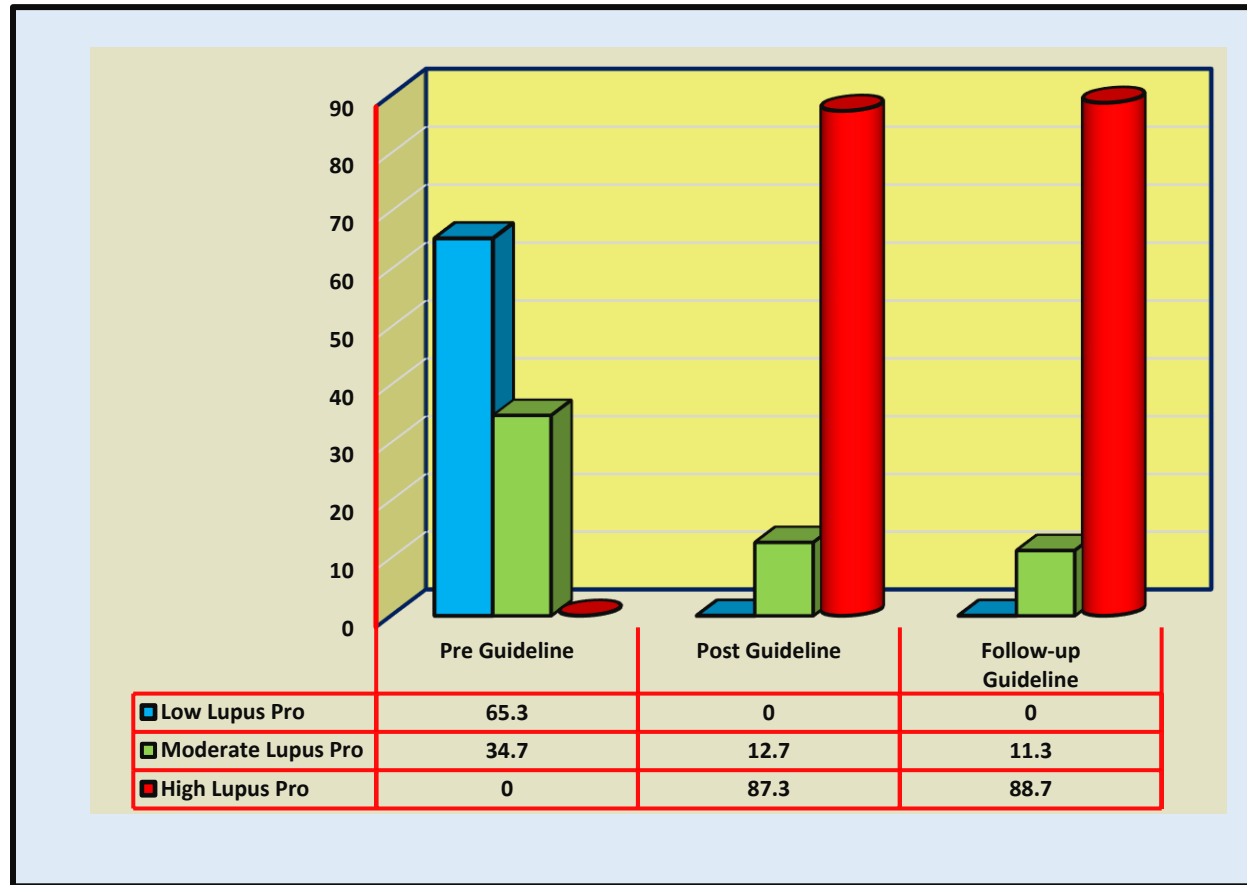

	Pre Guideline	Post Guideline	Follow-up Guideline
Good	14	77.3	82.7
Average	24.7	12	10
Poor	61.3	10.7	7.3

Poor   Average   Good

$\chi2=191.5, P=0.000$

Table (5): Comparison between mean lupus PRO score pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

Lupus PRO	Total score	Pre	Post	Follow Up	F Test	P Value
		$\overline{x} \pm SD$	$\overline{x} \pm SD$	$\overline{x} \pm SD$		
Lupus Symptoms	12	5.79 ± 2.1	10.1 ± 1.9	10.6 ± 1.2	478	0.000**
Cognition	8	2.63 ± 1.6	6.9 ± 1.6	7.1 ± 0.7	752	0.000**
Medications	8	2.83 ± 1.8	6.8 ± 1.5	7.2 ± 0.8	584	0.000**
Procreation	8	2.61 ± 1.7	6.9 ± 1.4	7.1 ± 0.6	788	0.000**
Physical health	20	10.25 ± 2.2	16.4 ± 2.4	17.0 ± 2.2	507	0.000**
Pain Vitality	20	9.39 ± 1.20	16.6 ± 2.2	17.1 ± 1.9	1298	0.000**
Emotional health	24	10.76 ± 2.2	20.6 ± 2.1	21.1 ± 1.8	1638	0.000**
Body image	20	11.59 ± 3.3	17.5 ± 1.4	17.9 ± 1.0	433	0.000**
Desires-Goals	16	8.47 ± 2.8	13.4 ± 1.4	14.0 ± 1.3	417	0.000**
Social support	8	4.28 ± 1.4	6.5 ± 1.4	7.2 ± 0.98	315	0.000**
Coping	12	7.01 ± 2.4	10.3 ± 1.9	10.9 ± 1.3	231	0.000**
Care satisfaction	8	3.78 ± 1.2	6.5 ± 1.4	7.13 ± 0.96	55	0.000**
Total	**172**	**79.3 ± 22.7**	**138 ± 8.1**	**144.6 ± 13.7**	**712**	**0.000****

*Significant p ≤ 0.05   ****Highly significant p ≤ 0.01**   **F Test: ANOVA Test**

Figure (3): Percentage distribution of the total level lupus PRO pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

	Pre Guideline	Post Guideline	Follow-up Guideline
Low Lupus Pro	65.3	0	0
Moderate Lupus Pro	34.7	12.7	11.3
High Lupus Pro	0	87.3	88.7

$\chi 2=354, P=0.000$

Table (6): Comparison between self-efficacy pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

Variables	Pre-guideline				Post- guideline				Follow Up- guideline				F Test	P Value
	1	2	3	4	1	2	3	4	1	2	3	4		
	%	%	%	%	%	%	%	%	%	%	%	%		
Solve difficult problems	36.7	43.3	18.7	1.3	20.0	33.3	43.3	3.3	18.7	34.7	42.0	4.7	16.7	0.000**
Find the means to get what I want	45.3	34.7	15.3	4.7	24.0	30.7	39.3	6.0	22.7	32.0	38.0	7.3	15.4	0.000**
Stick to my aims and accomplish my goals.	44.0	34.7	18.0	3.3	22.7	30.0	40.7	6.7	21.3	31.3	39.3	8.0	17.3	0.000**
Deal efficiently with unexpected events.	38.7	37.3	22.0	2.0	19.3	32.0	43.3	5.3	18.0	33.3	42.0	6.8	16.7	0.000**
Handling unforeseen situations.	42.0	38.7	13.3	6.0	22.0	30.7	41.3	6.0	20.7	32.0	40.0	7.3	16.6	0.000**
Solve most problems	35.3	33.3	22.0	9.3	21.3	28.7	41.3	8.7	20.0	30.0	40.0	10.0	6.35	0.002**
Being calm when facing difficulties	43.3	35.3	19.3	2.0	11.3	34.7	50.7	3.3	10.0	36.0	49.3	4.7	38.6	0.000**
Finding several solutions	37.3	36.0	21.3	5.3	10.0	34.0	41.3	14.7	8.7	35.3	40.0	16.0	29.9	0.000**
Thinking of a solution in troubling	37.3	47.3	12.7	2.7	10.7	38.7	46.7	4.0	9.3	40.0	45.3	5.3	37.7	0.000**
Handing whatever comes my way.	40.0	41.3	18.7	0.0	8.7	36.7	51.3	3.3	7.3	37.3	50.7	4.7	51.3	0.000**
Total	**35.3**	**33.3**	**22.0**	**9.3**	**8.7**	**35.3**	**41.3**	**14.7**	**7.3**	**36.7**	**40.0**	**16.0**	**23.5**	**0.000****

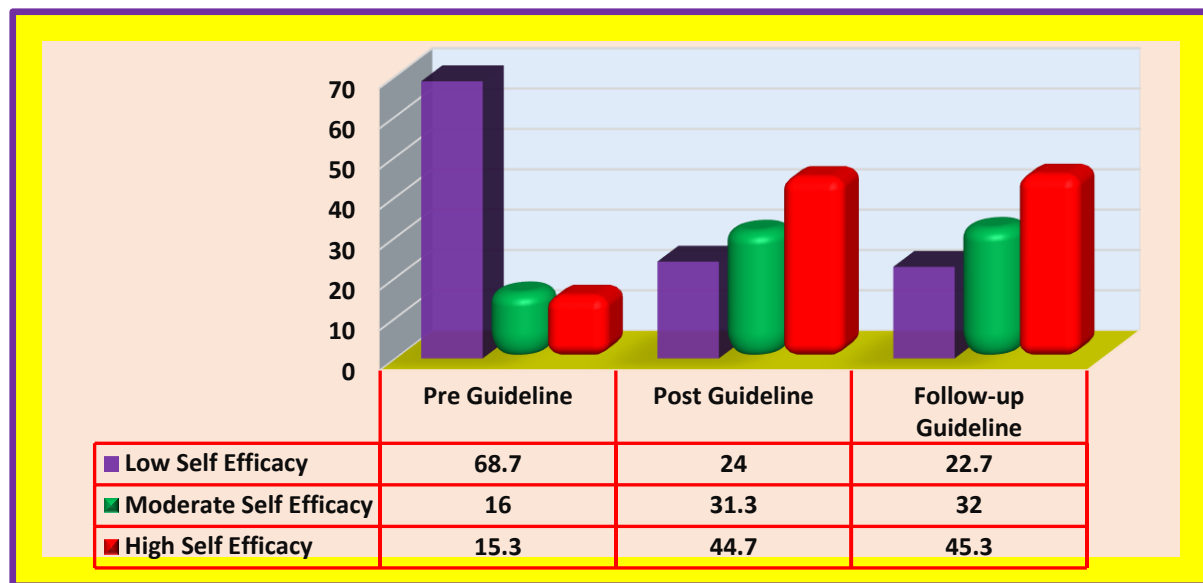**1= at all true   2= Hardly true   3= Moderately true   4= Exactly true**

*Significant p ≤ 0.05   **Highly significant p ≤ 0.01   F Test: ANOVA Test

Figure (4): Percentage distribution of the total self-efficacy level pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE (n=150)

	Pre Guideline	Post Guideline	Follow-up Guideline
■ Low Self Efficacy	68.7	24	22.7
■ Moderate Self Efficacy	16	31.3	32
■ High Self Efficacy	15.3	44.7	45.3

$\chi 2=87.7$, P=0.000

Table (7): Effect size and η2 of self-care guidelines on the total knowledge, self-care practice, lupus PRO and self-efficacy during pre, post & follow up among the studied patients with SLE (n=150)

Variables	H	η2	Effect size
Knowledge	0.780	0.608 ***	Large effect
Self-care practice	0.622	0.386 ***	Large effect
Lupus PRO	0.872	0.760 ***	Large effect
Self-efficacy	0.409	0.167 ***	Large effect

*Small effect size = 0.01 to < 0.06

**Medium effect size =0.06 to < 0.14

***Large effect size ≥ 0.14

Table (8): Correlation matrix between cumulative knowledge, self-care practice, lupus PRO and Self-efficacy among the studied patients with SLE (n=150)

Items			Cumulative (Sum of the score of Pre+ post+ Follow-up implementation of the self-care guidelines			
			1	**2**	**3**	**4**
Cumulative (Sum of the score of Pre+ post+ Follow-up implementation of the self-care guidelines	**Knowledge**	r		0.903	0.876	0.917
		P		0.000^{**}	0.000^{**}	0.000^{**}
	Self-care practice	r	0.903		0.823	0.855
		P	0.000^{**}		0.000^{**}	0.000^{**}
	Lupus PRO	r	0.876	0.823		0.975
		P	0.000^{**}	0.000^{**}		0.000^{**}
	Self-efficacy	r	0.917	0.855	0.975	
		P	0.000^{**}	0.000^{**}	0.000^{**}	

Discussion:

Systemic lupus erythematosus is an autoimmune illness in which the immune system harms affected organs, producing extensive inflammation and tissue destruction. It has the potential to harm the joints, skin, brain, lungs, kidneys, and blood vessels. SLE is a chronic condition with periods of increased symptoms followed by periods of minimal symptoms. With medication, most SLE patients can live a normal life. As a result, the current study sought to assess the impact of self-care recommendations on health outcomes and self-efficacy in individuals with systemic lupus erythematosus **(Silva et al., 2019)**.

Globally, SLE has a worldwide distribution and a wide range of natural disease evolution among different ethnic and geographic populations. The reported global prevalence of SLE varies significantly; this variation is likely due to a number of factors, including ethnicity, geographic area, income level, education, health insurance status,

level of social support, medication adherence, and environmental and occupational factors. Socio-demographic factors such as ethnicity, gender, age, access to health care, disease activity, and damage are key predictors of SLE outcome (**Mok et al., 2019**).

Part I: Demographic characteristics and health-related data among the studied patients with SLE:

Regarding the age of the studied patients, the current study results showed that, more than half of the studied patients were in the age group of 20 - ≤ 35 years with a Mean ± SD of 36.56 ± 6.82. This is known as the bearing age, and it indicates that hormones increase sensitivity to this illness during this time. This result was in accordance with **El-Zayat et al., (2022)**, whose study entitled" Effect of Telenursing Instructions on Improvement of Awareness among Systemic Lupus Erythematosus Patients" reported that more than half of the studied patients were in the age group of 20-< 35 years with a mean of 36.4 ±8.7.

On the other hand, this result disagreed with **Yu et al., (2020)**, who reported a study entitled "Trends of hospital palliative care utilization and its associated factors among patients with systemic lupus erythematosus in the United States"; found that more than half of the study patients were older than 50 years. SLE appears to develop most commonly between the ages of 20 and 39.

According to the gender of the studied patients in the current study, it was showed that females were more prevalent than males. This is in the same line with **Elmetwaly et al., (2021)**, who studied "Effect of nurse-led lifestyle intervention protocol on associated symptoms and self-efficacy among patients with systematic lupus erythematosus ", and stated that all the patients were females, and goes in the same lines with **Abd-El latifa., et al., (2018)**, whose study entitled "Effect of systemic lupus on patient's self-esteem and quality of life", and said most of the cases of SLE occur in women, frequently starting at childbearing age. This was explained by **Sanz, (2010)**, whose study entitled "Experimental reproduction of skin lesions in lupus erythematosus by UVA and UVB radiation", said that the major variation in the prevalence of lupus between men and women may be due to women experiencing the most oestrogen hormone exposure, but it is also feasible that the male hormone, androgen, may have a protective effect in lupus.

Regarding the marital status of the studied patients, the majority of them were married. From the researchers' point of view, these findings show that SLE is a long-term disability disorder that affects young patients during their productive years, and the hospital serves the surrounding rural areas with low fees. Finally, differences in results between studies could be due to differences in data collection tools and the setting at which the study was conducted.

These findings agree with **Rizk et al., (2020)**, who studied "Impact of an Education Program on Self-Care Agency and Self-Rated Abilities among Patients with Systemic Lupus Erythromatosis", and revealed that more than half of them were married, and are also, supported by **O'Riordan, et al., (2017)**, whose study entitled "Fatigue and Activity Management Education for Individuals with Systemic Lupus Erythematosus" found that all the studied patients were female and the majority were married. However, this finding, in contrast with **Hassan & Gomaa, (2018)**, whose study entitled "Effect of systemic lupus on patient's self-esteem and quality of life", whose sample showed that less than half of the sample was single, this increases the likelihood of them not marrying in the future, which lowers their self-esteem.

Concerning the level of education, the present study results showed that more than half of the studied patients had technical institute degree. This finding is in agreement with **Wageeh et al., (2020)**, study entitled "Effect of Nursing Education on Knowledge and Self Care for Patients with Systemic Lupus Erythematosus", who revealed that the majority of the subjects were educated. This result is inconsistent with the findings of **Zhang et al., (2019)**, who studied "Lack of patient education is a risk factor for disease flare in patients with systemic lupus erythematosus", and indicated that half of the group analyzed had a high level of education.

With reference to place of residence, the current study finding demonstrated that nearly three quarter of the studied patients were living in urban areas. This finding is goes in the opposite line with **Abd El-Azeem et al., (2018)**, who studied "Effect of health promotion program on quality of life for patients with systemic lupus erythematosus" and indicated that more than half of the studied samples lived in rural areas. As well, this study finding is contradicted with those of the study of **Sedrak et al., (2020)**, whose study entitled" Effect of Nursing Education on Knowledge and Self-Care for Patients' with

Systemic Lupus Erythematosus" mentioned that more than half of them were from rural areas.

According to the occupation of the studied patients in the current study, the majority of the patients are not working, and this result is in accordance with **Sedrak et al., (2020)**, reported the same. This result is similar to **El said et al., (2019)**, who clarified that half of the studied samples were unemployed in a study titled "The Effect of Implementing A protocol of Nursing Care on SLE Patients' Knowledge and Health Related Quality of Life". In addition, **Mostafa & Abd-Elrehem (2017)**, in a study titled "Self- Management Guidelines: Effect on Awareness of Patients with Systemic Lupus Erythmatosus, Egypt", who stated that the bulk of the patients were unemployed.

In concern to family history of systemic lupus erythematous, the current study found that roughly three-quarters of the studied patients didn't have a family history of systemic lupus erythematous. This finding comes into agreement with, **Elmetwaly et al., (2021)**, they discovered that the majority of the studied patients had no family history of SLE or autoimmune illness.

This result is in contrast with **Constance, et al., (2017)** in a study entitled "Family history of systemic lupus erythematosus and risk of autoimmune disease: Nationwide Cohort Study in Denmark, 1977–2013", said that a family history of SLE is a considerable risk factor for the development of SLE, depending on the degree of relatedness.

As regards the duration of systemic lupus erythematous, the current study found that more than half of the studied patients evaluated had the condition for at least six months. This result contradicted with **Rizk et al., (2020)**, who discovered that more than one-third of patients had sickness for more than four years. Also, the finding of **El Fadeel, & El-Deen (2020)**, in a study titled "Effect of energy conservation strategies on fatigue and daily living activities among patients with systemic lupus erythematosus", reported that half of the study group and more than one-third of the control group had SLE for less than 5 years. In addition, **Gheita et al., (2021)**, who studied "adult systemic lupus erythematosus in Egypt", mentioned that the disease duration was four years.

Regarding the presence of chronic disease, the present study showed that, the entire of the studied patients has chronic diseases. These results are consistent with **Kankaya & Karadakovan (2020)**, who studied "Effects of web-based education and

counseling for patients with systemic lupus erythematosus: self-efficacy, fatigue and assessment of care", and found that more than half of the study patients had additional comorbidities.

On the contrary, **Elsayed &Mesbah (2018)**, who studied "Effect of health education-based intervention on self-care among systemic lupus erythematosus clients", and revealed that fewer than three-quarters of study patients did not have any other chronic conditions.

In the respect of previous hospitalization, nearly three quarter of the studied patients did not have a history of previous hospitalization. In addition, these findings were similar to those of **Elmetwaly et al., (2021)**, and they claimed that less than one-fifth of them had previously been hospitalized.

Part II: Effect of self-care guidelines on level of knowledge among the studied patient's relation to SLE:

According to the total knowledge of the studied patients regarding systemic lupus erythematous, the findings of the current study demonstrated that, a noticeable progress among the studied patients' total score of knowledge pre, post and follow up after self-care guidelines implementation with a highly statistically significant difference between pre, post and follow up after self- care guidelines implementation. This result supports the study H_1 which stated that the total mean score of knowledge regarding SLE will expect to be improved at post and follow-up implementation of self-care guidelines as compared to pre implementation of self-care guidelines among patients with SLE.

From the researchers' point of view, knowledge deficits prior to implementing self-care recommendations may be attributed to a lack of self-care guidelines provided to the studied patients' needed information regarding SLE.

This result was agreed with **Wageeh et al., (2020)**, who show that there was a high statistically significant difference in patient knowledge regarding SLE in the pre- posttest for the studied patients with a p value =0.001. Also, the study finding was supported by **Mohamed & Kamel, (2018)**, who studied "Effect of Health Education based Intervention on Self-care among Systemic Lupus Erythematosus Clients" and found that the health education-based intervention had significant effects on the knowledge of SLE patients.

However, following implementing the specified nurse education, the patients demonstrated a highly significant improvement.

Part III: Effect of self-care guidelines on level of self-care reported practices among the studied patients with SLE:

Self-care can help SLE patients improve their ability to live independently (**Harmayetty et al., 2018**). Finding of the current study clarified that, the self-care reported practice for the studied patients improved after self- care guidelines implementation. The post and follow up phases indicated highly statistically significant differences in the scores between pre, post and follow up indicating the effect of self- care guidelines implementation on improvement of self-care reported practice in SLE patients. From the researchers' point of view, this might be attributed to a shift in patients' understanding, which indicated their degree of SLE practice, and the effectiveness of tele nursing instructions, which enhanced their practices. This result supports the study H_1 which stated that the total mean score of self-care reported practice regarding SLE will expect to be improved at post and follow-up implementation of self-care guidelines as compared to pre implementation of self-care guidelines among patients with SLE.

This result was in agreement with another study by **Hui et al., (2018)**, who studied "self-care agency in systemic lupus erythematosus and its associated factors: a cross-sectional study", and reported that the process of learning or teaching, as well as the direction of others, allow for development as well as promotion of self-care. This finding is congruent with **Mohamed** and **Kamel (2018)**, who indicated that the health education-based intervention significantly improved SLE patients' self-care practices.

In the current study, there was an improvement in lifestyle related practice after the implementation of self- care. This finding was in agreement with **Rizk et al., (2020)**, who demonstrated that there were highly significant statistical differences between pre and post - test in study group in all subscales of self-rated abilities for health practices after implementation of the education program. Nutrition, exercise, psychological well-being, and responsible health practices all improved significantly. While, in contrast with **Elsayed & Mesbah, (2018)**, who found that self-care practices in lupus patients were irrelevant to health-related quality of life and health outcomes.

Part IV: Effect of self-care guidelines on lupus patient reported outcomes among the studied patients with SLE:

According to the mean Lupus PRO scores of the studied patients, the current study results illustrated a highly statistically significant difference between the total mean lupus PRO score pre, post and follow up after implementation of the self-care guidelines among the studied patients with systemic lupus erythematosus. This result supports the study **H₂** which stated that there will be an improvement in the total mean score of lupus patient reported outcomes (Lupus PRO) at post and follow-up implementation of self-care guidelines among patients with SLE.

From the researchers' point of view, this might indicate the significance of health education interventions and programs in improving health outcomes for SLE patients. In this respect, **Elsayed** and **Mesbah (2018)**, who illustrated that a highly statistically significant improvement regarding all Lupus PRO items, post intervention.

These findings are consistent with **Mohamady et al., (2022)**, who studied "Effect of Self-Care management on Health Outcomes and Symptoms for Females with Systemic Lupus Erythematosus", who demonstrates that there were highly statistically significant differences between pre and one month after self-care management for all Lupus PRO items.

These findings are compatible with **Gholizadeh et al., (2019)**, who studied "Body image mediates the impact of pain on depressive symptoms in patients with systemic lupus erythematosus", and indicated that the Lupus PRO-pain and vitality and Lupus PRO-body image reveal lower Lupus PRO scores prior to intervention, indicating higher symptomatology. As well **Williams, et al., (2017)**, who studied "Effective Self-Management Interventions for Patients with Lupus: Potential Impact of Peer Mentoring" and clarified that self-management strategies that include both social support and health education enhance health outcomes in SLE patients by reducing pain, enhancing function, and delaying impairment.

Part V: Effect of self-care guidelines on level general self-efficacy among the studied patients with SLE:

Concerning self-efficacy, the findings of this study revealed that there was a noticeable improvement following the implementation of self-care guidelines in terms of

being confident about how to deal efficiently with unexpected events, finding several solutions when confronted with a problem, and being able to handle whatever comes his way. According to the total self-efficacy score, the current study showed that the studied patients had high self-efficacy, which was markedly increased at post and follow up phase after the implementation of self- care guidelines when compared to pre implementation. This result supports the study H_3 which stated that self-efficacy level will expect to be higher post and follow-up implementation of self-care guidelines as compared to pre implementation of self-care guidelines among patients with SLE.

From the researchers' point of view, the preceding findings might be attributed to patients' increased capacity to handle their difficulties as a result of increased knowledge and acquisition of good behaviors through education.

These findings are compatible with **Elmetwaly et al., (2021)**, revealed a highly statistical correlation between total level of self-efficacy post-implementation of the intervention protocol. This might be attributed to increasing self-awareness because of applying the intervention protocol, which consequently increased the self-efficacy, which is important in developing a healthy lifestyle.

This finding is supported by **Ibrahim et al., (2020)**, who studied "Effectiveness of Nurse-Led Lifestyle Intervention on Outcomes of Metabolic Syndrome Patients" and **Elsayed** and **Mesbah (2018)**, who indicate that there was an improvement in self-efficacy after the application of an educational and lifestyle intervention program. On the same line with the previous findings, **Mohammed, (2018)**, who studied "Effect of Self-Management Guidelines on Awareness and Self-Efficacy for Patients with Systemic Lupus Erythematosus" and the intervention enhanced self-efficacy, and there was a significant difference in the self-efficacy score.

Part VI: Effect size of self-care guidelines on the studied patients' health outcomes and self-efficacy:

The current study showed that self-care guidelines regarding the care of patients with SLE had a positive large effect size on the total knowledge, self-care practice, lupus PRO and self-efficacy during pre, post & follow up implementation of the self-care guidelines among the studied patients This results supports the study H_4 which stated that

there will be a large effect size of self-care guidelines on patients' health outcomes and self-efficacy at pre, post and follow-up phase after implementation of self-care guidelines.

On the same line study finding conducted by **Abdel-Salam et al (2023)**, who investigated "The effect of implementing Family Empowerment Model on the Quality of Life and Self Efficacy of Mothers of Children with Systematic Lupus Erythema" and concluded that implementation of family empowerment model was improving quality of life and self- efficacy of mothers of children with systematic lupus.

These findings were in accordance with result conducted by **Alzaghmouri, et al., (2021)**, who's studied "The effect of Benson relaxation technique on fatigue of patients diagnosed with multiple sclerosis", suggested Benson relaxation technique is a very effective strategy for reducing fatigue in patients with multiple sclerosis as well as, to presence of a large effect size of Benson relaxation technique on fatigue of patients diagnosed with multiple sclerosis.

Additionally, the study finding was consistent with the study result conducted by **Mohammed** and **Aziz, (2023)**, who investigated "The effectiveness of an Educational Program on Nurses' Knowledge Toward Prevention of Neonatal mechanical ventilator-associated pneumonia", and indicated that educational program was highly effective on nurses' knowledge among the studied patients evidenced by high significance associated with "Greenhouse-Geisser" correction at p-value=0.001 and the Eta squared that indicate large size effect.

Conclusion:

According to the findings of the current study:

- It can be concluded that there was a highly statistically significant difference between total mean knowledge scores pre, post, and follow up implementation of the self-care guidelines among the studied patients with systemic lupus erythematosus with a P value of 0.000**.
- There was a highly statistically significant difference between the total level of self-care reported practice pre, post, and follow up implementation of the self-care guidelines among the studied patients with systemic lupus erythematosus with a P value of 0.000**.

- There was a highly statistically significant difference between the total mean lupus PRO score pre, post, and follow up implementation of the self-care guidelines among the studied patients with systemic lupus erythematosus with a P value of 0.000**.
- There was a highly statistically significant difference between the total level of self-efficacy pre, post, and follow up implementation of the self-care guidelines among the studied patients with SLE, with a P value of 0.000**.
- There was a large effect size of self-care guidelines on patients' health outcomes and self-efficacy at the pre, post, and follow-up phases after implementation of self-care guidelines.

Recommendations:

The following suggestions are made based on the study's findings:

- Promoting a multidisciplinary approach to SLE patient care through an interprofessional team of (physicians, nurses, social workers, and psychologists).
- Ongoing educational programs for patients with SLE in order to enhance their health status.
- A simple, comprehensive, and illustrated Arabic guided visual booklet about SLE should be delivered to each newly admitted patient diagnosed with SLE at the Rheumatology Department.
- Further research and replication are also required.

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الملخص العربى

تأثير إرشادات الرعاية الذاتية على النتائج الصحية والفعالية الذاتية بين مرضى الذئبة الحمراء

الخلفية:
الذئبة الحمراء هي مرض مناعي ذاتي مزمن. بالإضافة إلى الأعراض السريرية المختلفة ، فإن له عواقب روحية ونفسية واجتماعية واقتصادية. تعتبر الرعاية الذاتية الجيدة ضرورية لرعاية المرضى المصابين بالذئبة الحمراء حيث يمكن تحسين تشخيصهم من خلال التعرف على العديد من جوانب المرض بالإضافة إلى مراقبة صحتهم عن قرب مع مقدمي الرعاية الصحية. **الهدف:** هدفت الدراسة إلى تقييم تأثير إرشادات الرعاية الذاتية على النتائج الصحية والكفاءة الذاتية بين مرضى الذئبة الحمراء. **تصميم الدراسة:** تم استخدام تصميم شبه تجريبي. **مكان البحث:** أجريت هذه الدراسة في وحدة أمراض الروماتيزم التابعة لمستشفيات جامعة جنوب الوادي. **عينة البحث:** عينة هادفة من 150 مريض تم تشخيصهم بالذئبة الحمراء. **الأدوات:** تم جمع البيانات باستخدام أربع أدوات: الأداة (1): استبيان مقابلة منظم ، الأداة (2): أداة تقييم الذئبة الحمراء ، الأداة (3): نتائج مريض الذئبة الحمراء المذكورة والأداة (4): مقياس الكفاءة الذاتية العامة. **النتائج:** كان هناك فرق دلالة إحصائية عالية بين مجموع متوسط درجات المعلومات ، وكذلك المستوى الإجمالي لممارسة الرعاية الذاتية المبلغ عنها والكفاءة الذاتية في ما قبل ، وبعد ، والمتابعة بعد تنفيذ إرشادات الرعاية الذاتية بين مرضى الذئبة الحمراء. **الخلاصة:** كان هناك حجم تأثير كبير لإرشادات الرعاية الذاتية على النتائج الصحية للمرضى والكفاءة الذاتية في مرحلة ما قبل وبعد ومتابعة بعد تنفيذ إرشادات الرعاية الذاتية. **التوصيات:** برامج تعليمية مستمرة لمرضى الذئبة الحمراء لتحسين حالتهم.