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Effect of Self-Management Guidelines on Fatigue among Patients with Systemic Lupus Erythematosus

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Abstract: Background Systemic lupus erythematosus is a common chronic autoimmune inflammatory disease which can affect most organ systems. Effective self-management guidelines are required as they may be of a great value in minimizing fatigue. **Purpose**: To assess the effect of self-management guidelines on fatigue among patients with systemic lupus erythematosus. **Design**: a quasi-experimental research design was utilized for this study. Setting: The current study was carried out at rheumatology outpatient clinic in Menoufia University Hospital, Shebin El-Kom. **Sampling**: A consecutive sample of 70 adult patients with systemic lupus erythematosus were assigned alternatively into two equal groups, (35 patients in each group). **Instruments**: Two instruments were used for data collection: Structured interviewing questionnaire and Fatigue Severity Scale (FSS). **Results**: They revealed that the severity of fatigue level were reduced among the study than control groups on post intervention and follow-up (54.3% and 57.1% pre intervention among the study and control groups respectively compared with 20% and 54.3% post intervention and 14.3% and 54.3% at follow up intervention among the study and control groups respectively. **Conclusions**: Self-management guidelines had significant effect on reducing fatigue severity among study group (group I) than control group (group II). **Recommendations**: Supervised continuous self management guidelines for patients with SLE in hospitals should be implemented to reduce fatigue severity.

Key words*: Fatigue, self-management guidelines, 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 cause of SLE is uncertain. A person who gets SLE 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).

Fatigue is a universal symptom experienced by nearly everyone in the general population. It can be described as a subjective unpleasant sensation of exhaustion with physical and mental components, which interferes with individuals' ability to function at their normal capacity (Kawka et al., 2021)

Fatigue is the most common symptom negatively affecting the quality of life of people with SLE reported by 67% to 90% of patients (Kawkaet al., 2021). Fatigue in SLE can lead to limitations in workplace activities by affecting endurance, mobility, concentration, or interactions with employees and coworkers. Fatigue in SLE is also associated with a higher risk of absenteeism and unemployment. Fatigue is an important determinant in the perception of SLE impact upon patients' daily living, even for those in remission (Kawka et al., 2021).

Non-pharmacological management guidelines such as psychological and behavioral assessment or physical activity workshops should be favored. Importantly, lack of optimal physical activity as well as sedentary behavior have been associated with fatigue in SLE. Physical exercise is recommended for the management of pain and fatigue in patients with inflammatory arthritis in the last European League Against Rheumatism recommendations. Physical activity has been shown to improve fatigue in patients with SLE, with more time spent in moderate or high physical activity associated with less fatigue (Kawka et al., 2021)

Education and counselling provided to patients and their families had a significant impact on patient outcomes 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-management lowers mortality and disability, improves quality of life, and reduces health-care costs. As a result, self-management recommendations are an essential component of the standard of care for chronic illness (Twumasi et al., 2020).

Self-management is essential to managing fatigue related lupus. Self-management is what the patient with SLE does to better manage their conditions. Also it describes the strategies that individuals use to

manage the disease process itself, any emotional impacts of living with the condition, and the changes that occur to everyday living as a result of the condition. This involves finding information, making decisions and taking action (Mohamed et al., 2020).

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).

According to Mohamady et al, 2022) mentioned that, implementation of self-care management had a positive and significant effect on reducing fatigue and pain severity, (P <0.001). Also, Kankaya, & Karadakovan., (2020) concluded that patients who received educational intervention about SLE management had a positive effect on reducing fatigue compared with their counterparts.

Therefore, the current study aimed to evaluate the effect of self-management guidelines on fatigue among patients with systemic lupus erythematosus.

Significance of the Study

SLE is associated with high morbidity and death 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 guidelines 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).

Patients with high level of self-care managment might achieve better health outcomes, so the patient needs to acquire self-care knowledge and skills and must find suitable ways to manage surrounding environments to maintain optimal health as the leading causes of death from SLE are the complications of the disease, such as end stage renal disease and cardiovascular disease, rather than SLE itself (Elmetwaly, et al., 2021).

According to the Lupus Foundation of America (2021), at least five million people worldwide have a form of lupus. 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, In menoufia University Hospital the total number of patients were admitted in (2021) was about (470) cases to medical and rheumatology department (Annual Statistic of Menoufia University Hospital of rheumatology department, 2021).

Purpose of the Study

The purpose of the current study was to assess the effect of self-management guidelines on fatigue among patients with systemic lupus erythematosus.

Research Hypothesis:

- Patients who follow the self-management guidelines (study group) are expected to experience less fatigue score than patients who do not follow the guidelines (control group)

Methods:-

Research design:

A quasi experimental research design (study and control) was utilized to achieve the purpose of this study.

Research Setting:

The study was carried out at Rheumatology Outpatient Clinic at Menoufia University Hospital, in Shebin El-Kom. It is located in the second floor of Menoufia university hospital. The clinic contains: A rheumatology room and a waiting area. It contains 25 chairs for patients and their relatives where, the researcher applied the sessions.

Sampling:

A consecutive sample of 70 adult male and female patients with SLE. They were assigned alternatively into two groups, (study& control group). Thirty-five patients for each group:-

- Study group (I): patients received self-management guidelines along with routine hospital care.
- Control group (II): Patients were exposed only to routine medical care, such as oral instruction from nurse.

Sampling Technique:

The sample of the study estimated by using the following power analysis equation: Unlimited population:

$$n = \frac{z^2 \mathrm{X}\, \hat{P}(1-\widehat{P})}{\varepsilon^2}$$

Finite population:

$$n' = \frac{n}{1 + \frac{z^2 X\, \hat{P}\,(1-\widehat{P})}{\varepsilon^2 N}}$$

based on this assumption, the sample size was estimated to be 70 at confidence interval 80% (Kirby et al., 2002).

Z is the z score

ε is the margin of error

N is population size

N and n′ are sample size

P^ is the population proportion

Inclusion criteria

This Adult patients from both sexes (19-65yrs)

Exclusion criteria

Patients have active severe myositis, nephritis, neurological, cardiac or pulmonary disease and pregnant women as performing physical activity may be painful for them and increase fatigue.

Instruments:

Two instruments were used by the researchers for collecting the necessary data, these instruments were:

Instrument one: Structured interviewing questionnaire.

Instrument was developed by the researcher based on pertinent literature

review (Kankaya and Karadakovan, 2020 and Williams, 2018) and guidance of expertise to collect sociodemographic and medical data. It covered the following parts:

Part one: Sociodemographic data: It was used to collect specific information from study sample as patient's age, gender, marital status, level of education, occupation and economic status.

Part two: Medical data: It included questions about patient's past and present medical history beside family history.

Instrument two: Fatigue Severity Scale (FSS)

It is an adopted scale from Rifai et al., (2016) and will be used by the researcher to assess the impact of fatigue on patients with systemic lupus. It contains nine questions about severity of fatigue. Scoring system for each item ranged from one to three and total score was 27.

Scoring system for Fatigue Scale

The patient's response for each statement will be scored as follows**:**

Response	Score
Disagree	1
To some extent	2
Agree	3

Total Scoring system for Fatigue Scale

Fatigue degree	Total Score
Mild fatigue	1-9
Moderate fatigue	10-18
Severe fatigue	19-27

Validity:

All instruments were tested for their face validity by jury of 5 experts (Professors in the field of Nursing and Medical specialties) ` to ascertain their relevance and completeness.

Reliability:

Test retest method was used. Value of test retest for instrument one was 0.97. Value of test retest for instrument two was 0.85.

Ethical Consideration

Approval of the Faculty of Nursing Ethical and research committee in Menoufia University (research No: 847, A written approval obtained from Ethical and date,,,,) All participants were informed about the purpose and methods of data collection. Then a written consent to carry out the study was obtained from the participants. Participation in the study was voluntary and the patients could withdraw from the study at any time without penalty. Confidentiality and anonymity of patients was assured through coding all data. Participants were informed that instruments do not cause any physical or emotional harm to participants.

Pilot study:

Prior to actual study, a pilot study was conducted on 10% (7 patients) of the sample to assess the constructed instruments for feasibility and applicability and the necessary modifications were carried out. The results of the pilot study were excluded from the actual study.

Procedure:

- A letter was submitted from the dean of the Faculty of Nursing, Menoufia University to the director of Menoufia University including the purpose and methods of data collection.
- A written permission to carry out the study was obtained from responsible authorities.
- Patients who fulfill inclusion criteria were assigned alternatively into two equal groups, study group (I) and control group (II).
- The researcher made an initial interview. Each participant of both groups was interviewed individually and assessed for demographic data, medical data using instrument (I). It will take about 10 to 20 minutes.
- All participants of both groups were assessed for their fatigue using instrument two. It took about 20 to 30 minutes.
- The control group (II) was exposed for routine hospital care only.
- The study group (I) was taught the self-management guidelines that should be followed along with routine hospital care.
- The study group was divided into 5 groups. Each group contained 7 patients who was taught on their appointed day.
- An instructional booklet with illustrative pictures was prepared by the researcher about self-management guidelines that included instructions about systemic lupus erythematosus disease, diet counseling, physical activity exercises, how to compensate with the disease and coping skills to adapt with fatigue.
- The researcher conducted three teaching sessions for each group of the study group (I) about self-management guidelines (knowledge, physical activity, diet, stress management and coping strategies). Each session took from 30 to 45 minutes at rheumatology outpatient clinic.
- During the first session, the researcher provided each group in the study group information about systemic lupus erythematosus such as definition, types, causes, signs, symptoms, complication and management through using educational booklet to improve patient's awareness. It lasted from 30-45 minutes at rheumatology waiting area.
- In addition, in order to enhance patient's ability for doing activities, the researcher provided information about methods of performing physical activity exercises three times week for 6 weeks. Information was provided about exercises such as aerobic exercises to improve cardiovascular fitness (cycling for a period of 15 minutes or walking for 30 minute per day three days aweek, outdoors, in the late afternoon 6: pm in summer or 4 : pm in winter as exposure to sunlight can cause flares in systemic lupus and trigger symptoms of SLE and range of motion exercises for 30 minutes to

maintain joint's flexibility. The researcher enhanced patients to get frequent periods of rest to cope with fatigue.

- During the second session, the researcher explained to the study group (I) about the importance of healthy diet. It taken about 30-45 minutes.
- Instructed patient to eat a healthy, nutritious and well-balanced diet that contains plenty of fresh fruits and vegetables at least five servings a day, whole grains and moderate amounts of meat. In addition, eating food high in calcium and vitamin D every day would help with bone growth such as low-fat milk, cheese, yogurt, beans, and dark green leafy vegetables such as spinach.
- Moreover, food high in omega-3 that help protection against heart disease and stroke and reduce inflammation in the body like fish were encouraged at least twice a week to enjoy its anti-inflammatory effects.
- Besides, gave instructions about importance of avoiding fat and garlic intake because increasing fat intake can increase inflammation and physical symptoms of lupus, while eating garlic can send immune system into overdrive and flare up lupus symptoms.
- During the third session, the researcher reinforced the received information then explained to the study group (I) about stress management and coping. It taken about 30-45 minutes.
- Encouraged the patient to reduce stress as it can trigger lupus flares, through performing relaxation techniques such as meditation, deep breathing and guided imagery. In addition, the researcher encouraged playing a game or doing an activity that makes the patient happy. Getting seven to nine hours of sleep every night and take breaks throughout day is very important to reduce fatigue. Using cold compresses reduce swelling by constricting blood vessels in case of painful joints and muscle to improve patient's ability.
- Instructed the patient to avoid excess exposure to sunlight as it cause flares in systemic lupus and trigger symptoms of fatigue, disability, skin rashes, itching, burning, joint pain and weakness.
- Encouraged the patient to avoid smoking because it can worsen lupus, increase fatigue, reduces available energy by restricting blood flow to heart and lungs and get professional help if it is hard to quit alone.
- Enhanced the patient to maintain emotional and social wellness. Building healthy relationships and practicing emotional self-care improves mental and emotional wellbeing for coping. It is important to have a loving support system of people who will listen to patient when need to talk, encourage the patient when feel down and give the patient useful advice.

- Direct teaching methods such as discussion used during teaching sessions. Also, demonstration and re-demonstration for the self-management guidelines had done to study group subjects (I).
- Finally, each patient in the study group (I) was given a copy of the educational booklet.
- The researcher reinforced the participants of the study group (I) by phone to perform the educated self- management guidelines day others day at home.
- The researcher conducted post-test one-month's post third session. As all participants re-assessed for their fatigue using instruments II.
- During follow-up period, the researcher conducted follow up test three months post third session of educational intervention to highlight the self-management guidelines effect. As all participants re-assessed again for their fatigue using instruments II.
- Both groups compared to assess effect of self-care management on fatigue.

Statistical Analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, which describe a categorical set of data by frequency, percentage or proportion of each category, comparison between two groups was done using Chi-square test ($\chi 2$). For comparison between means of two groups of parametric data of independent samples, student t test was used. For comparison between means of two groups of non-parametric data of independent samples, Z value of Mann-Whitney test was used. For comparison between means of two related groups (pre and post program intervention data) of parametric data, paired t test was used. For comparison between more than two means of non-parametric data, Kruskal-Wallis ($\chi 2$) was calculated. Correlation between variables was evaluated using Pearson's correlation coefficient (r). P-value at 0.05 was used to determine significance regarding:

- ♦P-value > 0.05 to be statistically insignificant.
- ♦P-value ≤ 0.05 to be statistically significant.
- ♦P-value ≤ 0.01 to be highly statistically significant.
- ♦P-value ≤ 0.001 to be very highly statistically significant.

Results

Table 1: illustrated that the mean age of participants in the study and control groups was 39.31±10.67years and 39.08±9.38 years, respectively. The majority of them were females (85.7% and 88.6% respectively). Concerning marital status, more than half of them were married (60.0% and 54.3% respectively). As regards to their level of education, about half of the study and control groups (45.7% and 54.3% respectively) had secondary education and in relation to occupation, about two thirds were housewives (42.9% and 45.7%) compared to one third had

manual work (31.4% and 34.3%) respectively for both study and control groups. In addition to more than two thirds of both study and control groups reported that their income was insufficient (60.0% and 57.1%respectively).

Table 2: This table revealed that there was no statistically significant difference between the study and control groups regarding their medical data ($p > 0.05$).

Table 3: showed that there were no statistically significant differences between the study and control groups pre the implementation of self-management guidelines regarding all items of fatigue. Also, there was a significant difference between the study and control groups post the implementation of self-management guidelines and during the follow-up phase regarding most items of fatigue. Moreover, there was highly significant difference between the study and control groups during the follow-up phase of the implementation of self-management guidelines regarding easily fatigued, fatigue interferes with physical functioning (no desire to do anything fatigue prevents sustained physical functioning ($p > 0.05$).

Table 4: showed that there was a statistically significant difference between the study and control groups post the implementation of self-management guidelines and during the follow-up phase regarding the total mean fatigue severity scale.

Figure 1: showed that, there were highly statistically significance differences between study and control group regarding total fatigue severity score post and follow- up self management guidelines.

It illustrated that 54.3% and 57.1% of the study and control groups had severe fatigue pre implementation of the self-management guidelines, which was improved to 20% and 54.3% post implementation of the self-management guidelines, and 14.3% and 54.3% during the follow-up phase in the study and control groups, respectively.

Table 1: Distribution of the studied sample according to their demographic characteristics (n=70)

	Study (n=35)		Control (n=35)		X^2	p-value
	No	%	No	%		
Age/year					0.567	.904
• <35	8	22.9	10	28.6		
• 35-<45	17	48.6	15	42.9		
• 45-<55	6	17.1	7	20.0		
• 55-<=65	4	11.4	3	8.5		
Mean ±SD	39.31±10.67		39.08±9.38			
Gender					.128	.721
• Female	30	85.7	31	88.6		
• Male	5	14.3	4	11.4		
Marital Status					.282	.869
• Single	10	28.6	12	34.3		
• Married	21	60.0	19	54.3		
• Divorced	4	11.4	4	11.4		
Level of Education					.733	.865
• Illiterate	4	11.4	3	8.6		
• Basic education	8	22.9	8	22.9		
• Secondary education	16	45.7	19	54.3		
• Higher or university education	7	20.0	5	14.2		
Occupation					.486	.922
• Manual work	11	31.4	12	34.3		
• Administrative	7	20.0	6	17.1		
• Does not work	2	5.7	1	2.9		
• Housewife	15	42.9	16	45.7		
Monthly income					.059	.808
• Enough	14	40.0	15	42.9		
• non Enough	21	60.0	20	57.1		

Table (2): Distribution of both studied groups according to their medical data (n=70)

Medical data	Study (n=35)		Control (n=35)		X^2	p-value
	No	%	No	%		
Duration of SLE per year						
< 1	4	11.4	5	14.3	.275	.965
1<10	19	54.3	17	48.6		
10 -20	9	25.7	10	28.6		
≥ 20	3	8.6	3	8.5		
Mean ±SD	5.21±2.41		5.96±3.11			
Previous hospitalization of SLE						
Yes	20	57.1	22	62.9	.238	.626
No	15	42.9	13	37.1		
Family history of SLE						
Yes	10	28.6	8	22.9	.299	.584
No	25	71.4	27	77.1		
If yes what is kinship	(n= 10)		(n= 8)			
Uncle or aunt	4	40.0	4	50.0		
Other	6	60.0	4	50.0		

Table (3): Distribution of studied group according to the their extent of fatigue on pre, post and follow-up (n=70)

		Study						Control						X^2/p1-value	X^2/ p2-value	X^2/ p3-value
		Pre		Post		Follow-up		Pre		Post		Follow-up				
		No	%	No	%	No	%	No	%	No	%	No	%			
My motivation	Disagree	10	28.6	13	37.1	10	28.6	9	25.7	8	22.9	8	22.9	.651/.722	7.530/ .023*	9.045/.011*
	To some extent	8	22.9	15	42.9	21	60.0	11	31.4	9	25.7	12	34.3			
	Agree	17	48.6	7	20.0	4	11.4	15	42.9	18	51.4	15	42.9			
Exercise brings	Disagree	10	28.6	15	42.9	16	45.7	7	20.0	10	28.6	10	28.6	.701/.704	7.640/ .022*	6.483/.039*
	To some extent	7	20.0	13	37.1	15	42.9	8	22.9	7	20.0	12	34.3			
	Agree	18	51.4	7	20.0	4	11.4	20	57.1	18	51.4	13	37.1			
I.am easily	Disagree	9	25.7	12	34.3	14	40.0	7	20.0	9	25.7	7	20.0	.876/.645	7.935/ .019*	13.823/ .001**
	To some extent	6	17.1	16	45.7	18	51.4	9	25.7	8	22.9	11	31.4			
	Agree	20	57.1	7	20.0	3	8.6	19	54.3	18	51.4	17	48.6			
Fatigue interferes	Disagree	12	34.3	13	37.1	15	42.9	7	20.0	9	25.7	7	20.0	2.486/ .289	9.175/ .010	14.652/ .001**
	To some extent	5	14.3	15	42.9	16	45.7	9	25.7	7	20.0	9	25.7			
	Agree	18	51.4	7	20.0	4	11.4	19	54.3	19	54.3	19	54.3			
Fatigue causes	Disagree	10	28.6	12	34.3	14	40.0	8	22.9	10	28.6	8	22.9	.444/.801	8.544/ .014*	10.122/.006*
	To some extent	8	22.9	16	45.7	17	48.6	10	28.6	7	20.0	11	31.4			
	Agree	17	48.6	7	20.0	4	11.4	17	48.6	18	51.4	16	45.7			
My fatigue prevents	Disagree	10	28.6	14	40.0	13	37.1	7	20.0	10	28.6	8	22.9	.701/.704	7.840/ .020*	13.784/ .001**
	To some extent	7	20.0	14	40.0	19	54.3	8	22.9	7	20.0	10	28.6			
	Agree	18	51.4	7	20.0	3	8.6	20	57.1	18	51.4	17	48.6			
Fatigue interferes	Disagree	10	28.6	13	37.1	13	37.1	8	22.9	9	25.7	9	25.7	.472/.790	9.175/ .010*	8.785/.012*
	To some extent	7	20.0	15	42.9	18	51.4	9	25.7	7	20.0	11	31.4			
	Agree	18	51.4	7	20.0	4	11.4	18	51.4	19	54.3	15	42.9			
Fatigue is among	Disagree	10	28.6	13	37.1	12	34.3	8	22.9	10	28.6	9	25.7	.508/.776	8.140/ .017*	8.930/.012*
	To some extent	6	17.1	15	42.9	19	54.3	8	22.9	7	20.0	11	31.4			
	Agree	19	54.3	7	20.0	4	11.4	19	54.3	18	51.4	15	42.9			
Fatigue interferes	Disagree	14	40.0	13	37.1	13	37.1	8	22.9	8	22.9	10	28.6	2.897/.235	10.359/ .006*	9.642/.008*
	To some extent	5	14.3	15	42.9	19	54.3	9	25.7	7	20.0	11	31.4			
	Agree	16	45.7	7	20.0	3	8.6	18	51.4	20	57.1	14	40.0			

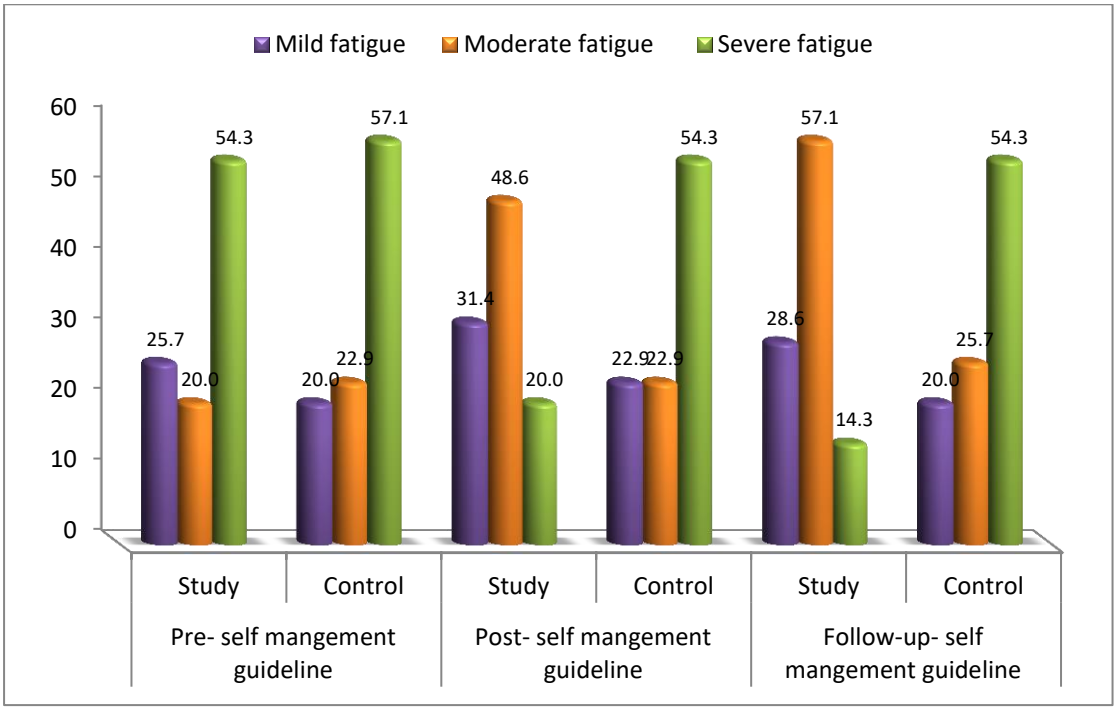
** Highly statistically significance p<0.001 *statistically significance p<0.05

Table (4): Mean of fatigue severity among studied groups during pre, post and follow-up phases (n=70)

Fatigue severity score items		Pre	Post	Follow-up	t1	p-value	t2	p-value	T3	p-value
		Mean ±SD	Mean ±SD	Mean ±SD						
My motivation is lower when I am fatigued	Study	2.20±0.87	1.83±0.75	1.83±0.62	.141	.888	2.430	.018*	2.179	.033*
	Control	2.17±0.82	2.29±0.83	2.20±0.80						
Exercise brings on my fatigue	Study	2.23±0.88	1.77±0.77	1.66±0.68	.709	.481	2.317	.024*	2.379	.020*
	Control	2.37±0.81	2.23±0.88	2.09±0.82						
I am easily fatigued	Study	2.31±0.87	1.86±0.73	1.69±0.63	.143	.887	2.105	.039*	3.514	.001**
	Control	2.34±0.80	2.26±0.85	2.29±0.79						
Fatigue interferes with my physical functioning (no desire to do anything)	Study	2.17±0.92	1.83±0.75	1.69±0.68	.829	.410	2.374	.020*	3.705	.000**
	Control	2.34±0.80	2.29±0.86	2.34±0.80						
Fatigue causes frequent problems for me	Study	2.20±0.87	1.86±0.73	1.71±0.67	.284	.778	1.922	.059	2.904	.005*
	Control	2.26±0.82	2.23±0.88	2.23±0.81						
My fatigue prevents sustained physical functioning	Study	2.23±0.88	1.80±0.76	1.71±0.62	.709	.481	2.185	.032*	3.129	.003*
	Control	2.37±0.81	2.23±0.88	2.26±0.82						
Fatigue interferes with carrying out certain duties and responsibilities	Study	2.23±0.88	1.83±0.75	1.74±0.66	.281	.780	2.374	.020*	2.409	.019*
	Control	2.29±0.83	2.29±0.86	2.17±0.82						
Fatigue is among my 3 most disabling symptoms	Study	2.26±0.89	1.83±0.75	1.77±0.65	.278	.782	2.054	.044*	2.264	.027*
	Control	2.31±0.83	2.23±0.88	2.17±0.82						
Fatigue interferes with my work, family, or social life	Study	2.06±0.94	1.83±0.75	1.71±0.62	1.083	.283	2.710	.009*	2.278	.026*
	Control	2.29±0.83	2.34±0.84	2.11±0.83						
Total	Study	19.89±7.54	16.43±6.62	15.51±5.26	.496	.622	2.328	.023*	3.114	.003*
	Control	20.74±6.91	20.37±7.53	19.86±6.36						

t1 between study and control pre-self-management guidelines
t2 between study and control post self-management guidelines
t3 between study and control follow-up self-management guidelines
** Highly statistically significance p<0.001
*statistically significance p<0.05

Figure (1): distribution of studied patients according to their levels of fatigue (n=70)



Discussion

Regarding to the patients severity of fatigue level, the findings of the present study revealed that there was reduction in the level of fatigue severity between participants in the study group than participants in the control group on post intervention and follow-up the implementation of self-management guidelines (P<0.001). This results supported by Mohamady et al (2022) who revealed that there were statistically significant differences in fatigue between pre and one month after self-care management with significant reduction in the level of fatigue in the studied females was observed post self-care management

So, using self- management guidelines and effect of guidelines that was given by the researcher to the study group as well using non pharmacological management methods such as range of motion exercises, relaxation exercises and improving diet with vitamins which supported by the illustrative colored booklet help the patient to flow their instructions and this have multiple benefits including significant reduction in fatigue levels, and improvement in physical fitness, and QOL

This result consistent with Vandenbulcke (2023) who revealed that, Physical exercise could help SLE patients to reduce fatigue and improve quality of life. Also, the study carried by Elaydi etal., (2019) mentioned that, self-management instructions had positive effects on the patients in reducing fatigue and pain. (P < 0.001).

Also, this result parallel with Youssef (2019) who revealed that, Implementation of aerobic exercises, stretching and strengthening are effective non-pharmacological method

to increase physical activity and decrease severity of fatigue.

In addition this results was consistent with Carrera et al., (2020) who revealed that, 12 weeks of progressive aerobic exercise improve relevant dimensions of fatigue in women with SLE.

Moreover, these results were in line with, Pellegrini et al., (2018) who cleared that, use of physical activity monitors in rheumatic populations increasing vitality, primarily by helping them to overcome fatigue, also effective stress management can help maintain emotional stability and increase adaptive coping.

So, the hypothesis which revealed that patients who followed the self-management guidelines (study group) experience less fatigue level than patients who didn't follow guidelines (control group) was accepted through the current study research findings.

It can be concluded that self-management guidelines for patients with systemic lupus erythematosus. Significantly decreased the level of the fatigue among study group subjects compared to control group subjects.

Conclusions:

Based on the findings of current study, it can be concluded that:

- Self-management guidelines had a positive impact on reducing fatigue score among study group (group I) than control group (group II).

Recommendations:

- A simplified, comprehensive and illustrated Arabic guided images booklet about SLE should be distributed for each newly admitted patient diagnosed with SLE.
- Supervised continuous self management programs for patients with SLE in hospitals should be implemented to improve patient's awareness about SLE, fatigue and its management.
- A similar study can be replicated at different settings and on a larger probability sample to allow for greater generalization of the findings.
- Colored booklet with self management guidelines should be available at rheumatology out patients clinics for all patients to increase their awareness about disease

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