

Self-care Training Program for Patients Suffering from Multiple Sclerosis

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Abstract

Background: Multiple sclerosis is a chronic autoimmune disease affecting the central nervous system, often leading to significant impairments in quality of life and daily functioning for patients. **Aim:** The study aimed to evaluate the impact of a self-care training program for patients suffering from multiple sclerosis. **Design:** A quasi-experimental design was used. **Setting:** The study was carried out in an outpatient clinic at Ain Shams University Hospital. **Tools:** Structured interview questionnaire; including three tools. **The first tool:** to assess socio-demographic characteristics, medical history, and MS-related health problems were collected through interviews. **Second tool:** Multiple Sclerosis Quality of Life. **Third tool:** Self-care of chronic illness inventory tools. **Results:** Seventy-one adult MS patients participated in this study. Significant improvements were observed in self-care scores across the pre-, post-, and after-follow-up time points. The mean score increased from 18.4 ± 8.31 during the pre-program phase to 34.2 ± 8.33 following the program, and then to 30.1 ± 7.17 after the follow-up period. Self-care scores demonstrated a substantial increase in pre-, post-, and after-follow-up time points, indicating the effectiveness of the self-care training program. **Conclusion:** This study concluded that the implementation of self-care training programs had a positive effect on improving self-care practices and the quality of life of Multiple sclerosis patients. **Recommendations:** Designing a rehabilitation program for individuals affected by Multiple sclerosis to become self-reliant.

Key words: Self-care, Training, Multiple sclerosis

Introduction

Multiple Sclerosis (MS) is a chronic autoimmune disease characterized by destroying Myelin Membrane cells in the nervous system. This leads to progressive central nervous system damage and debilitating symptoms. These symptoms profoundly impact patients' lives, encompassing physical ability, emotional and psychological well-being, employment, family dynamics, social interactions, and overall QoL (Hauser & Cree 2020).

While the exact cause of MS remains elusive, factors such as genetics, environment, infections, and nutrition are believed to contribute to its onset. The

disease presents with a spectrum of symptoms, including fatigue, visual impairment, muscle weakness, bladder dysfunction, sexual issues, cognitive decline, and emotional disturbances (Ashtiani et al., 2020).

MS significantly impairs QoL, imposing direct and indirect costs on society and hindering patients' ability to engage in self-care (McGinley et al., 2021).

Lack of awareness about self-care exacerbates hospitalizations among MS patients. Thus, effective self-care training becomes crucial in mitigating hospital visits, alleviating frustration, and bolstering confidence among MS patients (Oliva et al., 2021).

Such training should address patients' physical, emotional, psychological, and social needs to manage the disease, enhance personal performance, and minimize side effects. By fostering self-care practices, individuals with MS can better cope with the disease's chronic challenges (*Maghbooli et al., 2022*).

Self-care refers to any activity a person performs on their own, without help, to safeguard their health. Three key objectives of self-care are illness monitoring, improving one's ability to function on one's own, and reducing complications. Therefore, to enhance these patients' quality of life at home, effective education and interventions, including teaching on self-care, are crucial (*Shabany et al., 2021*).

Self-care encompasses a broad spectrum of activities spanning lifestyle adjustments, hygiene practices, environmental considerations, and socioeconomic factors. It involves conscious decisions and actions aimed at improving physical and mental health and well-being or coping with illness (*Jalili et al., 2022 & Austen et al., 2023*).

People with MS need to be compatible with and adjust to the disease's chronic problems because self-care can improve their quality of life and because chronic complications can be avoided or delayed with regular follow-up (*Homayuni et al., 2021*).

Specialist MS practitioners and community health nurses play pivotal roles in the multidisciplinary care of MS patients, contributing to the planning and implementation of tailored interventions and ideal self-care practices. Their involvement ensures patient-centered care, anticipates care needs, and facilitates multi-agency collaboration, ultimately fostering self-awareness and self-responsibility among patients, families, and care partners (*Vasso & John, 2020*).

Significance of study

There is still much to learn about the causes of multiple sclerosis. The autoimmune system assaults its own tissues for unknown reasons, eventually destroying a fatty substance that shields the brain and spinal cord nerve fibers (*Abd El Hamid et al., 2020*).

There are 2.8 million MS patients worldwide, according to the most recent Atlas of MS (*Deif, 2022*). Another figure from Egypt's Ministry of Health and Population indicates that 1.4% of all neurological disorders are cases of MS. According to data published in 2020, there are approximately 59,670 MS patients in Egypt. That is, one out of every 1,500 individuals (*Deif, 2022*).

Reduced social engagement can result from the neurological abnormalities caused by multiple sclerosis, which usually have a detrimental effect on domains of life such as social functioning, employment, finances, and standards of living (*Olek, 2021*).

Aim Of The Study

The aim of the current study was to evaluate the impact of a self-care training program for patients suffering from Multiple sclerosis through:

- 1-Assessing quality of life for patients suffering from Multiple sclerosis.
- 2- Assessing self-care practices toward caring for Multiple sclerosis.
- 3-Design and implement a self-care training program for patients suffering from Multiple sclerosis.
- 4- Evaluate the effect of a self-care training program on quality of life and self-care practices.

Hypothesis

The study hypothesized that:

The study hypothesizes that implementing a self-care training program will positively affect quality of

life and self-care practices among patients suffering from Multiple sclerosis.

Subjects and Methods

Study design

A quasi-experimental design was used to conduct this study.

Study setting

The study was carried out at an MS outpatient clinic at Ain Shams University Hospital. The clinic was open from 8:30 a.m. to 1 p.m. from Saturdays to Wednesdays. The clinic is located in the Abasia district of Cairo Governorate, Egypt, and offers a broad range of healthcare services for people living in cities or rural areas.

Subjects

A purposive non-probability sample comprising adult patients diagnosed with MS was selected. The criteria included adult patients of both genders diagnosed with MS, whose ages ranged from 20 to 40 years old. Exclusion criteria included critically ill patients and patients with disabilities.

Sample size

The total sample size was 71 patients, which determined according to the power analysis formula as follows:

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

Structured interview questionnaire: consisted of three tools used for data collection. Developed by the researchers after a thorough review of the relevant literature. It was designed in the Arabic language based on related literature.

The first tool: A personal data questionnaire, which was divided into two parts:

Part I: Patients' socio-demographic characteristics: as gender, age, education level, marital status, occupation, residence & monthly income.

Part 2: Patients' medical history and health problems regarding MS. It

covered data related to patient medical conditions such as duration of disease, smoking, number of relapses, number of hospitalizations, first symptoms of the disease, main problem, and presence of chronic disease.

Second tool: The Multiple sclerosis Quality of Life (MSQOL) scale: Multiple Sclerosis Quality of Life instrument 54: it was adapted from *Samohyl, (2014)* and edited by the researchers to assess the quality of life for patients with multiple sclerosis. Its' domains evaluated problems such as the physical domain (10 items), psychological domain (15 items), family & social domain (10 items), spiritual domain (10 items), and marital domain (9 items).

The total scoring system for patients' quality of life:

The items were graded on a five-point Likert scale from 'Never' to 'Always' and vice versa for the negative statement. These items were scored as never = 0, rarely=1, Sometimes=2, usually=3, Always=4.

According to their response, the quality of life for MS patients has been divided into categories, good ($\geq 75\%$) equal to ≥ 160 -degrees, average ($50 < 75\%$) equal to ($108 < 160$) degree and poor ($< 50\%$) equal to < 108 -degree

Third tool: Multiple sclerosis self-care. This tool was developed based on the Middle Range Theory of Self-Care for Chronic Illness which evaluates self-care in people with chronic illness (*Riegel et al., 2018*). This tool aimed to provide a multidimensional assessment of self-care among MS patients, which could prioritize patients own wellbeing to live a healthier life as follows: proper nutrition, regular exercise, stress management, fostering social connection, sleep management, adapting to the environment, setting realistic goals,

symptom management, regular check-ups.

Scoring system: It consisted of 53 items, including all domains of self-care. There are 9 subscales: as proper nutrition (11 items), regular exercise (6 items), stress management (6 items), fostering social connection (4 items), sleep management (5 items), adapting to the environment (3 items), setting realistic goals (4 items), symptom management (11 items), and regular check-ups (3 items). The overall number of correctly answered questions has been determined as the self-care score. If the score was more than 50%, it would be considered adequate self-care. A score of 50 % or lower is deemed inadequate self-care.

Content validity: A panel of five experts in the area of Community health nursing has reviewed the validity of study tools with a view to determining their clarity, face, completeness, and relevance. The experts believe that minor changes have been made in the form of rephrasing and comprehension.

Reliability of the tools: In order to determine the extent to which the questionnaire items are related, reliability tests have been carried out. For items of personal care, the Cronbach's alpha was 0.874 and the MS quality of life was 0.911.

Pilot study:

To assess the applicability and clarity of these tools, as well as assess the necessary time for filling them in before starting actual data collection, a pilot study was carried out on 10% of patients who had been 7 patients. No modifications were made to the tools as a result of the pilot study. Therefore, the main study sample was composed of those patients.

Ethical consideration

Ethical approval obtained from an ethical research committee of the faculty

of nursing, Ain Shams University, the ethical code was 23.07.94. The aim and the nature of the study were explained, and informed consents were obtained from the recruited patients. Also, it was emphasized that the study posed no risks or hazards on subjects' health. All subjects were informed that participation in the research was voluntary, and anyone could withdraw from this study at any time without giving any reason.

Administrative design:

Official permission to conduct the study was obtained through an issued letter from the dean of faculty of nursing Ain Shams University to directors of Ain Shams Hospitals to conduct the study in the Multiple Sclerosis Outpatient Clinic. The official approval was obtained from the directors of the previously mentioned setting.

Field work:

After obtaining the permission to conduct the study, the researchers introduced themselves to the patients and clarified the aim of the study. The informed consent was obtained from the patients. The collection of data took a period of six months, from May 2023 to November 2023. Researchers collected data three times, pretest, and posttest after program implementation and follow up, about 25–30 minutes were required to complete the tools. The researchers visited the study setting two days per week, from 9.30 a.m. to 1.00 p.m. All ethical considerations were followed before data collection started. The data was collected through five phases: interviewing and recruitment, assessment, planning, implementation, follow-up and evaluation phase.

Interviewing and recruitment:

The MS outpatient clinic was the source of eligible patients. The patients were interviewed by the researchers who

went over the inclusion criteria, explained the study's purpose, and informed consent was obtained.

Assessment phase:

The researchers assessed the preliminary data on patients' history, quality of life, and self-care.

Planning phase:

The overall goal of the self-care training program was to improve MS patients' quality of life so they could cope with the challenges posed by their disease. This was accomplished by tailoring the program to the patients' actual needs as determined by the pre-assessment. After looking over relevant literature, the researchers prepared an educational booklet for the patients. The self-care training program also satisfied the patients' needs and comprehension level. The meaning of Multiple sclerosis (MS), types, signs and symptoms, risk factors, causes, diagnosis, complications, treatment, instruction to the patients, how to live with MS to improve quality of life, and what patients can do to adapt to disease problems are all included in this booklet.

Implementation of the program:

The self-care training program was executed in 3 months. The total number of patients was 71, divided into ten groups. Each group included 6-7 patients, and the program was performed in four theoretical sessions for each group. The duration of each session took about 30-45 minutes according to the presented items. The first part of the session began with a revision of the previous content and the goals of the new ones; all while using patient-friendly, straightforward language. Techniques for reinforcement and motivation were applied to enhance educational sessions. The booklet was distributed to all patients at the beginning of the self-care training program implementation. The researchers met the patients in a waiting area in the MS

Outpatient Clinic, and performed post-test to evaluate the patient's knowledge regarding MS and their quality of life after a self-care training program. The methods of teaching included a lecture and a small group discussion. The media were used a booklet and pictures to clarify some items during the self-care training program.

Follow up: Throughout of three months, the researchers follow up the patients through regular meetings.

Evaluation: Effect of the self-care training program on the studied patients was evaluated in post-test after the last session for one time only by using the same tools and follow-up was done after three months.

Statistical design

Data collected from the studied sample was revised, coded and entered using a Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 22. Data was presented using descriptive statistics in the form of frequencies, percentages, Mean and SD. The T test was used to determine if there is a significant difference. A correlation coefficient and repeated ANNOVA were used to measure a statistical relationship between two variables. The P-value <0.05 was considered statistically significant.

Results

Table (1) shows that, 60.6% of the studied sample age ranged between (20-30) years, the mean and standard deviation of age was 32.7 ± 7.84 . As regard to gender and marital status, 62.0% of them were female and married (63.4), respectively. Also, 70.5% of the studied sample had a technician education. Moreover, 71.8% of them were employed. In addition, 85.9% of them were living in urban areas, and

74.6% of them had insufficient monthly income.

Table (2) illustrates that, 81.7% of the studied sample had their duration of disease (6–10) years, 56.3% of them were not smokers, regarding number of relapse attacks, and 53.5% of them had relapses of (4–6) attacks in the previous two years. While 38.1% of them had a history of a previous hospitalization more than twice and 46.5% of them had motor disorder as, first symptom of the disease. 71.8%, 66.2%, 57.7%, 46.5% respectively of patients with other main problems had lack of balance, visual impairment, numbness and tingling, fatigue.

Table (3) analysis of the QoL among MS patients over time revealed notable changes in both physical and psychological domains ($p < 0.05$). During follow-up, the number of patients experiencing poor physiological and psychological functioning decreased from 40 and 35 to 9 and 22, respectively. Conversely, social, spiritual, and environmental functions remained relatively stable across pre-, post-, and after-follow-up assessments, although numeric improvements were observed. Moreover, there were no significant differences in the total QoL score among these assessment points ($p = 0.09$). However, a significant improvement was observed between pre- and after-follow-up assessments ($p < 0.05$).

Figure (1) indicates that, regarding the total score level of quality of life of patients with MS, 45.1% of them were at a poor level in pre-program and

decreased to 26.8% in post-program, 25.4% in follow up (after three months). While 29.6% of them were at average level in pre-program and improved to 38.0% in post-program and 40.8% in follow up. 25.3% of them were at a good level in pre-program and increased to 35.2% in post-program, 33.8% in follow up. The difference observed is a highly statistical difference between P. value < 0.000 .

Table (4) significant improvements were observed in self-care scores across the pre-, post-, and after-follow-up time points. The mean score increased from 18.4 ± 8.31 during the pre-program phase to 34.2 ± 8.33 following the program, and then to 30.1 ± 7.17 after the follow-up period. Repeated measures ANOVA indicated a significant change in the mean score over time. Subsequent post hoc analysis using Bonferroni-corrected p-values demonstrated significant differences between each pair of assessments ($p < 0.05$).

Figure (2) reflects that, 25.3 % of patients with MS had total adequate scores of practices in pre-program compared to 50.7% in post-program and 42.3% in follow up. There was a statistically significant relation between the pre, post and follow-up program (p-value is < 0.00001).

Table (5) there was a notable correlation between MSQOL and self-care total scores before and after the training program, as well as after the follow-up ($r = 0.621$, $p < 0.001^*$; $r = 0.686$, $p < 0.001$; and $r = 0.476$, $p < 0.001$; respectively).

Table (1): Distribution of studied sample according to their socio-demographic characteristics (no=71)

Characteristic		No	%
Gender	Male	27	38.0
	Female	44	62.0
Age (years)	20-<30	43	60.6
	30-≤40	28	39.4
	Mean± SD 32.7 ± 7.84		
Education level	Basic education	7	9.8
	Technician education	50	70.5
	High education	14	19.7
Marital status	Single	23	32.4
	Married	45	63.4
	Divorced	3	4.2
Occupation	Employee	20	28.2
	Unemployed	51	71.8
Residence	Rural	10	14.1
	Urban	61	85.9
Monthly income	Enough	18	25.4
	Not enough	53	74.6

Table (2): Distribution of studied sample according to their medical history and health problems regarding MS (no=71)

Characteristic		No	%
Duration of disease	3 -<6 years	4	5.6
	6-10 years	58	81.7
	More than 10	9	12.7
Smoking	Yes	31	43.7
	No	40	56.3
Number of relapses attacks (previous 2 years)	No recurrence	3	4.2
	1-3	18	25.3
	4-6	38	53.5
	≥7	13	18.3
Number of hospitalizations	No hospitalization	7	9.8
	Once	16	22.5
	Twice	21	29.6
	More than twice	27	38.1
First symptom of the disease	Visual impairment	22	31.0
	Motor disorder	33	46.5
	Sensory disorder	14	19.7
	Urinary sphincter disorder	2	2.8
Main problem *	Fatigue	33	46.5
	Weakness	26	36.6
	Numbness and tingling	41	57.7
	Muscle stiffness	28	39.4
	Visual impairment	47	66.2
	Lack of balance	51	71.8
	Bowel disturbances	8	11.3
	Mood disturbances	36	50.7
Chronic diseases	Yes	19	26.8
	No	52	73.2

*Total items are not mutually exclusive

Table (3): Distribution of studied sample according to their quality of life (n=71)

Domain		Physiological		Psychological		Social		Spiritual		Environmental		Total	
		No	%	No	%	No	%	No	%	No	%	No	%
Pre program	Good	20	28.2	17	23.9	22	31.0	15	21.1	18	25.3	18	25.3
	Average	11	15.5	19	26.8	22	31.0	31	43.7	21	29.6	21	29.6
	Poor	40	56.3	35	49.3	27	38.0	25	35.2	32	45.1	32	45.1
Post program	Good	33	46.5	21	29.6	24	33.8	19	26.8	30	42.3	25	35.2
	Average	23	32.4	32	45.1	28	39.4	32	45.1	17	23.9	27	38.0
	Poor	15	21.1	18	25.3	19	26.8	20	28.1	24	33.8	19	26.8
Follow up (After three months)	Good	29	40.8	20	28.2	21	29.6	24	33.8	28	39.4	24	33.8
	Average	33	46.5	29	40.8	29	40.8	29	40.8	21	29.6	29	40.8
	Poor	9	12.7	22	31.0	21	29.6	18	25.4	22	31	18	25.4

Figure (1): Distribution of studied sample according to their total score level of quality of life (n=71)

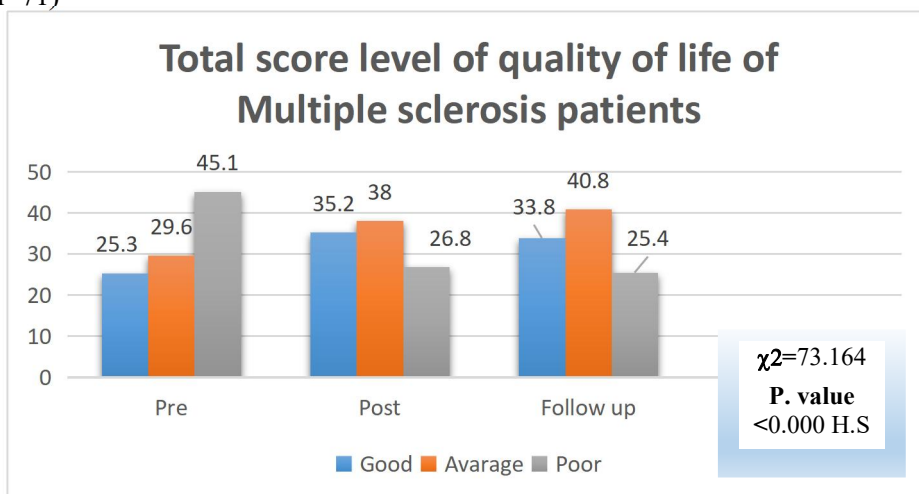


Table (4): Distribution of studied sample regarding adequate score practices toward MS self-care pre, post and follow up self-care training program (n=71)

Items of self-care	Pre		Post		Follow up	
	Adequate		Adequate		Adequate	
	No	%	No	%	No	%
Daily nutritional pattern	22	31.0	39	54.9	37	52.1
Physical exercise	11	15.5	30	42.3	23	32.4
Stress management	7	9.8	22	31.0	19	26.8
Fostering social connection	18	25.3	34	47.9	33	46.5
Rest /Sleep	19	26.8	41	57.7	31	43.7
Adapting to environment	13	18.3	29	40.8	32	45.1
Setting realistic goals	14	19.7	23	32.4	20	28.2
Symptom management	35	49.3	44	62.0	39	54.9
Regular check-up	27	38.0	46	60.6	36	50.7
Total	18	25.3	36	50.7	30	42.3
Mean ± SD	18.4 ± 8.31		34.2 ± 8.33		30.1 ± 7.17	
T test (pre, post)	10.803*					
T test (post, follow up)					2.969*	

*Significant

Figure (2): Distribution of studied sample regarding total patients' adequate practices toward self-care pre, post training program and during follow-up (n=71)

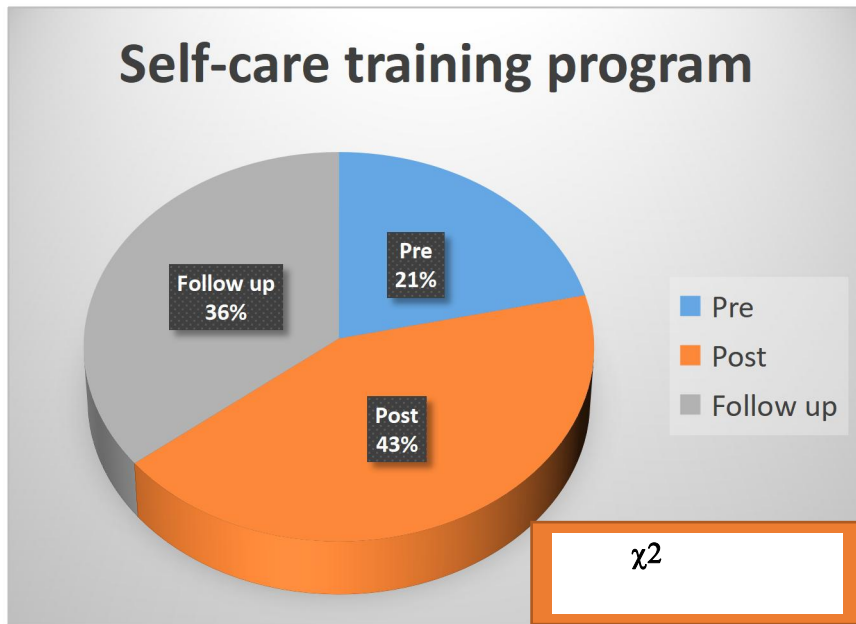


Table (5): Correlation between total Quality of Life score and total self-care score of the studied sample pre, post training program and during follow-up (n=71).

Variables	Pearson correlation coefficient					
	Total score level Quality of Life					
	Pre – training program		Post – training program		Follow up	
Total score level self- care program	r	p	r	p	r	p
	.476	.000**	.686	.000**	.621	.000**

** Correlation is significant at <0.01 level

Discussion

Implementing a tailored self-care training program aimed at enhancing the QoL and self-care among MS patients has yielded promising results, as evidenced by a recent study. The significant outcomes observed both immediately post-program and during follow-up periods underscore the efficacy of such interventions in addressing the multifaceted challenges faced by individuals living with MS. This underscores the importance of proactive interventions that not only target symptom management but also empower

patients to actively engage in self-care practices actively, thereby potentially improving their overall well-being and resilience in the face of chronic illness.

According to the demographic characteristics of the present study, which revealed that, the mean age of the studied patients was (32.7 ± 7.84 years). This finding is consistent with *Aulaban, et al. (2020)* in a study entitled "Multiple Sclerosis patients knowledge in Saudi Arabia participants" found that the majority of the participant their age was ranged from 25-39 years.

In relation to gender, the current study showed that more than two thirds of the studied patients were females. This finding agreed with *Koltuniuk et al., (2020)* in a study entitled "*The role of disease acceptance, life satisfaction, and stress perception on the quality of life among patients with multiple sclerosis: Descriptive and correlational study in in Philadelphia*" which found that 90% of the study samples were females. From the researchers' point of view, this can be discussed as the immune system may be stimulated by sex steroid hormones during puberty, nulliparous women may have higher risk of MS than those who had several pregnancies and obesity rates are higher for women than men, belly fate in particular is associated with increased inflammation.

The study findings indicated that more than two thirds of the studied samples were married. This finding is also consistent with *Rezapour, (2019)* who studied "*the impact of disease characteristics on multiple sclerosis patients' quality of life at the center for special diseases and multiple sclerosis society of shiraz in Iran*", which found that 59% of the study sample were married. From the researchers' point of view, the correlation may be due to hormonal disturbances and changes in BMI which in time increase the risk for inflammation and immunity changes.

The current study revealed that less than three quarters of patients were unemployed. This was in contrast with *Koltuniuk et al., (2020)* who found that the number of unemployed patients was 28% of the total sample. From the researchers' point of view, these findings may be due to the impact of disease on their physical ability to carry or lifting objects, on the other hand, lack of mobility with time leads to worsening of their condition.

In relation to patients quality of life regarding Multiple sclerosis in this study, illustrated that, the highest affected domains were the physiological, followed by psychological, environmental, social and spiritual in pre self-care training program and improved in most domains post training program and during follow-up. The study is agreed with *Algahtani et al., (2020)* whose study entitled "quality of life among multiple sclerosis patients in Saudi Arabia", they revealed that 45% of studied patients had a poor quality of life regarding all dimensions of Multiple sclerosis post program. They mentioned that MS affects the patient in a variety of aspects, which including that; psychological state, pain, fatigue, financial problems, employment difficulties and the perception of MS within their community. Depression and loss of cognitive function usually affect the employment status and social functioning of the patient.

The present study showed that there was remarkable improvement in multiple sclerosis patients' total adequate level of daily nutritional pattern in post program and follow up with highly statistically significant differences between pre, post self-care program and during follow up. These findings agreed with *Hajar et al., (2021)* whose study entitled "self-care practices and related factors in patients with multiple sclerosis based on the health belief model in Egypt", they revealed that beneficial recommendations are diets low in sodium, high in potassium and rich in fruits, vegetables, whole grains, cereals, fibers and fatty fish. In light of the previous results the nutritional pattern of multiple sclerosis patients improved after implementation of self-care program due to acquired knowledge and healthy nutritional practices that help in modifying their nutritional pattern.

According to physical exercise practicing, the present shows that more than one third from patients under study were practicing physical exercise in the post program and follow up compared to few of them were practicing physical exercise in pre self-care program with a highly statistically significant difference between the pre, post and during follow up. This result agreed with the study conducted by *Hajar et al., (2021)* who studied patients' with MS and general practitioner intervention to improve the management of multiple risk factors after MS mentioned that, lack of regular exercise can increase the risk of obesity, diabetes, poor circulation and so the risk for MS-related disability and disease activity.

In relation to resting and sleeping patterns, the present shows that there was remarkable improvement in multiple sclerosis patients' total adequate level of resting and sleeping in post program and follow up with highly statistically significant differences between pre, post self-care program and during follow up. These findings agreed with *Masoud et al., (2018)* whose study entitled "the effect of Orem's Self Care Model on Physical Quality of life in patients with Multiple Sclerosis in Kurdistan ", who mentioned that 60% of patients with MS had improved in resting and sleeping pattern after implementation the program and who added that poor sleep increase levels of C-reactive protein and other substances that reflect active inflammation. It also reverses up the body's sympathetic nervous system, which is activated by fright or stress. From the researchers' point of view, these findings may be due to effects of multiple sclerosis on the all body system which leads to difficulty sleeping.

In relation to the total score level of the self-care training program of patients with MS, the present study indicated that,

there was improvement in the total score level of self-care training program of patients with MS after implementation of the self-care training program, while in follow-up more than one third of them had improvement in their total score level of self-care training program with a statistically significance difference between pre, post self-care program and during follow up (**figure 2**). The study is agreed with *Masoud et al., (2018)*, they revealed that 65% of patients with MS had adequate lifestyle practices toward their disease after implementation of the program.

From the researchers' point of view, these findings could be related to acquiring knowledge and practices through implementation of the self-care training program about MS which helps the patients to apply healthy practices to improve their lifestyle and thus improve their quality of life.

The present study results improved in post self-care training program and decreased in follow-up could be due to the duration between post and follow up the program which was long and result MS patients forgetting some of information regarding lifestyle practices.

Our results further demonstrated significant correlations between QoL and self-care scores across multiple time points, encompassing pre-program, post-program, and follow-up assessments. These findings align with existing research indicating that self-care serves as a critical determinant of QoL in numerous chronic conditions, including MS. The study was supported by *Brola et al., (2021)* whose study entitled "Multiple sclerosis: patient-reported quality of life in the Swietokrzyskie Region", they revealed that there was statistically significant correlation between patients' quality of life and their total score level of self-care program, knowledgeable patients associated with

adequate coping, managing physical impairment and dealing with frustration and depression. From the researchers' point of view, this can be viewed as a particularly significant independent self-care training program because it is a low-cost, non-invasive, and non-pharmacological approach to managing the psychological and physical issues related to multiple sclerosis.

Study Limitations:

While our investigation into the efficacy of self-care training for MS patients yielded promising results, the sample size of 71 participants was relatively small, potentially impacting the generalizability of our findings. Although power analysis indicated sufficient statistical power (80%), larger sample sizes would enhance the robustness of our conclusions to the broader MS population.

Conclusion

This study concluded that the implementation of self-care training programs had a positive effect in improving self-care practices and the quality of life of Multiple Sclerosis patients. Our findings underscore the value of implementing cost-effective and easily accessible interventions that offer substantial benefits to individuals living with Multiple Sclerosis.

Recommendations

- 1- Designing a rehabilitation program for individuals affected by Multiple Sclerosis to become self-reliant.
- 2- Expand the scope of educational sessions to be implemented through social media networks.

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