

Effect of Empowerment-Based Nursing Program on Knowledge and Self-Efficacy among Patients with Multiple Sclerosis

Gehad Abd Elmaged Abdelfattah^{1*}, Magda Ahmed Mohamed¹, Mohamed Mostafa Ahmed Shehab², Neama Mamdouh Mostafa¹

¹Medical-Surgical Nursing Department, Faculty of Nursing, Assiut University, Assiut Governorate 71515, Egypt

²Neurology and Psychiatry Department, Faculty of Medicine, Assiut University, Assiut Governorate 71515, Egypt

*Corresponding Author's Email: gehad18@aun.edu.eg

ABSTRACT

Background: Multiple sclerosis is a long-term neurodegenerative disorder. Empowerment-based nursing interventions are considered an essential approach in chronic disease management, which effectively enhances patients' knowledge and self-efficacy. **Objectives:** To evaluate the effect of an empowerment-based nursing program on knowledge and self-efficacy among patients with multiple sclerosis. **Methods:** A study-control quasi-experimental research design was used for conducting the study with a purposive sample of 102 patients obtained from the multiple sclerosis unit and neurological ward at Assiut University Hospitals, utilizing two tools: the patient's assessment sheet and the Multiple Sclerosis Self-Efficacy Scale. **Results:** Regarding age distribution, 51.0% of patients in the intervention group and 60.8% in the control group were aged between 30 and less than 40 years. The majority of patients in both groups presented with a relapsing–remitting disease pattern (82.4% in the intervention group and 94.1% in the control group). Following the implementation of the empowerment-based nursing program, 90.2% of patients in the study group demonstrated a satisfactory level of knowledge, while 31.4% exhibited a high level of self-efficacy. **Conclusion:** There were statistically significant differences in knowledge and self-efficacy between the study and control groups post application of the empowerment-based nursing program. Recommendation: Patients with multiple sclerosis should receive ongoing empowerment-based nursing programs, and healthcare institutions should integrate such programs into routine care.

Keywords: Empowerment; Knowledge; Multiple Sclerosis; Nursing; Self-Efficacy

INTRODUCTION

Multiple Sclerosis (MS) is a long-term central nervous system impairment characterized by autoimmune inflammation, rapid decline of regenerative capacity, and irreversible neurodegenerative alteration (Arab *et al.*, 2026). MS is an autoimmune disease that affects the central nervous system and is one of the most common debilitating neurological diseases affecting young adults worldwide, particularly those between 20 and 50 years of age (Kamel *et al.*, 2022). Globally, the prevalence of MS has increased by approximately 30%, exceeding two million cases by 2020 (Graf *et al.*, 2024). In Egypt, MS was reported to account for approximately 14.1 per 1,000 cases among patients with neurological diseases (Kamel *et al.*, 2022). More recently, the prevalence of MS in Egypt was estimated at approximately 25 per 100,000 population in 2023 (Khedr *et al.*, 2023).

Despite the current disease-modifying therapies, such as interferons, being effective in managing the acute inflammation and reducing the frequency of relapses, there is a significant lack of interventions to halt chronic disability progression (Woo *et al.*, 2024). Furthermore, many individuals demonstrate insufficient knowledge regarding their condition and symptom management and experience low levels of self-efficacy,

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which is required for effective self-management and remains a sustained barrier to patients' optimal functioning (Tingey *et al.*, 2023).

Empowerment is the act of giving people the ability to take action based on resources that are accessible to them. Empowerment-based nursing interventions represent a patient-centered approach that emphasizes enhancing individuals' capacity to take an active role in managing their health (Raj *et al.*, 2024). Empowerment nursing interventions start with the provision of education and support and end with active involvement in decision-making regarding disease (Kapeller & Loosman, 2023). It aims to strengthen patients' sense of control over their condition, enhance their understanding of the disease, and promote confidence in managing symptoms by fostering self-care behavior (Zafar *et al.*, 2025).

Nurses play a pivotal role in fostering empowerment among patients with MS through structured education, individualized counselling, and ongoing emotional support; furthermore, nurses increase patients' knowledge about the disease and enable patients to take active responsibility for their health outcomes by promoting self-efficacy and encouraging shared decision-making (Bayat *et al.*, 2025). The significance of empowerment-based nursing programs lies in their capacity to bridge the gap between clinical management and patient-centered care, ultimately improving patient self-efficacy and reducing disease-related complications. Therefore, the present study aims to evaluate the effect of an empowerment-based nursing program on knowledge and self-efficacy among patients with multiple sclerosis.

Operational Definitions

Empowerment-based nursing program: A structured, multi-session educational/intervention delivered to enhance patients' knowledge and self-efficacy regarding multiple sclerosis.

Self-Efficacy: Patients' perceived confidence in their ability to manage MS-related physical and emotional challenges.

Research Hypothesis

Patients in the study group will demonstrate significantly higher knowledge levels and self-efficacy scores compared to the control group after implementing the empowerment-based nursing program.

METHODOLOGY

Study Design

A study-control quasi-experimental design was used in this research.

Research Variable

The empowerment-based nursing program constituted the independent variable. Dependent variables were self-efficacy and patient knowledge.

Study Setting

The study was completed within the multiple sclerosis unit and neurological ward at Assiut University Hospitals, Egypt.

Target Population

The research comprised all adult patients diagnosed with multiple sclerosis attending the multiple sclerosis unit and neurological ward at Assiut University Hospitals.

Accessible Population

It consisted of adult male and female patients with confirmed MS diagnoses, ages ranging from 20 to 65 years old, with sufficient cognitive and communicative ability and readiness to take part in research.

Sampling Technique and Sample

A purposive sampling technique was employed. A total of 102 patients were recruited and distributed

equally between both groups (51 patients in the study group and 51 in the control group). The control group got standard hospital care only, while the study group received an empowerment-based nursing program.

Exclusion Criteria

The study excluded patients with the Expanded Disability Status Scale (EDSS) score more than 4.5 and also persons with mental disorders such as depression or psychosis related to disease.

Sample Size

Sample size was calculated based on an expert opinion by using G*power software version 3.1.9.7. An independent-sample t-test was selected as the statistical test, with two groups (study and control) with a Cohen effect size of 0.50, a significance level (α) of 0.05, and a statistical power of 80% ($1-\beta = 0.80$). Based on these parameters, the required sample size was 102 patients, with 51 patients allocated to each group.

Data Collection Tools

Tool I: Patient's Assessment Sheet

It was formulated and constructed by the researcher in accordance with contemporary national and international literatures (Abd Elsalam and Ali, 2022; Arab *et al.*, 2023), and it included 3 divisions:

Part 1: Demographic characteristics: incorporated age, sex, educational level, income, residence, and occupation.

Part 2: Clinical data: included assessment of patient past, current, and family health history.

Part 3: Knowledge assessment tool: aimed to assess knowledge regarding multiple sclerosis, including definition, types, causes, manifestations, complications and treatment.

Scoring System: The knowledge assessment tool comprised 15 items. Each item was scored as follows: complete response = 3, incomplete response = 2, and a wrong or unknown response = 1. The total score ranged from 15 to 45. Then scores were converted into percentages and interpreted as Good Knowledge >60%, Fair Knowledge 50–59%, Poor Knowledge <50% (Abd Elsalam and Ali, 2022).

Tool II: Multiple Sclerosis Self-Efficacy Scale

It was adopted from Rigby *et al.* (2003) and Chiu and Motl (2015). This Likert-type self-reported scale, comprising 14 items, was employed to evaluate patients' perceived self-efficacy in disease management. Scoring System: Each item ranged from completely disagree=1 to completely agree=6. Total score ranged from 14 to 84, with higher scores indicating higher self-efficacy.

Reliability of Tools

The reliability test exhibited high internal consistency, as indicated by Cronbach's alpha coefficient of 0.960 for Tool I and accepted internal consistency of 0.784 for Tool II. The EDSS was used for quantifying disability in patients with multiple sclerosis. The scale ranges from 0.0 (normal neurological function) to 10.0 (death due to MS), with higher scores indicating greater disability. Patients with an EDSS score > 4.5 were excluded from the study.

Pilot Study

The pilot study was conducted on 10% (n=10) patients in December 2023. Following data analysis, no modifications were made, and then patients were integrated into the main study. It was carried through the subsequent phases:

Phase I: Planning Phase

Authorization was approved from the departmental head of neurology at Assiut University Hospital for carrying out proposed research, and then data collection was undertaken by the researcher.

Every patient who met the eligibility criteria was met individually; their names were obtained from the clinical records, and data collection was carried out on different days for control and study groups during different shifts.

Phase II: Operational Phase

It was conducted in three theoretical sessions. The first session was divided into two parts. The first part took about 5 minutes. The researcher welcomed the patients, introduced herself, and outlined the objective of the study to facilitate the patients' collaboration and increase their sense of responsibility. The second part took about 10 minutes. The researcher used tool I-II to obtain primary evaluation for participants.

The second session took about 25 minutes. The control group received routine hospital care only, and the study group received an empowerment-based nursing program delivered by the researcher using standard teaching methods. The discussion took about 15 minutes, and the demonstration took about 10 minutes. The program components encompassed general information about the disease (definition, physical symptoms, ways for diagnosis, management methods, complications and difficulties caused by the disease and its problems), nutrition instructions, the importance of medication adherence, teaching relaxation techniques and proper exercises for controlling anxiety and stress, and management of disease-related complications such as muscle weakness, fatigue, and pain.

The third session follows the completion of sessions, with an additional 5-10 minutes allocated for re-explaining and clarification. Motivational support was provided to ensure adequate comprehension and consolidation according to the patient's needs.

Then patients in the study group received a printed version of the program to promote understanding and retention of the learned program contents. Patients in both groups were informed about the 3-month schedule for reassessment. Follow-up of the study group was done through a telephone call to ensure their commitment to the program.

Table 1: Intervention Details

Session	Content	Duration	Method	Materials	Expected Outcome
1 st session	Introduction assessment	15 min	Interview	Assessment sheet	Establish rapport Asses baseline data
2 nd session	Education for nutrition instructions, medication adherence importance, teaching relaxation techniques and proper exercises for controlling anxiety and stress, management of disease related complications such as muscle weakness, fatigue and pain	25 min	Discussion	Program booklet	Improve patient knowledge Increase self-efficacy
3 rd session	Revision	5-10 min	Feedback Questions	Educational material as picture	Knowledge reinforcement Foster self-efficacy

Phase III: Evaluation Phase

Both groups' patients were re-evaluated after three months at the outpatient clinic using tool I-II to determine the effect of the program on the patient's outcome. Data collection lasted 18 months, during the time frame from 1st February 2024 to 31st July 2025.

Statistical Analysis

Statistical Package for the Social Sciences (SPSS) version 22 was used for entering and analyzing data, while Microsoft Excel was utilized for the preparation of graphical representations. The content of the data collection instrument was systematically reviewed, categorized, and coded by the researcher prior to analysis. Frequencies and percentages were used to summarize data, and the chi-square test was used for comparisons and recognized as statistically significant with a *p*-value of less than or equal to 0.05.

Ethical Consideration

The research obtained ethical clearance from the Faculty of Nursing Ethics Committee, Assiut University, Egypt, with reference number 1120230709 on 27th November 2023.

RESULTS

Table 2: Distribution of Sociodemographic Data for Both Groups (n=102)

Variables		Study N %		Control N %		Sig.
Age	20 - < 30	5	9.8	9	17.6	0.033
	30 to <40	26	51.0	31	60.8	
	40 to <50	13	25.5	11	21.6	
	50-65	7	13.7	0	0.0	
Gender	Male	15	29.4	20	39.2	0.299
	Female	36	70.6	31	60.8	
Residence	Urban	28	54.9	32	62.7	0.423
	Rural	23	45.1	19	37.3	
Level of Education	Illiterate	4	7.8	4	7.8	0.956
	Primary school	10	19.6	10	19.6	
	Secondary school	30	58.8	28	54.9	
	University	7	13.7	9	17.6	
Occupation	Unemployed	30	58.8	34	66.7	0.415
	Employed	21	41.2	17	33.3	
Adequacy of Monthly Income	Enough	2	3.9	2	3.9	0.592
	Adequate enough to some extent	23	45.1	18	35.3	
	Not enough	26	51.0	31	60.8	

Chi-square test; Sig = or < 0.05; NS= Non-significant difference $p > 0.05$

Table 2 mentions that with regard to sociodemographic data, more than half of patients their age were 30 to less than 40 years old in the study and control groups (51.0% and 60.8%, respectively). More than two-thirds were female in study groups and more than one-half in the control group (70.6%, 60.8%), and more than half of patients in the study group and control group were urban residents (54.9%, 62.7%) in both groups, respectively. With regard to level of education, more than half of patients graduated from secondary school in both groups (58.8%, 54.9%), more than half in the study group, and more than two-thirds in the control group were unemployed (58.8%, 66.7%). More than one-half of the study and control groups had inadequate income (51.0% and 60.8%, respectively). There was no statistically significant difference regarding demographic data among control and study groups (p value = 0.033, 0.299, 0.423, 0.956, 0.415, 0.592) except for age, which showed a statistically significant difference (p value 0.033).

Table 3: Distribution of Clinical Variables for Both Groups (n=102)

Variables		Study N %		Control N %		Sig.
Family History	No	44	86.3	51	100	0.006
	Yes	7	13.7	0	0	
Duration of Disease	Less than 5 years	19	37.3	9	17.6	0.084
	5-10 years	30	58.8	39	76.5	
	More than 10 years	2	3.9	3	5.9	
Disease Pattern	Relapsing remitting	42	82.4	48	94.1	0.173
	Secondary progressive	7	13.7	2	3.9	
	Primary progressive	2	3.9	1	2.0	
Relapse Number	Non	25	49.0	27	52.9	0.578
	Once per year	25	49.0	24	47.1	
	Twice per year	1	2.0	0	0	

Chi-square test; Sig = or < 0.05; NS=Non Significant difference; $p > 0.05$

Table 3 reveals that the majority of patients in the study group and all of the patients in the control group didn't have a family history of multiple sclerosis (86.3%, 100%), respectively. As regards disease duration, more than half in the study group and more than two-thirds in the control group were 5-10 years in duration (58.8%, 76.5%), respectively. The majority of patients in both groups had a relapsing-remitting disease pattern (82.4%, 94.1%). There is no statistically significant difference regarding clinical variables between control and study groups (p value = 0.084, 0.173, 0.578) except for family history (p value = 0.006).

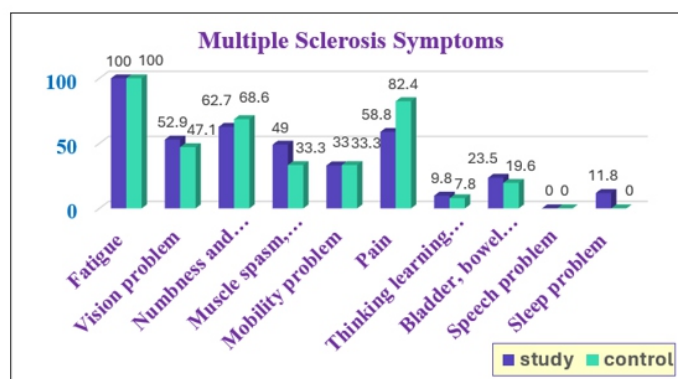


Figure 1: Distribution of Multiple Sclerosis Symptoms for Both Groups (N=102)

Figure 1 illustrates that, regarding the distribution of multiple sclerosis symptoms, all of the patients suffered from fatigue in both groups (100%, 100%), respectively. More than half of patients in the study group and more than two-fifths in the control group had vision problems (52.9%, 47.1%), and less than two-thirds in the study group and more than two-thirds in the control group had numbness and tingling (62.7%, 68.6%). More than two-fifths of patients in the study group and one-third in the control group complained of muscle spasm and weakness (49%, 33.3%), and more than half of the patients in the study group and the majority of patients in the control group complained of pain (58.8%, 82.4%), respectively. No statistically significant difference regarding past, present, and family history among control and study groups (p value = 0.554%, 0.534%, 0.109%, 0.039%, 0.009%, 0.728%, 0.632%, 0.012%).

Table 4: Distribution of Patients' According to Total Knowledge Score Regarding Multiple Sclerosis Pre and Post Implementation of Empowerment-based Nursing Program for Both Groups (n=102)

Variables Total knowledge	Study				Control			
	Pre Intervention		Post Intervention		Pre Intervention		Post Intervention	
	N %		N %		N %		N %	
Poor knowledge	40	78.4	0	0	46	90.2	42	82.4
Fair knowledge	7	13.7	5	9.8	2	3.9	6	11.8
Good knowledge	4	7.8	46	90.2	3	5.9	3	5.9
Sig.	0.188				0.001**			

Chi-square test; Sig = or < 0.05; NS=Non Significant difference; $p > 0.05$

Table 4 shows that regarding patients' total knowledge score, more than two-thirds of the study group and the majority of the control group had poor knowledge pre-implementation of the empowerment-based nursing program (78.4%, 90.2%), while the majority of the study group and less than a tenth of the control group had good knowledge post-implementation of the empowerment-based nursing program (90.2%, 5.9%). There was a statistically significant difference regarding patients' total knowledge score regarding multiple sclerosis disease between the study and control groups post three months from the implementation of the empowerment-based nursing program (p value = 0.001).

Table 5: Distribution of patients according to level of Multiple Sclerosis Self-Efficacy Scale pre and post implementation of empowerment-based nursing program for both groups (n=102)

Group	Study				Control			
	Pre Intervention		Post Intervention		Pre Intervention		Post Intervention	
Variables	N	%	N	%	N	%	N	%
Low MS Self-Efficacy	0	0.0	0	0.0	4	7.8	2	3.9
Moderate MS Self-Efficacy	51	100	35	68.6	47	92.2	49	96.1
High MS Self-Efficacy	0	0.0	16	31.4	0	0.0	0	0.0
Sig.	0.059				0.001			

Chi-square test; Sig = or < 0.05; NS=Non Significant difference; $p > 0.05$

Table 5 reveals that the vast majority of patients in the study group and the majority in the control group had moderate self-efficacy before the implementation of the empowerment-based nursing program (100%,

92.2%), while more than one quarter of patients in the study group (31.4%) had a high level of self-efficacy after the implementation of the empowerment-based nursing program. There was a statistically significant difference regarding patients' level on the Self-Efficacy Scale three months after the implementation of the empowerment-based nursing program between the study and control groups (p value = 0.001).

Table 6: Between-Group Differences in Knowledge and Self-Efficacy Scores Before and After the Empowerment-Based Nursing Intervention among both groups (n=102)

Variable	Group	Study		Control		P-value	Mean Diff.	Cohen's d	CI 95%
		Mean	Standard Deviations	Mean	Standard Deviations				
Total Knowledge Score	Pre	19.1176	4.66753	17.9804	3.80784	0.181	11.61	2.66	9.89–13.32
	Post	31.3922	4.44558	19.7843	4.27698	0.001			
Total Self-Efficacy Score	Pre	46.5686	4.69150	44.9608	7.49923	0.197	13.41	1.72	10.34–16.48
	Post	59.3137	9.56554	45.9020	5.54709	0.001			

Independent T test; Sig = or < 0.05; NS= Non Significant difference $p > 0.05$

Table 6 shows that at baseline, no statistically significant differences were observed between the study and control groups in total knowledge scores or total self-efficacy scores. Following the intervention, the study group demonstrated significantly higher knowledge and self-efficacy scores than the control group ($p = 0.001$ for both outcomes), indicating a substantial beneficial effect of the empowerment-based nursing intervention.

DISCUSSION

The following discussion is organized thematically according to study variables: sociodemographic and clinical characteristics, knowledge, and self-efficacy.

Multiple sclerosis is a process of long-term inflammation and demyelination causing a variety of physical and psychological disorders up to disability and presents with a wide range of manifestations resulting in complicated demands and requirements, which require patient-centered care. Rosas *et al.* (2026). Several studies suggest that empowerment can foster patients' both physical and mental autonomy and mitigate numerous multifaceted consequences and complications of long-term illness; therefore, diligent focus must be directed for empowerment (Ilie *et al.*, 2026).

Sociodemographic and Clinical Characteristic

In terms of sociodemographics, the study demonstrated that the predominant age group was thirty to less than forty years in both cohorts. This outcome is consistent with Khedr *et al.* (2023), who documented that the average chronological age of participants who suffered from multiple sclerosis in Upper Egypt was thirty-three years. This outcome is in contrast with Habbestad *et al.* (2024), who noticed an increasing number of persons experiencing onset after forty to forty-five years of age.

Based on the researcher's observation, this finding may be explained by stressful life events and high levels of physical or emotional stress, which are common in young adulthood, which might act as triggers for multiple sclerosis symptoms in genetically susceptible patients. Concerning patients' gender, a substantial majority, exceeding two-thirds of the sample in the study and over half in the control group, were female. These findings were in agreement with Bayat *et al.* (2025), who revealed female predominance.

In terms of education, the majority of patients graduated from secondary school, were unemployed, and had inadequate income, and the majority of them also were urban residents. Ahmed and Mohammed (2024) documented that over two-thirds of the studied participants were graduates of secondary school and seventy percent were unemployed. Similarly, Rizk and Elmowafy (2022) reported that over fifty percent of patients were not working, and two-thirds of patients had insufficient monthly income. Kirk-Brown *et al.* (2026). Afifi *et al.* (2021) also revealed that the highest concentration of cases was urban residents.

These results contradicted the results of Duguay *et al.* (2025), who indicated that greater than eighty percent of patients were classified as highly educated. Moreover, Beslay *et al.* (2025) reported widespread

occurrence of multiple sclerosis in the rural areas. Regarding clinical characteristics, the vast majority had no family history of multiple sclerosis in both groups. The majority had a disease duration of five to ten years, a relapsing-remitting disease pattern, and more than two-fifths of patients in both groups had one relapse per year.

The data observed was in alignment with ElBakry *et al.* (2024), who mentioned that the average period of disease was five years. Additionally, Hammad *et al.* (2023) reported that over two-thirds had a relapsing-remitting multiple sclerosis course. These results disagreed with Rizk and Elmowafy (2022), who observed that over half of patients had three to four relapses, and Ragab *et al.* (2023), who reported a mean disease duration of three years.

Regarding multiple sclerosis symptoms, the current results illustrated that all of the participants suffered fatigue. More than half of patients in the intervention group and more than two-fifths in the control cohort had vision problems, and less than two-thirds in the intervention group and over two-thirds in the control cohort had numbness or tingling. Exceeding two-fifths in intervention and one-third in the control cohort complained of muscle spasm and weakness. Beyond fifty percent in the study group, and the majority of patients in the control group complained of pain.

This finding comes in accordance with the study of Abo-Nar *et al.* (2024), which mentioned that fatigue and pain manifestation affected more than two-thirds of patients. Also, Correia *et al.* (2024) stated that sensory symptoms are common in multiple sclerosis patients, including pain syndromes, vertigo, and fatigue, and were present significantly in multiple sclerosis.

Knowledge

The present study showed a statistically significant difference in knowledge total score between the study and control groups following the application of the empowerment program. Those results are consistent with Bayat *et al.* (2025), who noticed a marked difference in mean score between the study and control groups following the application of the empowerment program. Therefore, it is imperative for the health care team to tailor empowerment strategies based on patients' requirements while providing care for chronic diseases, including multiple sclerosis.

This finding is also in accordance with a study by Robles-Sánchez *et al.* (2025), who revealed that participation in the programs aimed to improve knowledge and empowerment resulted in improved knowledge, patient activation, and lifestyle modification. Similarly, Zafar *et al.* (2025) demonstrated that educational programs markedly enhance multiple sclerosis-specific health literacy by improving patients' knowledge. According to Robles-Sánchez *et al.* (2025), a nurse-led program to foster MS knowledge and facilitate self-management empowerment successfully resulted in a notable increase in knowledge level and strengthened patient activation and participation in self-care. Moreover, applying an empowerment paradigm to caregivers is suggested to increase their ability to provide care and to have a positive effect on patients' self-care behavior (Nurhidayati *et al.*, 2024).

Knowledge scores improved in studied patients. This finding may be explained as empowerment programs help to create a channel of communication that provides necessary information and allows for the clarification and correction of misconceptions. Additionally, empowerment programs involved interventions designed to enhance patients' understanding and retention of information regarding their condition.

Self-Efficacy

The current data demonstrated a statistically significant difference regarding self-efficacy three months post-implementation of the empowerment program between two groups. These findings agreed with Arab *et al.* (2023), who reported that remote empowerment positively affected patients' self-efficacy and led to marked elevation in total scores following an empowerment program implementation. In a similar manner, Rooddehghan *et al.* (2024) confirmed that effective nursing educational intervention contributes substantially to self-efficacy improvement among MS patients.

Furthermore, Abd Elsalam and Ali reported that, prior to the implementation of the guidelines, approximately thirty percent of patients demonstrated a higher self-efficacy score; following intervention, this proportion increased to nearly fifty percent. The difference between pre- and post-implementation self-efficacy levels was found to be statistically significant. In the same vein, Rizk & Elmowafy (2022) reported a significant difference regarding self-efficacy mean scores between groups after implementing an educational program.

Improvement in patients' self-efficacy levels was observed and may be explained as a result of increasing patients' knowledge, enhanced motivation, and increased patients' sense of control over their condition, which was achieved through the empowerment program.

The finding of the present study underscores the pivotal role of empowerment-based nursing programs in improving knowledge and self-efficacy among patients with multiple sclerosis. These results have several implications in nursing practice. Nursing staff should adopt empowerment as a core principle of chronic illness care, integrating it systematically in the routine management of multiple sclerosis. Nurse educators should incorporate an empowerment-based framework into nursing curricula.

Limitations

This study adopted a purposive sampling technique, which limits the generalizability of the finding.

Future Scope

A longitudinal study to assess the long-term clinical effectiveness and sustainability of empowerment-based nursing interventions. Further investigation to explore the impact of the empowerment program on other clinical outcomes, such as relapse rate and disease complications.

CONCLUSION

The application of an empowerment-based nursing program resulted in significant improvement among patients with multiple sclerosis regarding knowledge level and self-efficacy. This finding supports the integration of empowerment programs into routine nursing care for patients with chronic neurological conditions. Based on the findings of this study, the following recommendations are proposed. Patients with multiple sclerosis should receive an ongoing structured empowerment-based nursing program as an integral component of their chronic disease management. Healthcare institutions should formally integrate empowerment-based programs into routine nursing care protocols for multiple sclerosis and other chronic diseases.

CRedit Authorship Contribution Statement

G.A.A.: Conceptualization, methodology, investigation, data curation, writing – original draft. M.A.M.: Formal Analysis and validation. N.M.M.: Review and editing. M.M.A.S.: Supervision.

AI Assistance Declaration

The authors declare that AI tools were used only to assist with language editing and grammar correction. The authors carefully reviewed all content and remain fully responsible for the originality and final version of the manuscript.

Conflict of Interest

The authors declare that there is no competing interest.

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