The Effect of a Self-Management Program on Care Burden and Self-Efficacy in Family Caregivers of People With Multiple Sclerosis

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ABSTRACT

Background: Family caregivers of patients with multiple sclerosis (MS) face many caring-related problems that increase their care burden and decrease their self-efficacy. Evidence-based self-management interventions may be used to improve care processes and resolve caregiver concerns.

Purpose: The aim of this study was to investigate the effect of a self-management program on care burden and self-efficacy in family caregivers of people with MS.

Methods: This study was performed in Iran in 2018-2019. The participants were selected using convenience sampling and assigned to control and intervention groups of 35 participants each using stratified randomization by gender. The intervention group participated in an eight-session self-management program. Data were collected using the Zarit Burden Interview and Scherrer Self-efficacy Questionnaire. Data were analyzed using descriptive and inferential statistics in SPSS Version 16.

Results: No significant difference in care burden scores was found between the two groups at baseline (p = .953). However, mean scores for care burden in the intervention group were significantly higher (p < .001) both immediately after completion of the intervention (42.6 ± 3) and at 3 months after completion of the intervention (36 ± 3), with the most significant improvement found immediately after the intervention. Similarly, no significant difference in self-efficacy scores was found between the groups at baseline (p = .976). However, mean scores for self-efficacy in the intervention group were significantly higher (p < .001) both immediately after and at 3 months after completion of the intervention (60.6 ± 4.7 and 72.7 ± 4, respectively), with the most significant improvement found at 3 months post-intervention.

Conclusions/Implications for Practice: Providing self-management programs to caregivers of people with MS is an effective approach to reducing their burden of care and increasing their self-efficacy. Enhancing self-management by learning adaptation skills, self-care skills, social support, and spiritual support promote improved self-efficacy and reduce the care burden of these caregivers.

Key Words: multiple sclerosis, family caregivers, care burden, self-efficacy, self-management program.

Introduction

Multiple sclerosis (MS) is a chronic, progressive, and common disease of the central nervous system associated with the immune system that can cause severe physical changes, adaptive changes, and cognitive function changes in young adults (Santos et al., 2019).

Approximately 30% of people with MS require supportive assistance, with 80% of related assistive care provided informally by family members (Nwoke et al., 2017). Recently, caregiving has shifted toward family caregivers, and their responsibilities for their families have increased (Katsavos et al., 2017). Over 44 million caregivers in the United States provide informal, unpaid care for their relatives (Hillman, 2013). Family members are highly affected from the time of disease onset onward, and normal family functions are adversely impacted. Family members frequently respond to this new phase of life with a medley of emotions such as denial, shock, anxiousness, fear, depression, guilt, stress, and frustration. Disease-related issues and problems impose difficult conditions on the family (Dayapoglu & Tan, 2017; Masoudi et al., 2017). Family caregivers became confused and anxious while adapting to numerous new issues and problems, leading to a heavy patient care burden (Opara & Brola, 2018; van der Hiele et al., 2019). The care burden of people with MS includes the physical pressures placed on the caregiver, caring for patients with motor impairment problems, permanent care needs, sleep disorders, and interruptions because of the...
burdensome role of caring, lack of knowledge about MS, aging, and health-related problems (Katsavos et al., 2017). Thus, the most important stressors and intensifiers of care burden in caregivers of people with MS have been identified as follows: inadequate coping skills, poor communication, inability to play role, lack of professionalism, role incompatibility and ambiguity, and problems associated with limitations and expectations (Ebrahim et al., 2017; Naoshy et al., 2016). Nevertheless, certain factors that influence care burden can be changed and adjusted, suggesting that professional interventions may be able to reduce this burden and improve caregiver life quality (Hillman, 2013).

**Literature and Background**

Care burden has been described as the effect that caring has on the physical and mental health, family relationships, work activity, and financial status of caregivers (Opara & Brola, 2018; van der Hiele et al., 2019). The stressors and intensifiers of care burden on caregivers of people with MS often overshadow the self-efficacy of caregivers (Nwoke et al., 2017). Moreover, a significant relationship has been found between self-efficacy and somatic and social performance in patients and their caregivers (Grano et al., 2017). A substantial decrease in self-efficacy and self-confidence is experienced by chronic patients' caregivers attributable to the potential physical limitations of patients, fears of facing new roles caused by a family member’s illness, fears of being unable to handle new responsibilities, and the lack of knowledge about the patient's new needs (Liu & Huang, 2018). Self-efficacy has been identified as a predictor of health-related behavioral changes, including psychological adjustments for MS management (Nwoke et al., 2017).

Self-efficacy is a potential moderator of stressors and distress-related factors in caregivers (Nwoke et al., 2017). Sense of self-efficacy, which is a key precondition for changing health behaviors (Bandura, 1977), forms by enduring challenges and by performing specific behaviors multiple times in a step-by-step manner.

Attention to self-management processes and procedures related to people with chronic disease has increased significantly during the past two decades (Audulv et al., 2019). Self-management offers nurses and healthcare contributors an opportunity to help patients and their caregivers better manage their condition and healthcare (Fraser et al., 2013). Corbin and Strauss (1988) identified three characteristics of self-management, including disease-related problem management (medication use and attendance at medical centers), behavioral management (modifying behaviors and changing lifestyle), and emotional management (controlling emotions because of experiencing a chronic illness). In addition, they suggested various skills of self-management such as problem solving, determination, resource utilization, cooperation with healthcare providers, and self-efficacy measures and improvement (Corbin & Strauss, 1988). Subsequently, Ryan and Sawin (2009) described the goal of self-management processes as the enhancement of learning and trust, modulation of skills and abilities, and social facilitation (Ryan & Sawin, 2009). Although various studies have examined the issue of self-management, the use of related programs with family caregivers of patients has been given minimal research attention. As the disparate influences of MS impose a heavy burden on patients and their family caregivers, this study was conducted to explore the effect of an evidence-based self-management program on family caregivers of people with MS.

**Methods**

**Design and Participants**

This study was a quasi-experimental study performed on family caregivers of patients with MS in Iran in 2018–2019. The Iranian Nursing Society Review Board approved this study (AHD-052-IRB-28011). Inclusion criteria for the potential participants included (a) providing informed consent to take part in the study, (b) being over 18 years old, (c) being able to read and write, (d) performing an average of 8–9 hours of caregiving daily, (e) caring for patients diagnosed with relapsing-remitting MS, (f) lack of previous participation in family education sessions, and (g) no known history of physical illness or mental disorder. Exclusion criteria included (a) withdrawing from the study, (b) death of the recipient of care, (c) transferring responsibility for care to another person or to a care center, and (d) failure to participate in more than one training session (Figure 1).

**Randomization and Baseline Assessment**

The sample size was calculated at 32 individuals for each group based on a sample size calculation formula set at 95% confidence and 90% test power. To increase the rigor of the study and allow a buffer for participant attrition, 35 individuals were enrolled in each group. Thus, 70 participants were enrolled. The participants were selected from the MS Society and neurology department using convenience sampling and then assigned to the groups using stratified randomization by gender. Thus, men and women were assigned to the intervention and control groups separately.

**Data Collection**

Data were collected using a demographic characteristics checklist, which included caregiver age, patient age, caregiver gender, caregiver education, caregiver occupation, and caregiver marital status, as well as the Zarit Burden Interview and Scherrera Self-efficacy Questionnaire.

**Instruments**

The 22-item Zarit Burden Interview was designed to measure level of perceived care burden. The items are scored on a 5-point Likert scale from never (0) to always (4), with total scores below 30 indicating mild, 31–60 indicating moderate, and 61 and over indicating high levels of perceived care.
Intervention

The conceptual underpinning of this study as an evidence-based approach was based on Corbin and Strauss’ (1988) model and the self-management dimensions of textbooks based on the Table 1 format (Eslami et al., 2016; Fraser et al., 2013). Ramzani et al. (2019) concluded that the relationship between caregiver burden and self-efficacy is significantly negative. Thus, in care programs, the care burden of caregivers may be reduced by strengthening self-efficacy (Ramzani et al., 2019).

The self-management plan of action in this study was based on the Strauss–Corbin framework and self-management processes and was designed to help improve the health status of the caregiver participants (Table 2). This program was designed based on an educational–supportive approach and included an evidence-based training package incorporating a set of evidence-based self-management programs conducted by the researcher in eight 90-minute sessions twice weekly. Before and immediately after the evidence-based self-management
program, the Zarit Burden Interview and Scherrer Self-efficacy Questionnaires were completed by both groups. Only the intervention group participated in the 3-month follow-up program by completing the self-report checklist and telephone follow-up (the follow-up program was intended to maintain and perpetuate self-management skills and behaviors). Finally, 3 months after the end of the intervention, the scales were completed again by both groups.

The data from the self-report questionnaires after 3 months showed that around 94% of the intervention group were regularly performing the evidence-based self-management program as instructed. Both groups of participants were referred to the clinic weekly and received necessary tips and advice under the supervision of the researchers. Continuous follow-up and the continuity of the voluntary approach complemented the self-report checklists individually and one by one at the same clinic and MS society.

For the control group, routine general education about MS covering consulting, exercise, and time management was continued, whereas the intervention group underwent the intervention. After the intervention and collection of questionnaires in the follow-up phase, in one session, the control group was trained and given the program pamphlet and booklet.

**Table 1**

| Dimension                                      | Technique and Strategy                      |
|------------------------------------------------|---------------------------------------------|
| 1. Care knowledge management                  | Problem solving, participation in training  |
| 2. The management of planning for caregiving  | Participation in training, brainstorming    |
| 3. Self-care management                        | Group discussion, participation in training  |
| 4. Coping skills management                    | Group participation, problem solving        |
| 5. Spiritual management                        | Brainstorming, group discussion             |
| 6. Emotions and feelings management            | Problem solving, brainstorming              |
| 7. The management of social challenges and resource provision | Participation in training, problem solving |

**Ethical Considerations**

Permission was obtained from the Ethics Committee of Shahrekord University of Medical Sciences (IR.SKUMS.REC.1397.280). After completing the intervention and studying the data from both groups, based on ethical considerations, the researcher asked the control group to take part in the training sessions, and a booklet was provided introducing the evidence-based self-management program.

**Results**

**Baseline Characteristics**

Seventy caregivers of people with MS aged 18–65 years (mean = 40.5 years, SD = 12.2) participated in the study. The age of the patients ranged from 18 to 57 years (mean = 35.5 years, SD = 9.3). Forty-five of the caregivers were female, and 25 were male. Regarding level of education, most caregivers in the intervention (54.3%) and control (57.1%) groups and also patients in the intervention (48.6%) and control (60.0%) groups were educated to the high school level. In terms of employment and marriage statuses, most of caregivers were housewives (51.4% and 54.3%, respectively) and married (88.6% and 77.1%, respectively) in the intervention and control groups. The two groups were statistically similar in terms of all demographic variables (p > .05; Table 3).

**Analyses of Care Burden Outcome**

The results showed that the mean (± SD) scores for care burden at the three time points (pretest, immediate posttest, and 3 months posttest) were 52.9 ± 9.5, 42.6 ± 3.0, and 36.0 ± 3.0 in the intervention group and 53.0 ± 9.6, 52.4 ± 9.2, and 51.4 ± 9.1 in the control group. Moreover, mean (± SD) change in care burden over the study period was −16.9 ± 8.1 in the intervention group and −1.54 ± 1.46 in the control group (Table 4).

On the basis of Mann–Whitney test results, the two groups had similar care burden scores at pretest (p = .953) and significantly different care burden scores at both immediate posttest and 3 months posttest (p > .001), with the intervention group
| Session                | Session Content                                                                 | Subsidiary Purposes                                                                 | Techniques                                      | People in Charge                  |
|------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------|
| First session          | 1. Becoming familiar with MS  
2. Monitoring and managing symptoms  
3. The importance of drug therapy | 1. Promoting knowledge and skills about the disease  
2. Gaining information on how to care and how to deal with symptoms of the disease  
3. Promoting knowledge and skills about drug therapy | 1. Lecturing  
2. Question and answer  
3. Group discussion | Researcher and a nursing PhD |
| Second session         | 1. The role of caregiver and family  
2. Family challenges and problems with the patient  
3. Enhancing caregiver’s support for patient  
4. The importance of patient’s diet | 1. Identifying the position of caregiver in providing patient health  
2. Promoting confidence and control of the caregiver  
3. Setting goals without being bothered because of failure  
4. Becoming familiar with useful food basket | 1. Problem solving  
2. Participation in training  
3. Lecturing | Researcher |
| Third session          | 1. The importance of taking care of yourself  
2. Exercise and activity  
3. Appropriate diet  
4. Balancing work and life | 1. Maintaining and promoting caregiver’s health  
2. Learning personal strengths and limitations  
3. Identifying the symptoms of stress, insomnia, and irritation  
4. Paying attention to leisure time  
5. Maintaining interpersonal relationships | 1. Lecturing  
2. Question and answer  
3. Group discussion | Researcher |
| Fourth session         | 1. Adaptation skills with caregiving role  
2. Effective communication with the patient  
3. Problem-solving methods  
4. Time management | 1. Improving patient communication skills  
2. Reducing stress and pressure caused by care  
3. Balancing should and desires  
4. Adapting to new roles  
5. Understanding goals and motivations for time management and prioritizing goals | 1. Lecturing  
2. Question and answer  
3. Problem solving | Researcher and a nursing PhD |
| Fifth session          | 1. Maintaining spiritual self  
2. Empowering to use spiritual resources  
3. Increasing the capacity for virtuous behavior  
4. Recognizing individual dignity and value | 1. Giving meaning to and reevaluating life  
2. Adorning the activities and relationships of daily life with a sense of holiness  
3. The conformational application of spiritual information | 1. Lecturing  
2. Question and answer  
3. Brainstorming | Researcher |
| Sixth session          | 1. Methods of controlling unwanted emotions  
2. Emotion processing and sharing  
3. Emotion management | 1. Maintaining a positive outlook and hope, nurturing courage, motivation  
2. Prevention of isolation  
3. Increasing self-esteem  
4. Controlling emotions and feelings  
5. Feeling satisfied | 1. Brainstorming  
2. Problem solving  
3. Question and answer | Researcher |

(continues)
reporting relatively lower care burden scores. In addition, on the basis of Friedman test results, the care burden scores for both groups decreased significantly, although at different levels of significance, over the course of the study, with a mean 17-point decrease in the intervention group and a mean 2-point decrease in the control group (Table 4).

### Analyses of Self-Efficacy Outcome

The mean (± SD) scores for self-efficacy at the three time points (pretest, immediate posttest, and 3 months posttest) were, respectively, 48.8 ± 7.7, 60.6 ± 4.7, and 72.7 ± 4.0 in the intervention group and 48.7 ± 7.9, 50.0 ± 8.1, and 51.0 ± 7.7 in the control group. In addition, the mean (± SD) change over the course of the study was 23.9 ± 5.8 in the intervention group and 2.3 ± 1.0 in the control group. The results of the independent t test identified no significant difference in self-efficacy score between the groups at base-line (p = .976) but significant differences in this score (p > .001) at immediate posttest and 3 months posttest, resulting in higher mean self-efficacy scores in the intervention group. Moreover, on the basis of the results of repeated-measures analysis of variance, the mean self-efficacy score for both groups increased significantly over the course of the study. However, the interaction effect between time and self-efficacy score was found to be significant (p < .001), showing that the rate of increasing was significantly greater in the intervention group. Finally, the degrees of change in self-efficacy scores over the course of the study for the two groups differed significantly, with a mean change of +24 in the intervention group and +2 in the control group (Table 4) at 3 months posttest.

### Discussion

Most of the family caregivers of patients with MS in this study were female, had a high school education, were unemployed, and were married, with a mean age of 41.8 ± 11.8 years. Cultural conditions in Iran frequently designate informal caregivers,
mostly women who are also housewives, with the responsibility of caring for the sick and the disabled. Diaz et al. (2019) showed that women shouldering high burdens of care have a relatively lower general health status and that those who lack sufficient sources of support face an even higher risk of poor general health. Prior studies have shown that most informal caregivers are family members who assume the role of main caregiver (Etemadifar et al., 2014), which echo the situation in this study. The findings in this study underscore the significant and positive role that evidence-based self-management intervention programs can play in reducing caregiver care burden and echo Chen et al. (2015) with regard to the effectiveness of care-burden coping strategies in caregivers of elderly patients with dementia, Boyacığlu and Kutlu (2017) with regard to the family caregivers of older adults, and Yang et al. (2019) with regard to their identification of the important role of social support and self-efficacy in reducing caregiver care burden. Moreover, the results of this study concur with the study of Etemadifar et al. (2014) on caregivers of patients with heart failure, the study of Sin et al. (2017) on patients with psychosis, and the study of Martín-Carrasco et al. (2016).

Huis in het Veld et al. (2015) found evidence for the effectiveness of professional self-management support interventions targeting psychological well-being in improving stress and social outcomes in informal caregivers. Although they also found evidence supporting the effectiveness of interventions targeting information on ability/knowledge, they found limited evidential support for the effectiveness of interventions targeting techniques to other aspects such as care burden and self-efficacy sense of competence and decision-making confidence of informal caregivers (Huis in het Veld et al., 2015).

Interventions that focus on family caregiver problems have been shown to be effective in reducing care burden at all patient follow-up periods and in improving the formal and functional support provided by the family over both the short and long term (Ma et al., 2018).

Thus, the main question to be addressed is whether self-management interventions ameliorate the problems faced by caregivers of chronic patients. In Pahlavanzadeh et al. (2015), the effect of a group psychological training program on care burden in family caregivers of patients with MS was investigated, with results showing similar reductions in post-intervention care burden. However, Pahlavanzadeh et al. did not control for gender in their random allocation procedure, and most of the caregivers in that study were male, which differs significantly from the predominantly female composition of this study. Of the studies in the literature that do not align with our findings, González’s investigation of the effect of psychological interventions on caregivers of mentally retarded patients found no significant decrease in ZBI score either immediately after the 4-month intervention or at the 8-month follow-up (González-Fraile et al., 2019).

The findings of this study regarding self-efficacy and the effect of the evidence-based self-management program indicate that self-management interventions can increase self-efficacy in caregivers of patients with MS. These findings are consistent with Zhou et al. (2019), who investigated the efficacy of family-centered psychological training on the self-efficacy and emotions of parents of children with autism, and with Gamboa Moreno et al. (2019). These interventions included training on strategies and modifying behaviors and lifestyles. For these interventions to be sustainable and, thus, effective, participants must be able to incorporate them into their daily activities. Therefore, it is important to provide a way to develop behavioral change strategies. To achieve this goal, an intervention program, including the principles of

### Table 4

| Variable          | Before   | Immediately After | 3 Months After | Changes During Study | p (Into Group) |
|-------------------|----------|------------------|----------------|----------------------|----------------|
|                   | M (SD)   | M (SD)           | M (SD)         | M (SD)               |                |
| Care burden       |          |                  |                |                      |                |
| Intervention group| 52.9 (9.5) | 42.6 (3.0)      | 36 (3.0)       | −16.9 (8.1)          | < .001         |
| Control group     | 53.0 (9.6) | 52.4 (9.2)      | 51.4 (9.1)     | −1.54 (1.5)          | < .001         |
| Self-efficacy     |          |                  |                |                      |                |
| Intervention group| 48.8 (7.7) | 60.6 (4.7)      | 72.7 (4.0)     | 23.9 (5.8)           | < .001         |
| Control group     | 48.7 (7.9) | 50.0 (8.1)      | 51.0 (7.7)     | 2.3 (1.0)            | < .001         |
| **Note.** IQR = interquartile range.
self-management, resource prioritization, partnership with healthcare providers, group discussion, problem solving, and decision making, was delivered in this study to empower caregivers to create self-efficacy for living condition management. Durmaz and Okanlı (2014) reported a relationship between the mean scores of self-efficacy and care burden, indicating that the care burden of family caregivers decreases with increasing self-efficacy. Thus, they suggested that plans for promoting self-efficacy should be considered in future studies. Studies in agreement with the findings of this study include Samia et al. (2019), who examined the effect of advanced psychological interventions on self-efficacy in family caregivers of patients with dementia; Jafari et al. (2020), who examined the effect of a health intervention based on a family-centered empowerment model on health literacy and self-efficacy in a group of caregivers of patients with MS; and Zhang et al. (2020), who examined the effect of self-management programs on quality of life and self-efficacy in caregivers of patients with dementia. Zhang et al. showed that, after implementing a self-management intervention program, caregivers were more confident in their ability to handle the care process than at baseline. One difference in the program used in this study compared with other self-management programs is that all of the physical, psychological, spiritual, and social aspects of the participant were emphasized, which allowed the participants to formulate their own strategies to improve self-efficacy in terms of control conditions and helped reduce the burden of care. However, some previous studies have reported self-management programs to have no significant effect on self-efficacy. For example, Hamnes et al. (2012) showed that a self-management program delivered to patients with fibromyalgia syndrome had no effect on patient self-efficacy. Researchers in that study considered the short time of the intervention, lack of consideration of participant needs in intervention planning, and the limited motivation of the patients as limitations (Hamnes et al., 2012). In this study, a positive relationship was found between the use of a self-management program and reduced care burden and increased self-efficacy in family caregivers of patients with MS, indicating the effectiveness of this program in improving the management capacity of family caregivers.

In this study, performing a dynamic and interactive educational–supportive program (the ability to monitor disease and development and to use cognitive, behavioral, coping, and emotional strategies) improved the self-efficacy of caregivers and their ability to perform daily and caring activities, thereby reducing their care burden and improving their personal health outcomes.

Enhancing self-management capacity can significantly improve self-efficacy and reduce care burden in caregivers by bolstering related knowledge, adaptation skills, self-care skills, social support, and spiritual support, making it possible to promote the health of communities, families, and individuals.

Limitations and Suggestions
A limitation of this study was the lack of consideration given to the psychological problems and the personal and personality differences among the caregiver participants, which may influence the generalizability of the results. To compensate for this limitation, we sought to make the sample as representative as possible of the general population by randomly selecting the participants.

Future studies should investigate the impact of self-management programs on other variables such as stress, anxiety, quality of life, and caregiver satisfaction. In addition, given the variety of self-management models and programs available, comparative studies should be conducted on different evidence-based self-management programs.

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References
Audulv, Å., Gahari, S., Kephart, G., Warner, G., & Packer, T. L. (2019). The Taxonomy of Everyday Self-management Strategies (TEDSS): A framework derived from the literature and refined using empirical data. Patient Education and Counseling, 102(2), 367–375. https://doi.org/10.1016/j.pec.2018.08.034
Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, 84(2), 191–215. https://doi.org/10.1037/0033-295x.84.2.191

Boyacıoğlu, N. E., & Kutlu, Y. (2017). The effectiveness of psychoeducational interventions in reducing the care burden of family members caring for the elderly in Turkey: A randomized controlled study. Archives of Psychiatric Nursing, 31(2), 183–189. https://doi.org/10.1016/j.apnu.2016.09.012

Chen, H.-M., Huang, M.-F., Yeh, Y.-C., Huang, W.-H., & Chen, C.-S. (2015). Effectiveness of coping strategies intervention on caregiver burden among caregivers of elderly patients with dementia. Psychogeriatrics, 15(1), 20–25. https://doi.org/10.1111/psgy.12071

Corbin, J. M., & Strauss, A. (1988). Unending work and care: Managing chronic illness at home. Jossey-Bass.

Dayapoglu, N., & Tan, M. (2017). The care burden and social support levels of caregivers of patients with multiple sclerosis. Kontakt: Journal of Nursing and Social Sciences Related to Health and Illness, 19(1), e17–e23. https://doi.org/10.1016/j.kontakt.2016.12.001

Díaz, M., Estévez, A., Momeñe, J., & Ozerinjauregi, N. (2019). Social support in the relationship between perceived informal caregiver burden and general health of female caregivers. Ansiedad y Estrés, 25(1), 20–27. https://doi.org/10.1016/j.anyes.2019.04.001

Durham, H., & Okani, A. (2014). Investigation of the effect of self-efficacy levels of caregiver family members of the individuals with schizophrenia on burden of care. Archives of Psychiatric Nursing, 28(4), 290–294. https://doi.org/10.1016/j.apnu.2014.04.004

Ebrahimi, H., Hasankhani, H., Namdar, H., Khodadadi, E., & Fooladi, M. (2017). Dealing with chronic illness: Experiences of Iranian families of persons with multiple sclerosis—A qualitative study. Multiple Sclerosis International, 2017, Article ID 9243161. https://doi.org/10.1155/2017/9243161

Eslami, A. A., Rabiei, L., Abedi, H. A., Shirani, M., & Masoudi, R. (2016). Coping skills of Iranian family caregivers in caretaking of patients undergoing haemodialysis: A qualitative study. Journal of Renal Care, 42(3), 162–171. https://doi.org/10.1111/jor..12166

Etemadifard, S., Bahrami, M., Shahriari, M., & Farsani, A. K. (2014). The effectiveness of a supportive educative group intervention on family caregiver burden of patients with heart failure. Iranian Journal of Nursing and Midwifery Research, 19(3), 217–223.

Fraser, R., Ehde, D., Amtmann, D., Verrall, A., Johnson, K. L., Johnson, E., & Kraft, G. H. (2013). Self-management for people with multiple sclerosis: Report from the first international consensus conference, November 15, 2010. International Journal of MS Care, 15(2), 99–106. https://doi.org/10.7224/1537-2073.2012-044

Gamboa Moreno, E., Mateo-Abad, M., de Retana, Ochoa, García, L., Vrotsou, K., del Campo Pena, E., Sánchez Perez, A., Martínez Carazo, C., Arbonés Ortiz, J. C., Rua Portu, M. Á., Piñera Elorriaga, K., Zenarrutzabeitia Pikatza, A., Urquiza Bengoa, M. N., Méndez Sanpedro, T., Osés Portu, A., Aguirre Sorondo, M. B., & Rotaete del Campo, R. (2019). Efficacy of a self-management education programme on patients with type 2 diabetes in primary care: A randomised controlled trial. Primary Care Diabetes, 13(2), 122–133. https://doi.org/10.1016/j.pcd.2018.10.001

González-Fraile, E., Domínguez-Panchón, A. I., Berzosa, P., Costas-González, A. B., Garrido-Jimenez, I., Rufino-Ventura, D., López-Aparicio, J. I., & Martín-Carrasco, M. (2019). Efficacy of a psychoeducational intervention in caregivers of people with intellectual disabilities: A randomized controlled trial (EDUCA-IV trial). Research in Developmental Disabilities, 94, Article 103458. https://doi.org/10.1016/j.ridd.2019.103458

Grano, C., Lucidi, F., & Violani, C. (2017). The relationship between caregiving self-efficacy and depressive symptoms in family caregivers of patients with Alzheimer disease: A longitudinal study. International Psychogeriatrics, 29(7), 1095–1103. https://doi.org/10.1017/S104161101700024X

Hannès, B., Mowinckel, P., Kjeken, I., & Hagen, K. B. (2012). Effects of a one week multidisciplinary inpatient self-management programme for patients with fibromyalgia: A randomised controlled trial. BMC Musculoskeletal Disorders, 13(1), Article No. 189. https://doi.org/10.1186/1471-2474-13-189

Hillman, L. (2013). Caregiving in multiple sclerosis. Physical Medicine and Rehabilitation Clinics, 24(4), 619–627.

Huis in het Veld, J. G., Verkaik, R., Mistiaen, P., van Meijel, B., & Francke, A. L. (2015). The effectiveness of interventions in supporting self-management of informal caregivers of people with dementia; a systematic meta review. BMC Geriatrics, 15, Article No. 147. https://doi.org/10.1186/s12877-015-0145-6

Jafari, Y., Tehrani, H., Esmaily, H., Shariati, M., & Vahedian-shahroodi, M. (2020). Family-centred empowerment program for health literacy and self-efficacy in family caregivers of patients with multiple sclerosis. Scandinavian Journal of Caring Sciences, 34(4), 956–963. https://doi.org/10.1111/scs.12803

Katsavos, S., Artemiadis, A. K., Zacharis, M., Argyrou, P., Theotoka, I., Chrysovisanou, C., & Anagnostouli, M. (2017). Predicting caregiving status and caregivers’ burden in multiple sclerosis. A short report. Neurological Research, 39(1), 13–15. https://doi.org/10.1080/01616412.2016.1254942

Liu, H.-Y., & Huang, L.-H. (2018). The relationship between family functioning and caregiving appraisal of dementia family caregivers: Caregiving self-efficacy as a mediator. Aging & Mental Health, 22(4), 558–567. https://doi.org/10.1080/13607863.2016.1269148

Ma, C. F., Chien, W. T., & Blessington, D. T. (2018). Family intervention for caregivers of people with recent-onset psychosis: A systematic review and meta-analysis. Early Intervention in Psychiatry, 12(4), 535–560. https://doi.org/10.1017/eip.2018.12494

Martin-Carrasco, M., Fernandez-Catalina, P., Domínguez-Panchón, A., Gonçałves-Pereira, M., Gonzalez-Fraile, E., Munoz-Hermoso, P., & Ballesteros, J. (2016). A randomized trial to assess the efficacy of a psychoeducational intervention on caregiver burden in schizophrenia. European Psychiatry, 33, 9–17. https://doi.org/10.1016/j.eurpsy.2016.01.003

Masoudi, R., Khayeri, F., Rabiei, L., & Zarea, K. (2017). A study of stigma among Iranian family caregivers of patients with multiple sclerosis: A descriptive explorative qualitative study. Applied Nursing Research, 34, 1–6. https://doi.org/10.1016/j.apnr.2016.11.012

Naoshy, S., Ting, J., Watson, C., Jurado, D., Acquadro, C., & Savre, I. (2016). Concepts important for multiple sclerosis patient caregivers: Systematic literature review of qualitative studies (P2.196). Neurology, 86(16, Suppl.), P2.196.

Nwoke, M. B., Onuigbo, E. N., & Odo, V. O. (2017). Social support, self-efficacy and gender as predictors of reported stress...
among inpatient caregivers. *The Social Science Journal, 54*(2), 115–119. https://doi.org/10.1016/j.soscij.2016.08.001

Opara, J., & Brola, W. (2018). Quality of life and burden in caregivers of multiple sclerosis patients. *Physiotherapy and Health Activity, 25*(1), 9–16. https://doi.org/10.1515/pha-2017-0002

Pahlavanzadeh, S., Dalvi-Isfahani, F., Alimohammadi, N., & Chitsaz, A. (2015). The effect of group psycho-education program on the burden of family caregivers with multiple sclerosis patients in Isfahan in 2013–2014. *Iranian Journal of Nursing and Midwifery Research, 20*(4), 420–425. https://doi.org/10.4103/1735-9066.161000

Ramzani, A., Zarghami, M., Charati, J. Y., Bagheri, M., & Lolaty, H. A. (2019). Relationship between self-efficacy and perceived burden among schizophrenic patients’ caregivers. *Journal of Nursing and Midwifery Sciences, 6*(2), 91–97. https://doi.org/10.4103/JNMS.JNMS_13_19

Ryan, P., & Sawin, K. J. (2009). The individual and family self-management theory: Background and perspectives on context, process, and outcomes. *Nursing Outlook, 57*(4), 217–225.e6. https://doi.org/10.1016/j.outlook.2008.10.004

Samia, L. W., O’Sullivan, A., Fallon, K. C., Aboueissa, A.-M., & Hepburn, K. W. (2019). Building on self-efficacy for experienced family caregivers: The savvy advanced program. *The Gerontologist, 59*(5), 973–982. https://doi.org/10.1093/geront/gny016

Santos, M., Sousa, C., Pereira, M., & Pereira, M. G. (2019). Quality of life in patients with multiple sclerosis: A study with patients and caregivers. *Disability and Health Journal, 12*(4), 628–634. https://doi.org/10.1016/j.dhjo.2019.03.007

Sin, J., Gillard, S., Spain, D., Cornelius, V., Chen, T., & Henderson, C. (2017). Effectiveness of psychoeducational interventions for family carers of people with psychosis: A systematic review and meta-analysis. *Clinical Psychology Review, 56*, 13–24. https://doi.org/10.1016/j.cpr.2017.05.002

van der Hiele, K., van Gorp, D. A. M., Heerings, M. A. P., Jongen, P. J., van der Klink, J. J. L., Beenakker, E. A. C., van Eijk, J. J. J., Frequin, S. T. F. M., van Geel, B. M., Hengstman, G. J. D., Hoitsma, E., Mostert, J. P., Verhagen, W. I. M., de Gans, K., Zemel, D., Middelkoop, H. A. M., & Visser, L. H. (2019). Caregiver strain among life partners of persons with mild disability due to relapsing-remitting multiple sclerosis. *Multiple Sclerosis and Related Disorders, 31*, 5–11. https://doi.org/10.1016/j.msard.2019.03.005

Yang, Z., Tian, Y., Fan, Y., Liu, L., Luo, Y., Zhou, L., & Yu, H. (2019). The mediating roles of caregiver social support and self-efficacy on caregiver burden in Parkinson’s disease. *Journal of Affective Disorders, 256*, 302–308. https://doi.org/10.1016/j.jad.2019.05.064

Zhang, S. Y., Wu, F., Tang, D. L., Rong, X. S., Guo, Q. H., Fang, M., Zhao, Q. H., & Zhao, Y. X. (2020). Pilot testing the caregiver self-management intervention for caregivers of relatives with dementia. *Geriatric Nursing, 41*(2), 147–157. https://doi.org/10.1016/j.gerinurse.2019.08.006

Zhou, Y., Yin, H., Wang, M., & Wang, J. (2019). The effect of family-focused psychoeducational therapy for autism spectrum disorder children’s parents on parenting self-efficacy and emotion. *Archives of Psychiatric Nursing, 33*(1), 17–22. https://doi.org/10.1016/j.apnu.2018.08.002