ISSN 2526-8910
Cad. Bras. Ter. Ocup., São Carlos, v. 27, n. 4, p. 885-897, 2019
https://doi.org/10.4322/2526-8910.ctoAR1840

Review Article

Interventions of Occupational Therapy with people with multiple sclerosis: literature integrative review

Luana Aparecida Barbosa Campos, Rosé Colom Toldrá

Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional, Faculdade de Medicina – FMUSP, Universidade de São Paulo, São Paulo, SP, Brasil.

Abstract: Introduction: Multiple sclerosis is a more common autoimmune, demyelinating disease of the central nervous system, which affects mainly adults and causes significant impacts on occupational performance and social participation. Objective: To analyze and systematize the knowledge produced by Occupational Therapy related to interventions in people with multiple sclerosis, between 2012 and 2017. Method: Integrative literature review using the Scientific Electronic Library Online databases, Virtual Health Library, National Library of Medicine National Institutes of Health of United States, and the national journals: Brazilian Journal of Occupational Therapy, Journal of Occupational Therapy University of São Paulo and Brazilian International Journal of Occupational Therapy. Results: Publications were identified in fifteen different journals, being only two national articles and twenty foreign ones. The articles were classified in the following themes: Individualized Intervention / Self-Management, Home Intervention, Use of Technology for Intervention, Group Intervention and Client-Centered Intervention. The studies indicate the diversity of interventions in the individual, group, course, with the use of videoconference and videogame, in the home and work context. Conclusion: The interventions developed by the professionals indicate a decrease in symptoms, improvement of functionality, and greater knowledge of potentialities, self-control, self-care, and promotion of quality of life. The study contributed to greater dissemination and, consequently, greater recognition of the effectiveness of Occupational Therapy activities and indicated the need for national research, given the scarcity of articles published in Brazil on the subject.

Keywords: *Occupational Therapy, Multiple Sclerosis, Rehabilitation, Professional Practice, Review.*

Intervenções de Terapia Ocupacional com pessoas com esclerose múltipla: revisão integrativa da literatura

Resumo: Introdução: A esclerose múltipla é uma doença autoimune, desmielinizante mais comum do sistema nervoso central, que afeta principalmente adultos e causa impactos significativos no desempenho ocupacional e na participação social. Objetivo: Analisar e sistematizar o conhecimento produzido pela terapia ocupacional relacionado às intervenções com pessoas com esclerose múltipla, no período entre 2012 e 2017. Método: Revisão integrativa da literatura tendo como fonte de busca as bases de dados Scientific Eletronic Library Online, Biblioteca Virtual em Saúde, National Library of Medicine, National Institutes of Health of United States e os periódicos nacionais: Cadernos Brasileiros de Terapia Ocupacional, Revista de Terapia Ocupacional da Universidade de São Paulo e Revista Internacional Brasileira de Terapia Ocupacional. Resultados: Foram identificadas publicações em quinze periódicos diferentes, sendo apenas dois artigos nacionais e vinte estrangeiros. Os artigos foram classificados nas seguintes temáticas: Intervenção Individualizada/Autogestão, Intervenção Domiciliar, Uso da Tecnologia para Intervenção, Intervenção Grupal e Intervenção Centrada no Cliente. Os estudos apontam diversidade de intervenções na forma individual, grupal, curso, com uso de videoconferência e videogame, no contexto domiciliar e de trabalho.

Corresponding author: Luana Aparecida Barbosa Campos, Universidade de São Paulo, Rua Cipotânea, 51, Cidade Universitária, CEP 05360-000, São Paulo, SP, Brasil, e-mail: camposluana1997@gmail.com

Received on Dec. 06, 2018; 1st Revision on Jul. 12, 2019; Accepted on Sep. 12, 2019.

Conclusão: As intervenções desenvolvidas pelos profissionais apontam diminuição dos sintomas, melhora da funcionalidade, maior conhecimento das potencialidades, autocontrole, autocuidado e promoção da qualidade de vida. O estudo contribui para maior divulgação e, consequentemente, maior reconhecimento da efetividade das práticas da terapia ocupacional, indicando a necessidade de pesquisas no âmbito nacional, visto a escassez de artigos publicados no Brasil sobre a temática.

Palavras-chave: *Terapia Ocupacional, Esclerose Múltipla, Reabilitação, Prática Profissional, Literatura de Revisão.*

1 Introduction

Multiple sclerosis (MS) is the most common autoimmune, demyelinating, and progressive disease of the central nervous system (CNS). The diagnosis of the disease usually occurs between 20 and 40 years old, although the onset maybe earlier, according to the International Federation of Multiple Sclerosis - MISF (MULTIPLE…, 2019).

The average prevalence of people with MS worldwide is 33 per 100,000 inhabitants (MULTIPLE…, 2013). In Brazil, the disease, on average affects 15 to 18 people per 100,000 inhabitants (FINKELSZTEJN et al., 2014). The proportion of women and men also differs, with an average of two women per affected man (MULTIPLE…, 2013).

MS is a disease with heterogeneous manifestation, and its course can be classified into four categories: a) Relapsing-Recurrent Form (RR), most common among the forms and characterized by periods of symptom outbreaks followed by total or partial remission; b) Progressive Primary Form (PP) characterized by a progressive and cumulative decline since the onset of the disease; c) Progressive Secondary Form (PS), characterized by a phase in which there is continued deterioration after a period of remission; d) Recurrent Progressive Form (RP), which differs from RR, since the disease continues to progress between the outbreaks (FORWELL; COPPERMAN; HUGOS, 2013).

Functional disabilities caused by the disease evolution related to the number of outbreaks and remissions in the early years of the disease may progress over time and reflect on the performance of daily activities (OLIVEIRA et al., 2013). The most common symptoms affecting the participation in different walks of life are: fatigue, bowel and bladder dysfunction, cognitive and emotional impairment, depression, spasticity, gait disturbances, vision problems, tremors, speech and swallowing disorders, altered sensitivity, pain, and sexual dysfunction (KARHULA et al., 2013; KESSELRING, 2004).

Thus, these changes that affect the performance and social participation of people with MS require specialized care from different health professionals. In this sense, occupational therapy care aims to enable individuals to reach the maximum performance potential necessary for the various functions of life, using activities that are meaningful to them (OLIVEIRA et al., 2013).

Previous review studies published by Yu and Mathiowetz (2014a, 2014b) showed that occupational therapy interventions in the various occupational areas that involve basic activities of daily living (ADL) and instrumental activities of daily living (IADL), as well as work, leisure, and education to minimize disabilities. Cognitive rehabilitation, strength and endurance exercises, motor training, fatigue control through energy conservation education programs, adaptations to help in the practice of daily living activities, and social participation are some examples of occupational therapist interventions problems found in the literature (YU; MATHIOWETZ, 2014a, 2014b).

The review study by Arafah, Bouchard and Mayo (2017) showed the importance of patients' active participation in decision-making and the projection of self-management interventions, pointing out the benefits to treatment as they get the interest of the main agents of treatment, the patients. Also, recent review studies on occupational therapy practice have highlighted autonomous and independent participation by people in activities that are meaningful to them as the main objective of interventions, besides the interventions in self-management programs for ADL fatigue (ANGELA et al., 2019).

Thus, this review study aimed to systematize and analyze the knowledge produced by occupational therapy during its performance with the population with multiple sclerosis, between 2012-2017.

2 Methodology

This study used the Literature Integrative Review (IR) method. It is an instrument of Evidence-Based Practice (EBP), which consists of conducting a

broader analysis of the literature. The IR method aimed at gathering and synthesizing the knowledge obtained in the research in a systematic and orderly way to deepening a particular theme (MENDES; SILVEIRA; GALVÃO, 2008).

The IR analyses the significant decision-making studies and the incorporation of the applicability of results to improve clinical practice, enabling general conclusions about the study area, pointing out gaps to be filled with new studies, and making research more accessible for readers in a single study, minimizing obstacles in the use of scientific knowledge (MENDES; SILVEIRA; GALVÃO, 2008; SOUZA; SILVA; CARVALHO, 2010; WHITTMORE; KNALF, 2005).

The steps for performing the IR are: 1) Identification of the topic and selection of the research guiding question; 2) Sampling or literature search; 3) Categorization of studies; 4) Evaluation of included studies; 5) Analysis of the results; 6) Synthesis of knowledge (MENDES; SILVEIRA; GALVÃO, 2008).

For the development of the study with this method, the question was: What is the scientific production regarding the practice of occupational therapists with people suffering MS, in the last five years (2012-2017)?

The database for the research used the following descriptors and their combinations in the Portuguese and English: "occupational therapy" and "multiple sclerosis." The following databases were consulted: Scientific Electronic Library Online (SciELO Brazil), Virtual Health Library (VHL), and National Library of Medicine National Institutes of Health of the USA (MEDLINE/PUBMED). Specific national occupational therapy journals were also consulted: *Cadernos Brasileiros de terapia ocupacional, Revista de terapia ocupacional da Universidade de São Paulo and Revista Interinstitucional Brasileira de terapia ocupacional.*

The inclusion criteria were published articles with at least one occupational therapist as one of the authors, with topics on professional practice; articles that contributed to the reflection on the occupational therapists work with the population with MS; scientific articles published between 2012 and 2017 in English, Portuguese and Spanish. Articles not related to the topic of MS and occupational therapy were excluded; those that addressed interventions with caregivers and family members of people with MS; literature reviews; studies outside the specified period and published in other languages were excluded.

3 Results

When searching in the PUBMED database, 108 articles were found, and 28 articles were previously selected. In the VHL database, 41 articles were found, in which six articles were identified for analysis. In the SciELO database, no articles were found. As the specific occupational therapy journals consulted by the automatic mechanism, five articles were identified, but all were repeated in the databases. After reading the previously selected studies and applying the inclusion and exclusion criteria, the final sample was 22 articles composing this integrative literature review, as shown in the flowchart in Figure 1.

There were 15 different journals found, highlighting the American Journal of Occupational Therapy for having published the largest number of articles. Regarding the Indexing Base, the MEDLINE/PUBMED database contained the most indexed articles on the topic, followed by the VHL Portal (Table 1).

The publication of 20 selected articles was in English (91%), and only two (9%) were in Portuguese. No articles were found in Spanish or developed in Spanish-speaking countries to compose this review. There is also a shortage of publications produced in Brazil, with only two (9%) national articles, nine (41%) published in the United States, four (18%) published in Canada, two (9%) articles in the Netherlands,

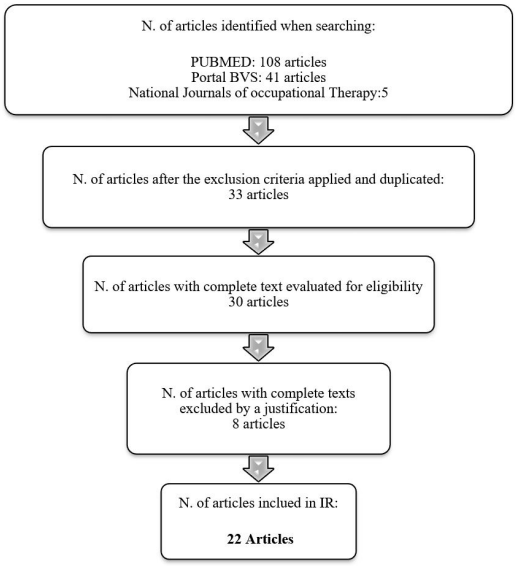

Figure 1. Flowchart and number of articles found in databases from 2012 to 2017.

two (9%) in England, and one article for Belgium, Switzerland, and Israel (5%).

Table 2 shows the distribution of publications by title, author (s), journal, and year. In 2013, a larger number of articles were published and the scientific production of occupational therapy on the topic in the last five years remained stable for the number of publications.

According to Table 3, the topics addressed in the articles were classified into the following categories of analysis: Individualized Intervention/Self-Management (n = 5; 23%); Home Intervention (n = 3, 13.5%); Use of technology for intervention (n = 5; 23%); Group Intervention (n = 3; 13.5%); Client-Centered Intervention (n = 5; 23%); and Vocational Rehabilitation (n = 1; 4%).

Table 1. Distribution of the scientific articles according to journals and indexing base of publications from 2012 to 2017.

Journals	Indexing base	Articles
Am. J. Occup. Ther.	MEDLINE	4
Mult Scler. Journal	MEDLINE	2
Disabil. Rehabil.	MEDLINE	2
Int. J. MS. Care.	MEDLINE	2
Cad. Bras. Ter. Ocup.	BVS	2
Disabil Health J.	MEDLINE	1
Int. J. Rehabil Res.	MEDLINE	1
Clin. Rehabil.	MEDLINE	1
J. Rehabil. Med.	MEDLINE	1
Neuropsychol Rehabil.	MEDLINE	1
Phys. Med. Rehabil. Clin. N. Am.	MEDLINE	1
Mental Health Spec. Interest Sect Q.	MEDLINE	1
Neuro Rehabilitation	MEDLINE	1
Canadian J. Occup. Therapy	MEDLINE	1
Occup. Ther. Int.	MEDLINE	1

Table 2. List of articles by title, author, journal, and year of publication from 2012 to 2017.

Nº	Title	Author(s)/Year	Journal
1	Effects of a One-to-One Fatigue Management Course for People With Chronic Conditions and Fatigue.	Van Heest, Mongush and Mathiowetz (2017)	Am. J. Occup. Ther.
2	A randomized controlled trial to treat impaired learning and memory in multiple sclerosis: The self-GEN trial.	Goverover et al. (2017)	Mult. Scler.
3	Método self-healing como estratégias de promoção à saúde e reabilitação de pessoas com esclerose múltipla no contexto da terapia ocupacional	Pimentel and Toldrá (2017a)	Cad. Bras. Ter. Ocup.
4	Desenvolvimento de manual para orientações básicas do dia a dia para pessoas com esclerose múltipla	Pimentel and Toldrá (2017b)	Cad. Bras. Ter. Ocup.
5	Learning to live with multiple sclerosis cognitive impairment and how it influences readiness for group cognitive intervention.	Brown et al. (2016)	Disabil Health J.
6	The effectiveness of a self-management occupational therapy intervention on activity performance in individuals with multiple sclerosis-related fatigue: a randomized-controlled trial.	Kos et al. (2016)	Int. J. Rehabil Res.
7	Occupational Therapy Interventions for Adults With Multiple Sclerosis.	Preissner, Arbesman and Lieberman (2016)	Am. J. Occup. Ther.
8	Goals set after completing a teleconference-delivered program for managing multiple sclerosis fatigue.	Asano et al. (2015)	Am. J. Occup. Ther.

Table 2. Continued...

Nº	Title	Author(s)/Year	Journal
9	Home-based training to improve manual dexterity in patients with multiple sclerosis: A randomized controlled trial.	Kamm et al. (2015)	Mult. Scler.
10	Fall risk and incidence reduction in high risk individuals with multiple sclerosis: a pilot randomized control trial.	Sosnoff et al. (2015)	Clin. Rehabil.
11	Client-centred therapy in multiple sclerosis: more intensive diagnostic evaluation and less intensive treatment.	Eyssen et al. (2014)	J. Rehabil. Med.
12	Staying at work and living with MS: a qualitative study of the impact of vocational rehabilitation intervention.	Jellie et al. (2014)	Disabil. Rehabil.
13	Task meaningfulness and degree of cognitive impairment: do they affect self-generated learning in persons with multiple sclerosis?	Goverover, Chiaravalloti and Deluca (2014)	Neuropsychol Rehabil.
14	A qualitative study exploring the usability of Nintendo Wii Fit among persons with multiple sclerosis.	Plow and Finlayson (2014)	Occup. Ther Int.
15	Facilitating a teleconference-delivered fatigue management program: perspectives of occupational therapists.	Dunleavy, Preissner and Finlayson (2013)	Can J OccupTher
16	Activities of daily living: evaluation and treatment in persons with multiple sclerosis.	Buzaid et al. (2013)	Phys. Med. Rehabil. Clin. N. Am.
17	Impact of comorbidity on fatigue management intervention outcomes among people with multiple sclerosis: an exploratory investigation.	Finlayson, Preissner and Cho (2013)	Int. J. of MS Care
18	Effects of a new sensory re-education training tool on hand sensibility and manual dexterity in people with multiple sclerosis.	Kalron et al. (2013)	NeuroRehabilitation.
19	A cluster randomised controlled trial on the efficacy of client-centred occupational therapy in multiple sclerosis: good process, poor outcome.	Eyssen et al. (2013)	Disabil. Rehabil.
20	Influence of occupational therapy on resilience in individuals with multiple sclerosis.	Falk-Kessler, Kalina and Miller (2012)	Int. J. MS. Care.
21	Outcome moderators of a fatigue management program for people with multiple sclerosis.	Finlayson, Preissner and Cho (2012)	Am. J. Occup. Ther.
22	The Mental Health Needs of Individuals Living With Multiple Sclerosis: Implications for Occupational Therapy Practice and Research.	Mesa et al. (2012)	Mental Health Spec. Interest Sect Q.

Table 3. Synthesis of scientific production knowledge according to the topic categories from 2012 to 2017.

Category/Topic	Author	Synthesis of Knowledge
Individualized Intervention/Self-management	Van Heest, Mongush and Mathiowetz (2017), Goverover et al. (2017), Kos et al. (2016), Goverover, Chiaravalloti and DeLuca (2014), Buzaid et al. (2013).	Individual courses and programs that enabled self-managed learning, design interventions, manage mild and severe symptoms for greater independence and safety.
Home Intervention	Kamm et al. (2015), Sosnoff et al. (2015), Kalron et al. (2013).	Easy application self-service home programs with functional benefits and fall prevention.

Table 3. Continued...

Category/Topic	Author	Synthesis of Knowledge
Use of technology for intervention	Asano et al. (2015), Dunleavy, Preissner and Finlayson (2013), Finlayson, Preissner and Cho (2012, 2013), Plow and Finlayson (2014).	Group teleconferencing use with effects for self-management of symptoms and lifestyle. Application of video games for exercise learning, improving skills, and participation in leisure, although it needs adaptation.
Intervention Group	Pimentel and Toldrá (2017a, 2017b), Brown et al. (2016).	The groups favored exchanges of experience, expression, and help. They contributed to the experimentation of body techniques, improvement and use of guidance and learning manual to live with cognitive changes.
Client-Centered Intervention	Preissner, Arbesman and Lieberman (2016), Eyssen et al. (2013, 2014), Mesa et al. (2012), Falk-Kessler, Kalina and Miller (2012).	Efficiency in the intervention in the acute symptoms phase; the importance of the evaluation of psychological distress and increased resilience when treated by an Occupational Therapist. A greater balance of time is required for assessment and intervention.
Vocational Rehabilitation	Jellie et al. (2014).	Workers who experienced job instability felt empowered to better manage relationships and job challenges by themselves. Employers reported a greater understanding of employee difficulties.

4 Discussion

This IR sought to systematize and analyze the knowledge produced by occupational therapy, its performance with the population suffering multiple sclerosis, in the period of 2012-2017. Only four articles of this review were published in specific occupational therapy journals. We highlight the search of occupational therapists to publish their studies in multidisciplinary journals. The non-prioritization of the dissemination of their production to the profession was maybe because the occupational therapists have greater mastery of practices in this area, whereas for other professions they are not so familiar. The importance of disclosing the contribution of occupational therapy to other professions favors the expansion of the offer of care, greater benefits for patients and the recognition of the profession.

The IR on Occupational Therapy Interventions with People suffering Multiple Sclerosis has identified a variety of topics, intervention strategies, and implications for the occupational therapy practice. The study of scientific production was classified into six categories: Individualized Intervention/Self-Management, Home Intervention, Use of Technology for Intervention, Group Intervention, Client-Centered Intervention, and Vocational Rehabilitation.

The publications grouped in the first category Individualized Intervention/Self-Management (BUZAID et al., 2013; VAN HEEST; MONGUSH; MATHIOWETZ, 2017; KOS et al., 2016; GOVEROVER et al., 2017; GOVEROVER; CHIARAVALLOTI; DELUCA, 2014) had articles showing the benefits of this type of intervention to decrease symptoms, improve QOL, independence and safety in ADL.

Buzaid et al. (2013) emphasized that one of the occupational therapist's roles is to promote symptom management to maximize independence and safety in performing ADL. Slight impairment of ADL skills can impact the QOL of people with MS. The authors presented interventions aimed at: adaptations in the home environment, equipment recommendations, transfer training and equipment, dressing mobilization strategies, preparatory methods training, teaching compensatory techniques to safely complete ADL, use of techniques and performance of exercises for pain relief, training for proper positioning and decubitus change methods, and strategies to minimize changes in sensitivity, cognitive deficits and fatigue (BUZAID et al., 2013).

Van Heest, Mongush and Mathiowetz (2017) and Kos et al. (2016) have widely discussed strategies to minimize fatigue impacts and fatigue management.

Van Heest, Mongush and Mathiowetz (2017) described an individualized fatigue management course, divided into five modules: (1) basics of fatigue, (2) communication and fatigue, (3) body mechanics and making the most of the environment, (4) analyzing and modifying activities, and (5) maintaining a balanced lifestyle. This study showed decreased fatigue, increased self-efficacy, support for improved QOL and increased implementation of energy conservation strategies in people's routines (VAN HEEST; MONGUSH; MATHIOWETZ, 2017). Also, Kos et al. (2016) developed an individual fatigue self-management program. Occupational therapy interventions included strategies to support patients on activity performance, depending on their energy capacity, for greater effectiveness in self-management of fatigue control, goal setting, and "self-monitoring." The program showed more significant clinical improvements, better performance and satisfaction with the desired daily activities when compared to the relaxation/rest strategy (KOS et al., 2016).

Goverover, Chiaravalloti and DeLuca (2014) and Goverover et al. (2017) described Strategies for memory rehabilitation. In a study by Goverover, Chiaravalloti and DeLuca (2014), 24 sentences were presented - 12 sentences provided by the therapist and 12 sentences generated by the study participants. In the next phase, four functional tasks were presented to the participants, and they chose the two most significant. The study showed that the items generated by the participants such as words or concepts are more remembered and learned than items simply read or heard (information provided), and the self-generation of words, concepts or procedures for performing activities can significantly improve learning and memory in everyday tasks that are meaningful to people (GOVEROVER; CHIARAVALLOTI; DELUCA, 2014).

In a later study, Goverover et al. (2017) demonstrated that benefits of self-generation strategies also include the performance of activities of daily living, satisfaction, and better QOL, as well as to the reduction of depression (GOVEROVER et al., 2017). According to the authors, these findings provide the basis for using self-generated learning principles to design interventions based on individualized goals and daily functional tasks (GOVEROVER; CHIARAVALLOTI; DELUCA, 2014; GOVEROVER et al., 2017).

In this category, there was an emphasis on the interventions aimed at developing individualized strategies to minimize the effects of fatigue and self-generation strategies for improving learning and memory in meaningful everyday tasks for people with MS.

The Home Intervention category contains publications of the functional benefits, ease, and feasibility of applying home programs and the independence of health services (KAMM et al., 2015; SOSNOFF et al., 2015; KALRON et al., 2013).

Kamm et al. (2015) evaluated the standardized home training program for improving manual dexterity with people with MS. The program has significantly improved manual dexterity and performance in ADLs, although without specification of the type. The authors concluded that the program could be easily be applied and run independently of the health services or community training programs, as well as in patients with transportation problems and with little time (KAMM et al., 2015).

The second study by Sosnoff et al. (2015) sought to examine the feasibility of rehabilitation interventions and prevention of physiological and behavioral risk reduction at home. These interventions were: (A) home exercise program for risk factors for learning standardized balance, muscle strength and stretching exercises; (B) educational program focused on behavioral risk factors; and (C) combination of exercise and education programs. The results of the study indicated that the combination of fall prevention behavioral education with home exercise proved to be more effective in reducing the risk of falls in people with MS compared with single programs (SOSNOFF et al., 2015).

The last study of the Home Intervention category by Kalron et al. (2013) evaluated the effect of using a new sensory rehabilitation device for the hand of people with MS for home training. The sensory rehabilitation intervention included an initial familiarization session and subsequently two different sensory tasks: (1) identification of an object by palpation without the help of the sight, and (2) picking up a single element described by the therapist, without the help of sight. After the completion of this task, participants received the sensory training device for home practice. The study results indicated that the sensory capacities of people with MS did not improve by home sensory rehabilitation training. In line with the results of the study by Kamm et al. (2015), this intervention may have beneficial effects on manual dexterity (KALRON et al., 2013).

As shown in the second category, home interventions by occupational therapists improved manual dexterity and reduced risk of falls for people with MS. However, sensory capacities could not be improved by home sensory rehabilitation training alone.

The third topic category has articles on the Use of technology for health intervention, which present the use of teleconferencing (ASANO et al., 2015; DUNLEAVY; PREISSNER; FINLAYSON, 2013; FINLAYSON; PREISSNER; CHO, 2012, 2013) and Nintendo Wii Fit video game application (PLOW; FINLAYSON, 2014).

Asano et al. (2015), Dunleavy, Preissner and Finlayson (2013) and Finlayson, Preissner and Cho (2012, 2013) indicated the possibilities of implementing teleconferencing technology. The interventions used weekly group teleconferences. The sessions involved the discussion about fatigue and its impacts on life; role of communication; knowledge and skills for more efficient use of energy; activity analysis; use of fatigue management skills; review of program material and teaching on goal setting to incorporate changes in participants' lifestyle (ASANO et al., 2015; DUNLEAVY; PREISSNER; FINLAYSON, 2013; FINLAYSON; PREISSNER; CHO, 2012, 2013).

The first article used the intervention to describe the focus of the short, medium, and long term goals set by people with MS and to assess whether participants were able to achieve those goals over time. After the fatigue management intervention, the people with MS planned to use their acquired knowledge and skills to address a wide range of occupational goals, most related to IADL, followed by work and play. Regarding the time, intermediate and long-term goals were achieved less frequently than short-term goals (ASANO et al., 2015).

The second category aimed to identify the problems and challenges to be addressed in the training of occupational therapists who were prepared to develop strategies in this particular teleconferencing model. Based on the session notes, five main themes were identified: "time management," "professional training," "logistics," "challenging work" and the perception that "it can work!". As professionals became more experienced, they recognized that the approach could facilitate change in the patients´ skills. However, the professionals who participated in the study reinforced that to achieve better results in interventions; it is necessary to prepare professionals specifically for the use of these technologies in their interventions (DUNLEAVY; PREISSNER; FINLAYSON, 2013).

Finlayson, Preissner and Cho (2013) investigated the analysis of the presence of moderate physical comorbidities and interference with the effectiveness of a teleconference fatigue self-management program for people with MS. The study result found that people with MS alone can answer better to fatigue management interventions than those with MS-associated with one or more comorbidities, such as diabetes, arthritis, heart problems, abnormal blood pressure, breathing, previous stroke, or thyroid deficiencies. Thus, supporting behavioral changes necessary for fatigue management need the efforts to address the challenges of managing multiple chronic conditions of people with MS (FINLAYSON; PREISSNER; CHO, 2013).

In another study, the authors analyzed whether age, gender, physical disability, and employment status influence the effect of education on fatigue management through the use of telehealth (FINLAYSON; PREISSNER; CHO, 2012). The results showed that in younger people, therapists should develop an energy conservation management program with more ambitious goals, with strategies used in a wide range of occupations. For older people, professionals should aim for goals that focus on identifying, refining, and generalizing energy conservation strategies that patients are already using (FINLAYSON; PREISSNER; CHO, 2012).

Finally, Plow and Finlayson (2014) examined the usability of the Nintendo Wii Fit video game longitudinally from the perspective of adults with MS. The video game was set up at the participants' homes to perform four types of exercises (yoga, balance, strength, and aerobic training). The participants reported that Nintendo Wii Fit helped improve confidence in their skills, achieve goals related to engaging in leisure activities, and remove barriers associated with going to the gym to exercise. However, Nintendo Wii Fit was limited to customize the accommodation of various physical conditioning and functional levels, so adaptation is required to improve game usability (PLOW; FINLAYSON, 2014).

The use of technological resources in the practice of occupational therapists was effective in managing fatigue, improving self-confidence in skills, achieving short-term goals, and eliminating barriers to the development of physical and leisure exercises. However, professionals point out the need for specific preparation for the use of these technologies in their interventions, as well as their adaptations to meet the needs of people with MS.

The fourth category of Group Intervention (BROWN et al., 2016; PIMENTEL; TOLDRÁ, 2017a, 2017b) showed the importance of group development as a space for sharing experiences, helping and expanding the social network support, and the specific benefits pointed out by each of the authors.

Brown et al. (2016) presented the psychological processes of learning to live with diseases that

cause cognitive changes through an intervention group focused on cognitive aspects. The group intervention program involved participants in the process of sharing, educating, supporting, and encouraging each other to learn to live with cognitive impairment. The study highlighted that the content and group process need to reflect the complexity of relearning to live with cognitive impairment, a process with several interrelated phases that includes the restoration of personal identity and relationships (BROWN et al., 2016).

Pimentel and Toldrá (2017a) also analyzed the group experience using body techniques based on the self-healing method. The first moment of the session focused on the triggering questions that guided the conversations and the exchange of experiences. Then, the group experienced body experimentation and self-healing techniques such as active, slow and coordinated movements, visualization, breathing, self-massage, and relaxation techniques. Learning the self-healing method has increased people's potential for self-awareness, self-care, health promotion, and better QOL. The combination with the group strategy aroused the desire for attitudinal changes, sharing experiences, breaking isolation and becoming a space for help, expression of feelings, and expansion of the social support network (PIMENTEL; TOLDRÁ, 2017a).

In another study, these authors showed the steps developed for the improvement of a manual with contents focused on general information about the disease, guidelines on fatigue, memory, balance, and organization of routine activities developed through a therapeutic group with people with MS. The group sessions sought to combine technical information from the occupational therapy area with the perspective of people with MS in a dialogical manner, for the construction of an improved guidance manual, which originated a tool for easy consultation, to sensitize and stimulate the adoption of self-care and health promotion practices. The development of the group in a participatory way, searching for collective solutions, provided the understanding of their issues and overcoming problems and participation in the construction of manual for self-care (PIMENTEL; TOLDRÁ, 2017b).

The fifth category Client-Centered Interventions (PREISSNER; ARBESMAN; LIEBERMAN, 2016; EYSSEN et al., 2013, 2014; MESA et al., 2012; FALK-KESSLER; KALINA; MILLER, 2012), included studies that emphasized the importance of joint goal-setting between therapist and the patient to be achieved with the interventions. Preissner, Arbesman and Lieberman (2016) developed a case study on occupational therapy intervention in the symptoms exacerbation phase during the hospitalization period. Occupational therapy sessions included: instruction on modified self-care strategies to promote independence and security; guidance and guided practice in the use of adaptive equipment; education on energy conservation strategies; memory training to support ADL and IADL; emotional regulation strategies; and creating a home exercise program for physical activity. Client-centered occupational therapy interventions using occupational-focused evidence have proven effective increasing performance and satisfaction levels in the occupations identified as most important by the patient and the therapist (PREISSNER; ARBESMAN; LIEBERMAN, 2016).

Eyssen et al. (2013, 2014) described an experimental occupational therapy intervention in eight action steps that guide the Client-centered therapeutic process: (1) first contact between the patient and therapist, with collaborative decisions for the therapy; (2) therapist and patient, determine the process development, clarify expectations and identify the main demands; (3) assessment of personal, environmental and occupational factors that underlie patients issues; (4) therapist and patient establish goals, objectives and intervention plan; (5) implement planning with patient participation and power-sharing; (6) monitoring and modification through continuous strategy assessment; (7) results are evaluated, and achievement of goals examined; (8) therapist and patient in joint decision determine the termination or continuity of the intervention, when necessary (EYSSEN et al., 2013, 2014).

Eyssen et al. (2013) aimed to evaluate the effectiveness of Client-centered occupational therapy compared with conventional treatments. According to Eyssen et al. (2013), the person in the patient centered practice is the central point in the treatment process and strongly involved in decision making. The main premises of this practice are autonomy, partnership between therapist and patient, patient accountability about treatment, habilitation, accessibility, and respect for diversity. As presented by the authors, patient centered practice is assumed to have more effective results when compared to more traditional approaches. However, the study showed that the practice had no impact on the participants' functionality, participation, and autonomy. A possible explanation is that more time was spent in the consultation process and less time in the treatment (EYSSEN et al., 2013).

Eyssen et al. (2014) also investigated this aspect in another study showing that patient centered therapy resulted in a more intensive diagnostic

assessment and a shorter treatment approach. That is, more time was spent in the consultation process and less time in treatment strategies, which may be related to worse functional outcomes compared to conventional treatment therapy (EYSSEN et al., 2014). The authors suggest in their studies that patient centered therapy should be adjusted for a more proportional distribution of time devoted to diagnostic assessment and treatment (EYSSEN et al., 2013, 2014).

Mesa et al. (2012) reviewed the main mental health problems associated with MS, outlining recommendations for patient centered practices and exploring implications for therapeutic practice and research. According to the study, occupational therapists must assess emotional, cognitive, or social changes; increased fatigue; decreased participation in activities, and difficulty in adapting, especially when these changes affect daily life, social roles, and QOL. As part of an interdisciplinary team, occupational therapists should implement therapeutic interventions, such as training programs, education and support groups, seminars, fatigue management programs, adjustment groups, skills training and rehabilitation, or the use specifically designed protocols that help the people with MS minimize the effect of loss of functionality, promote improvement in mental well-being, functional performance and QOL (MESA et al., 2012).

Finally, Falk-Kessler, Kalina and Miller (2012) examined whether participation in a multidisciplinary treatment program affected the resilience of individuals with MS and whether those receiving occupational therapist interventions tailored to meet the individual's specific needs, had better resilience than those who did not. Occupational therapy interventions focused on adapting to symptoms that interfere with functionality. After applying the Resilience Scale (RS), the result showed that the resilience of the group that participated in the treatment with occupational therapy increased significantly. Also, the authors pointed out that programs aimed at improving functional performance in ADL and life roles, community reintegration, socialization, and groups are beneficial and contribute to the resilience of the individual (FALK-KESSLER; KALINA; MILLER, 2012).

The joint elaboration of the patient and therapist goals to be achieved with patient centered occupational therapy interventions has been effective in increasing resilience and mental health follow-up of people with MS, as well as in performance levels and satisfaction in the occupations at the end of the hospitalization period. However, the studies presented in this category also suggested that Client-centered therapy should be adjusted for a more proportional distribution of time spent evaluating diagnosis and treatment for better outcomes in autonomy, QOL, patient satisfaction, treatment programs adherence, and reduced rehabilitation time.

The last category showed an article on the topic of Vocational Rehabilitation (JELLIE et al., 2014). The authors explored the occupational therapy intervention for vocational rehabilitation (VR) of people with MS who experienced job instability. The intervention included an interview to facilitate a realistic understanding of performance, followed by specific assessments and interventions to address problems presented as barriers to work. Participants were also told about their employment rights and how to access a range of services. In some cases, a workplace visit was made, and there were changes facilitated by the occupational therapist. The employers were advised on their legal obligations and responsibilities and supported to understand the specific nature of their employees' difficulties (JELLIE et al., 2014).

The authors showed that the people with MS valued VR service performed by the occupational therapists, as they had a greater understanding of the issues related to illness, work and personal factors that impacted their ability to work, as well as felt supported to self-manage the relationships and challenges of the work, based on the guidance provided by a skilled professional (JELLIE et al., 2014). Although the disease affects adults in the productive phase, a single study focused on this theme was found in this review.

The studies part of this IR indicated benefits related to the reduction of the most prevalent symptoms such as fatigue, functional gains, discovery, or rescue of skills to cope with daily adversities and promotion of QOL of people with MS.

Thus, from the survey, the tendency for studies that address interventions aimed at enhancing functional capacity and better management of symptoms, considering that the disease has great interference in the activities that the person performs in their life context. Therefore, the relevance of this approach is justified considering that participation in daily routine activities is a human need and an important determinant of health and quality of life (KIELHOFNER, 2009).

Contributing to the perspective of promoting functionality, a study showed the application of body techniques guided by the Self-Healing method, with a more global approach, focused on the development of body awareness, self-awareness

and self-care (PIMENTEL; TOLDRÁ, 2017a) and another investigation addressed body techniques such as yoga learning, in a more specific context using video games (PLOW; FINLAYSON, 2014).

Although it is a disease that can lead to significant limitations in the performance of activities, there was less emphasis on studies related to the expansion of the support and social network. Albeit with less emphasis, some studies have developed interventions based on group attention. Pimentel and Toldrá highlighted the importance of the group for the socialization of experience, support, disruption of isolation and the learning of body techniques (PIMENTEL; TOLDRÁ, 2017a) and for the development of guidance manual (PIMENTEL; TOLDRÁ, 2017b). Brown et al. (2016) showing the importance of group strategy in favoring social interaction, focusing on learning to live with cognitive changes and studies that used group teleconferencing for self-management of symptoms, interaction and social learning (ASANO et al., 2015; DUNLEAVY; PREISSNER; FINLAYSON, 2013; FINLAYSON; PREISSNER; CHO, 2012, 2013). Only one study addressed the topic of vocational rehabilitation, as it is a progressive chronic disease that affects people in the production phase.

Finally, this IR indicates the need for the authors to use the term occupational therapy as a keyword to facilitate the identification of research and to promote the dissemination of occupational therapy to other professions since it was found that neither all authors use it.

The period (five years) and languages (Portuguese, English, and Spanish) delimited for the selection of publications was a research limitation. The need to expand the number of keywords in future studies is indicated.

5 Conclusion

This integrative review contributed to the construction and expansion of the scientific knowledge produced in the last five years, related to occupational therapy interventions in people with MS. There is a tendency to publish studies on the effectiveness of actions developed by professionals, indicating the diversity of interventions that can be used as therapeutic proposals for people with MS.

The study contributed to greater dissemination, development of occupational therapy practices, and recognition of the importance of the profession in interventions with the population with MS. However, further studies are necessary to disseminate the knowledge produced by occupational therapists, especially nationally, given the scarcity of articles published in the country on the topic. Given the diversity of international publications in non-specific occupational therapy journals, the importance of using the keywords that specifies the profession is emphasized to facilitate the identification and appreciation of the scientific production in the area.

References

ANGELA, S. et al. Occupational therapy in fatigue management in multiple sclerosis: an umbrella review. *Multiple Sclerosis International*, London, v. 2019, p. 1-7, 2019.

ARAFAH, A. M.; BOUCHARD, V.; MAYO, N. E. Enrolling and keeping participants in multiple sclerosis self-management interventions: a systematic review and meta-analysis. *Clinical Rehabilitation*, London, v. 31, n. 6, p. 809-823, 2017.

ASANO, M. et al. Goals set after completing a teleconference-delivered program for managing multiple sclerosis fatigue. *The American Journal of Occupational Therapy,* Boston, v. 69, n. 3, p. 6903290010p1-6903290010p8, 2015.

BROWN, C. L. et al. Learning to live with multiple sclerosis cognitive impairment and how it influences readiness for group cognitive intervention. *Disability and Health Journal*, New York, v. 9, n. 4, p. 638-645, 2016.

BUZAID, A. et al. Activities of daily living: evaluation and treatment in persons with multiple sclerosis. *Physical Medicine and Rehabilitation Clinics of North America*, Philadelphia, v. 24, n. 4, p. 629-638, 2013.

DUNLEAVY, L.; PREISSNER, K. L.; FINLAYSON, M. L. Facilitating a teleconference-delivered fatigue management program: perspectives of occupational therapists. *Canadian Journal of Occupational Therapy*, Ottawa, v. 80, n. 5, p. 304-313, 2013.

EYSSEN, I. C. et al. A cluster randomised controlled trial on the efficacy of client-centred occupational therapy in multiple sclerosis: good process, poor outcome. *Disability and Rehabilitation*, London, v. 35, n. 19, p. 1636-1646, 2013.

EYSSEN, I. C. et al. Client-centred therapy in multiple sclerosis: more intensive diagnostic evaluation and less intensive treatment. *Journal of Rehabilitation Medicine*, Stockholm, v. 46, n. 6, p. 527-531, 2014.

FALK-KESSLER, J.; KALINA, J. T.; MILLER, P. Influence of occupational therapy on resilience in individuals with multiple sclerosis. *International Journal of MS Care*, Clifton, v. 14, n. 3, p. 160-168, 2012.

FINKELSZTEJN, A. et al. The prevalence of multiple sclerosis in Santa Maria, Rio Grande do Sul, Brazil. *Arquivos de Neuro-Psiquiatria*, São Paulo, v. 72, n. 2, p. 104-106, 2014.

FINLAYSON, M.; PREISSNER, K.; CHO, C. Outcome moderators of a fatigue management program for people with multiple sclerosis. *The American Journal of Occupational Therapy*, Boston, v. 66, n. 2, p. 187-197, 2012.

FINLAYSON, M.; PREISSNER, K.; CHO, C. Impact of comorbidity on fatigue management intervention outcomes among people with multiple sclerosis: an exploratory investigation. *International Journal of MS Care*, Clifton, v. 15, n. 1, p. 21-26, 2013.

FORWELL, S. J.; COPPERMAN, L. F.; HUGOS, L. Doenças neurodegenerativas. In: TROMBLY, C. A.; RADOMSKI, M. V. *Terapia ocupacional para disfunções físicas.* São Paulo: Santos Editora, 2013. p. 1079-1105.

GOVEROVER, Y. et al. A randomized controlled trial to treat impaired learning and memory in multiple sclerosis: the self-GEN trial. *Multiple Sclerosis*, Houndmills, v. 24, n. 8, p. 1096-1104, 2017.

GOVEROVER, Y.; CHIARAVALLOTI, N. D.; DELUCA, J. Task meaningfulness and degree of cognitive impairment: do they affect self-generated learning in persons with multiple sclerosis? *Neuropsychological Rehabilitation*, Hove, v. 24, n. 2, p. 155-171, 2014.

JELLIE, B. et al. Staying at work and living with MS: a qualitative study of the impact of a vocational rehabilitation intervention. *Disability and Rehabilitation*, London, v. 36, n. 19, p. 1594-1599, 2014.

KALRON, A. et al. Effects of a new sensory re-education training tool on hand sensibility and manual dexterity in people with multiple sclerosis. *Neuro Rehabilitation*, Amsterdam, v. 32, n. 4, p. 943-948, 2013.

KAMM, C. P. et al. Home-based training to improve manual dexterity in patients with multiple sclerosis: A randomized controlled trial. *Multiple Sclerosis*, Houndmills, v. 21, n. 12, p. 1546-1556, 2015.

KARHULA, M. et al. The activities and participation categories of the ICF Core Sets for multiple sclerosis from the patient perspective. *Disability and Rehabilitation*, Londres, v. 35, n. 6, p. 492-497, 2013.

KESSELRING, J. Neurorehabilitation in multiple sclerosis: what is the evidence-base? *Journal of Neurology*, Berlim, v. 251, n. 2, p. 25-29, 2004.

KIELHOFNER, G. *Conceptual foundations of occupational therapy*. Filadélfia: FA Davis Company, 2009.

KOS, D. et al. The effectiveness of a self-management occupational therapy intervention on activity performance in individuals with multiple sclerosis-related fatigue: a randomized-controlled trial. *International Journal of Rehabilitation Research*, London, v. 39, n. 3, p. 255-262, 2016.

MENDES, K. D. S.; SILVEIRA, R. C. P.; GALVÃO, C. M. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto & Contexto – Enfermagem*, Florianópolis, v. 17, n. 4, p. 758-764, 2008.

MESA, A. et al. The mental health needs of individuals living with multiple sclerosis: implications for occupational therapy practice and research. *Mental Health Special Interest Section Quarterly*, Rockville, v. 35, n. 2, p. 1-4, 2012.

MULTIPLE SCLEROSIS INTERNATIONAL FEDERATION – MSIF. *Atlas of MS 2013*: mapeamento da esclerose múltipla em todo o mundo. London: MSIF, 2013. Disponível em: <https://www.msif.org/wp-content/uploads/2014/09/Atlas-of-MS.pdf>. Acesso em: 19 abr. 2018.

MULTIPLE SCLEROSIS INTERNATIONAL FEDERATION – MSIF. *Whats is MS?* London: MSIF, 2019. Disponível em: < https://www.msif.org/about-ms/what-is-ms/>. Acesso em: 10 ago. 2019.

OLIVEIRA, A. C. F. R. et al. Caracterização e queixas relacionadas ao desempenho ocupacional: considerações de indivíduos com esclerose múltipla. *Revista de Terapia Ocupacional da Universidade de São Paulo*, São Paulo, v. 24, n. 2, p. 112-120, 2013.

PIMENTEL, P. P.; TOLDRÁ, R. C. Método Self-Healing como estratégia de promoção à saúde e reabilitação de pessoas com esclerose múltipla no contexto da terapia ocupacional. *Cadernos Brasileiro de Terapia Ocupacional*, São Carlos, v. 25, n. 3, p. 565-573, 2017a.

PIMENTEL, P. P.; TOLDRÁ, R. C. Desenvolvimento de manual para orientações básicas do dia a dia para pessoas com esclerose múltipla. *Cadernos de Terapia Ocupacional da UFSCar*, São Carlos, v. 25, n. 1, p. 67-74, 2017b.

PLOW, M.; FINLAYSON, M. A qualitative study exploring the usability of Nintendo Wii Fit among persons with multiple sclerosis. *Occupational Therapy International*, London, v. 21, n. 1, p. 21-32, 2014.

PREISSNER, K.; ARBESMAN, M.; LIEBERMAN, D. Occupational therapy interventions for adults with multiple sclerosis. *The American Journal of Occupational Therapy*, Boston, v. 70, n. 3, p. 7003395010p1-7003395010p4, 2016.

SOSNOFF, J. J. et al. Fall risk and incidence reduction in high risk individuals with multiple sclerosis: a pilot randomized control trial. *Clinical Rehabilitation*, London, v. 29, n. 10, p. 952-960, 2015.

SOUZA, M. T.; SILVA, M. D.; CARVALHO, R. Revisão integrativa: o que é e como fazer. *Einstein*, São Paulo, v. 8, n. 1, p. 102-106, 2010.

VAN HEEST, K. N. L.; MONGUSH, A. R.; MATHIOWETZ, V. G. Effects of a one-to-one fatigue management course for people with chronic conditions and fatigue. *The American Journal of Occupational Therapy*, Boston, v. 71, n. 4, p. 7104100020p1-7104100020p9, 2017.

WHITTMORE, R.; KNALF, K. The integrative review: upgrade methodology. *Journal of Advanced Nursing*, Oxford, v. 52, n. 5, p. 546-553, 2005.

YU, C. H.; MATHIOWETZ, V. Systematic review of occupational therapy-related interventions for people with multiple sclerosis: part 1. Activity and participation. *The American Journal of Occupational Therapy*, Boston, v. 68, n. 1, p. 27-32, 2014a.

YU, C. H.; MATHIOWETZ, V. Systematic review of occupational therapy-related interventions for people with multiple sclerosis: part 2. Impairment. *The American Journal of Occupational Therapy*, Boston, v. 68, n. 1, p. 33-38, 2014b.

Author's Contributions

Luana Aparecida Barbosa Campos: text design, font research and organization, result analysis, and text writing. Rosé Colom Toldrá: text conception, analysis of the results, and the final review of the text. All authors approved the final version of the text.