

The role of occupational therapy on patients with diabetes type 2: a literature review

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ABSTRACT

Type 2 Diabetes Mellitus is the one that most affects adult patients, responsible for 90-95% of cases. In addition to the diabetes related complications, some co-morbidities can arise without having a direct relationship with the disease. Negligent patients towards self-care and those without regular monitoring have a higher probability of presenting complications and are more susceptible to develop functional disability. Several professionals, among them the occupational therapists, can intervene in the treatment of these patients, focusing on the medicated care and the adherence to self-care activities. **Objective:** To analyze the role of occupational therapy in patients with Type 2 Diabetes. **Methods:** Analysis of the literature regarding articles published from 2012 to 2017, in Portuguese and English, was performed on PubMed, Virtual Health Library (Bireme), and Scopus. The search strategies were developed with the combination of “Type 2 Diabetes” and “Occupational Therapy” descriptors. **Results:** 593 articles were found per the selected descriptors and applications of filters. According to the eligibility criteria, 14 articles were selected for analysis. It is observed that the performance of occupational therapist with these patients has been based on the realistic integration and insertion of self-care practices in a more structured and organized routine. **Conclusion:** The occupational therapist can assist in the improvement of functionality, both in performance and in the participation of the daily life of diabetic patients, with strategies such as adaptations and modifications of the environment, the routine and objects.

Keywords: Diabetes Mellitus, Type 2, Activities of Daily Living, Self-Care, Occupational Therapy

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INTRODUCTION

Diabetes is a metabolic disease whose main characteristic is chronic hyperglycemia. Its importance should not be underestimated, since poorly controlled glycemia can cause severe complications, especially in vascular elements, which can lead to complications such as atherosclerosis, nephropathy, neuropathy and diabetic retinopathy.^{1,2}

Formerly considered a Western disease, diabetes mellitus can now be considered a global epidemic. According to the International Diabetes Federation,³ it is estimated that there are about 425 million adults aged 20-79 years with diabetes worldwide, including 193 million people who are undiagnosed. Over 318 million adults are estimated to have impaired glucose tolerance, a high risk for developing the disease.

Type 2 diabetes is the most common type among adult patients, accounting for 90-95% of the cases, what includes individuals who have resistance, and relative deficiency in insulin secretion, who usually do not need insulin therapy. Most of these patients are obese or have a higher percentage of abdominal fat, hypertension and a strong genetic predisposition. Usually, these patients have late diagnosis, since hyperglycemia develops gradually along the years and many symptoms may go unnoticed.^{1,3}

In addition to complications directly related to diabetes, some comorbidities may arise without being directly related to the disease. They include depression, musculoskeletal, lung, neurological and oncological diseases. Patients neglected in self-care and without regular follow-up are more likely to have comorbidities and are more likely to develop functional disabilities.⁴

According to the International Classification of Functioning, Disability and Health,⁵ disabilities appears by a dynamic interaction between health condition and environmental and personal factors, which have the potential to limit the capacity and performance of the individual in their activities of daily live. Reflecting on the routine, organization, and management, the American Occupational Therapy Association⁶ states that the occupational therapist is the qualified professional to intervene in this occupational context, proposing intervention strategies to modify the factors that can negatively influence or emphasize positive factors of daily routine.

Therefore, this professional can aid functionality, both in performance and in the participation of daily life, using strategies such as adaptations and modifications of the environment, routine and of the objects.⁶

OBJECTIVE

The objective of this study was to analyze the role of Occupational Therapists in the treatment of patients with Type II Diabetes.

METHODS

A PRISMA⁷ oriented literature review was conducted in the databases PubMed, Virtual Health Library (Bireme - BVS), and Scopus. Search strategies were applied with the concepts "Type II Diabetes" and "Occupational Therapy", and the following descriptors or terms, under the Medical Subject Headings – MESH, of the National Library of Medicine: ("Diabetes Mellitus, Type 2" OR "Diabetes Mellitus, Noninsulin-Dependent" OR "Diabetes Mellitus, Type II" OR "Diabetes Mellitus, Ketosis-Resistant" OR "Diabetes Mellitus, Stable" OR "Diabetes Mellitus, Non Insulin Dependent"

OR "Type 2 Diabetes" OR "Diabetes Mellitus, Non-Insulin-Dependent" OR "Diabetes Mellitus, Maturity-Onset" OR "Diabetes Mellitus, Adult Onset") AND ("Occupational Therapy" OR "Occupational Therapies" OR "Therapies, Occupational" OR "Activities of Daily Living" OR "instrumental activities of daily living" OR "occupational performance" OR "Daily Lives" OR "Roles ocupacional" OR "independent living" OR "daily activities" OR "perform daily tasks" OR "employee performance appraisal" OR "Activities of everyday life"). The respective Portuguese terms were also used in the search.

The inclusion criteria were: articles published between 2012 to 2017 in Portuguese and English and research articles on Occupational Therapy and type 2 diabetes. Review articles. The search was conducted from March to June 2017.

RESULTS

We found 593 articles (Figure 1): 297 at PubMed, 42 at the Virtual Health Library (Bireme - BVS) and 254 at Scopus. Considering the inclusion and exclusion criteria, 14 articles were selected for this bibliographic review. The articles are presented with title, author, year and abstract, as shown in Table 1.

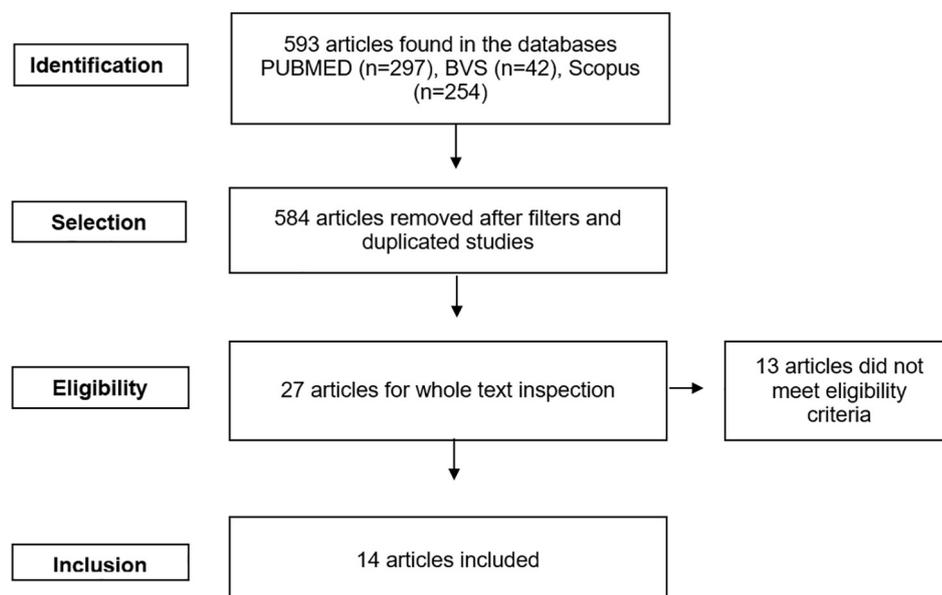


Figure 1. Selection flowchart of the results, according to PRISMA model.

Table 1. Summary of the articles included

ARTICLES	ARTICLE SUMMARY
Haltiwanger EP ⁸	Study with 16 patients diagnosed with Type II Diabetes Mellitus (T2DM) aged 60-85 years. The purpose of this study was to describe the development and evaluation of an intervention group of Mexican-American elderly, conducted by occupational therapists, who sought to facilitate the psychosocial adjustment to their condition and to improve their adherence to recommendations for self-care and health maintenance. After the interventions, empowerment, self-efficacy, and attitude towards self-care improved significantly. The relationship between a well-structured group intervention and the improvement of adherence in diabetes was observed. It was concluded that occupational therapists can incorporate all aspects of occupational performance when working with individuals, groups or populations with diabetes. They focus on assessing and establishing positive behaviors for health through engaging in basic activities of daily living, work and leisure.
Haltiwanger EP ⁹	A qualitative pilot study with 24 elderly (60-85 years) with diagnosis of T2DM. The objective of this study was to describe the experience lived in daily life by Mexican-American elderly and the planning of interventions to this group. It sought to provide an overview of day-to-day issues and psychosocial adaptation to DM2 that may facilitate or hinder the necessary changes in lifestyle. It was observed that through group care, participants were able to insert healthier practices in their routines, since they shared experiences and tried to avoid those that were negative. It was concluded that Occupational Therapy, in focus groups, facilitated the process of exploring problems, which facilitated social development, goal planning and better adaptation to diabetes care. In addition, they pointed to Canadian Occupational Performance Measure (COPM) as a good tool for prioritizing goals with patients, which can facilitate lifestyle changes according to a list of priorities. The authors further emphasize the importance of occupational therapists to enhance the spirituality, values, and beliefs concerning health that may have a role on the process of changing their routine.
Haltiwanger EP, Galindo D ¹⁰	A case report with 1 female patient. The purpose of this study was to determine whether occupation-based activities could improve diabetes management and reduce depressive symptoms in a Mexican-American women with T2DM. They used the COPM as an instrument to monitor occupational importance, performance and satisfaction. They observed that the intervention of Occupational Therapy can reduce depressive symptoms and increase the adherence to positive behaviors. This study emphasize the importance of participation in meaningful occupational activities. It suggests that it may be important for occupational therapists to address the spiritual and cultural perspectives of patients.
Piven E, Duran R ¹¹	American pilot study with 1 young adult of 19 years of age. It sought to determine whether the intervention of Occupational Therapy improves self-management skills of this patient diagnosed with T2DM. With the Human Occupation Model and the patient-centered approach, COPM was applied and a list of problems and self-care goals in diabetes were composed. The authors concluded that the intervention provided positive changes in lifestyle, improving self-care practices, such as glycemic control, adherence to a healthy diet and regular physical exercises.
Kendall L et al. ¹²	American study of patients diagnosed with T2DM (n=20) and mothers of children who received asthma treatment (n=19). The objective was to examine how individuals who are responsible for managing chronic conditions integrate notification systems and reminders into their daily routines. The study concluded that the participants used a varied set of strategies to manage their schedules and tasks, and that relying only on memory itself as well as redundant strategies have greater chances for failures.
Fritz H ¹³	A qualitative American study with 10 low-income female patients. The objective was to understand the dynamics of the occupational routine, focusing on self-management of T2DM. The authors observed that it was necessary to modify the daily routines of the participants, addressing the resources and barriers for a good self-management and the time structure to insert good practices of regular self-care. They concluded that occupational therapists are particularly suited to assist patients and modify pre-established routines, identifying and negotiating complicated aspects. In addition, occupational therapist could assist in building realistic plans for dietary and physical exercise changes.
Thompson M ¹⁴	Qualitative study with 8 participants whose objective was to explore the perceptions of individuals with T1DM and T2DM on self-management in diabetes care in their daily routine. The data were analyzed by occupational therapists who observed that although participants received similar guidelines regarding diabetes care, they applied this knowledge in different ways in daily life, and perceived this occupation in a unique and individual way. The authors conclude that occupational therapists are uniquely qualified to help newly diagnosed patients to develop routines and habits that facilitate the application of the guidelines given by professionals for self-management of diabetes.
Piven EF ¹⁵	Study with a group of 20 elderly (60-85 years) for addressing the cultural perspectives of Mexican-American elderly diagnosed with T2DM who presented good self-care. It was observed that in social gatherings the consumption of inadequate food was increased, and that the involvement in occupations and significant activities had positive results to raise awareness of the new demands of care. The authors concluded that steps need to be taken by occupational therapists to provide early intervention, for avoiding complications of diabetes and for providing a good quality of life.
Pyatak EA, Carandang K, Davis S ¹⁶	Descriptive study about the Occupational Therapy intervention manual "Resilient Empowered, active living with diabetes" (REAL) development. The purpose of this study was to describe strategies for the elaboration of a manual, the implementation of a feasibility study and evaluation of the effectiveness of the intervention. They concluded that the final manual presented differences and similarities with other existing interventions, such as other health education programs for diabetic patients. However, they stressed that one of the main differences to other educational programs is that the REAL emphasizes the integration of other professionals to orientate behaviors of day-to-day routine. They also concluded that, it is also a manual that can have its process applied to any problem of Occupational Therapy clinical practice.
Jandorf S et al. ¹⁷	Danish cohort of 1381 patients. Its objective was to explore the instrumental activities of daily living (IADL), focusing on the impact of preparing hot home cooked meals (lunch or dinner) on long-term morbidity and mortality among patients newly diagnosed with T2DM. It was concluded that patients who were not frequently involved in meal preparation had an increased risk of death related to T2DM, especially stroke in women; because they prefer unhealthy, fast-food.
Poole JL, Gashytewa C, Sullivan AT ¹⁸	A study with individuals aged 18-70 years, of which 43 participants were diagnosed for at least 2 years with T2DM and 31 healthy participants. The purpose of this study was to examine the limitations in daily activities, participation and quality of life in American Indians with and without diabetes. It was observed that the T2DM group presented greater impairment in body structures and functions and limitations in participation and in daily activities, correlating with the presence of pain. The authors concluded that occupational therapists can interfere by evaluating and providing interventions for painful, manual limitations, and by improving levels of activity and participation.
Marinho FS et al. ¹⁹	Cross-sectional study with 475 elderly patients with T2DM. The objective of this study was to investigate the disability profile of patients with T2DM in follow-up through the Canadian Occupational Performance Measure (COPM) and to determine the clinical and laboratory variables associated with performance. The identified disabilities included all domains of the Activity and Participation component of the International Classification of Functioning, Disability and Health (ICF) with high prevalence in the areas of mobility, self-care and domestic life. Limitations or pain in the upper limbs, peripheral diabetic neuropathy and absence of regular physical activity were associated with worse occupational performance.
Joo Kim Y et al. ²⁰	Study with 134 non-diabetic patients and 134 patients with T2DM aged 60-85 years. This study aimed to determine somatosensory differences among elderly people divided into 3 age groups (60, 70 and 80 years) and of both sexes. Although the differences in results were small between the groups, some variables presented significant differences, such as the sensation of pain. The authors concluded that future studies that include larger samples in each age group and diagnosis should be conducted to increase the possibility of generalization of their findings. In addition, an objective measure of the severity of diabetic neuropathy should be included in the screening process.
Pyatak EA et al. ²¹	A randomized American study of 81 patients for the pilot trial of the preventive occupational therapy intervention "Resilient, Empowered, Active Living with Diabetes" (REAL) in young adults (18-30 years). By evaluating the patient's abilities, the authors applied and developed strategies that allowed the development of habits and routines of self-care and greater participation in daily activities. The authors concluded that the REAL, through the flexibility of various intervention strategies, proved to be a way to meet the personalized needs of an ethnically diverse group.

DISCUSSION

Among the articles of this analysis, of the 14 articles included, 10 of them proposed to reflect the routine of the diabetic patient and the role of Occupational Therapy in this context. The articles emphasized the competence and capacity of the occupational therapist in the analysis of everyday life, and the exclusive strategies that integrate the guidelines given by several health professionals, with the reality found in the daily life of individuals.^{8-16,18,21}

Address the structure of habits and routines is a specific intervention of Occupational Therapy for any individual who presents a transient or chronic condition that affects performance in daily activities, such as in metabolic, neurological, rheumatologic, and dementia.^{22,23}

By addressing the routine changes demanded by diabetes, we observed that there is a great impact in several life contexts, what can limit the individual functionality in their participation and performance in daily activities. Routinely managing diabetes is a complex process that requires understanding of drug effects, self-care practices, diet balancing and physical exercise, and continuous follow-up of blood glucose levels, what is not a simple insertion of all information in a daily routine that is often poorly structured.¹⁴

Due to the complexity of diabetes regarding lifestyle changes, the insertion and intervention of occupational therapists in this type of population, integrating the necessary changes in the reality of each patient, understanding their values, their difficulties and stimulating cooperation of the individuals has been increasingly explored.⁹

Pyatak et al.²¹ emphasize that the main action of the occupational therapist is to raise awareness about habits and performances in management and self-care tasks, as well as the integration of these tasks in daily life, reinforcing that habits and routines are the focus of the intervention.

Pyatak, Carandang, Davis¹⁶ and Pyatak et al.²¹, trying to instrumentalize the intervention with diabetic patients present in their research the REAL manual, a manual that proposes to intervene in the routine, skills and life aspects of the patients. This manual was prepared in 7 intervention modules, with Module 1 "Setting Goals" which addresses the establishment of objectives, evaluations and fixed activities, with topics on the history of health, life and

daily routine. Module 2 "Living with diabetes", Module 3 "Access and advocacy", Module 4 "Activity and health", Module 5 "Social support", and Module 6 "Emotions and well-being" present adaptive aspects that deal with basic concepts of the disease, habits, routine, self-care, and social and emotional support with positive coping strategies. Module 7 "Long-term health" has fixed objectives and proposes the reflection on the new knowledge and skills acquired and the establishment of goals and plans.

The authors of this study reinforce that although the manual is standardized, only the first and last module are applied with all individuals, since the other modules can be individually adapted, and that they are a specific and structured intervention instrument of the profession. Basic guidelines about healthy self-care practices can and should be performed by any health professional, but what the authors point out is the specificity of the occupational therapist that allows this professional to act in the improvement of activities of daily life. It is not their responsibility to provide adequate diet, prescription of exercises or medications, but to verify with the patient how this requirements and guidelines will be applied to daily life, and to identify aspects that can be negative and positive to a good adhesion to the guidelines.^{8-11,13-16,18,21}

Most studies present research with low-income and Latino individuals; it should be considered that this public may present greater difficulties to understand the guidelines given by the professionals and to include such guidelines into their routines, either due to the social environment, the food adequation, the access to medicines or the closest monitoring with health professionals.^{8-11,13,15,18}

Another group with limitations to follow guidelines are the elderly, who may need more assistance and follow-up to make lifestyle changes, since adherence in this group is mostly low due to the difficulty of modifying long consolidated habits, which compromises all the proposed treatment. Additionally, physical, cognitive, cultural and psychosocial issues can influence and negatively impact the process of adherence to the care and guidance of professionals.^{8,9,10,15,20}

According to Haltiwanger,⁹ in any age group, imposed routine and lifestyle changes are not easy, as such changes need to be meaningful for the individual's life. Therefore, the intervention in aspects that address the transition to new habits of life

is a requirement. Although we observed the importance of Occupational Therapy in the organization of routine, in the integration of the guidelines, and in the daily care, according to the articles included in this study, Haltiwanger reports that these professionals rarely addresses diabetes specifically, and that their interventions are based on the disease as a comorbidity, since these patients are often referred to the professional because of other clinical conditions.⁹

Therefore, what we observe is the performance of the professional, being restricted to general guidelines that limit the whole potential of effective changes in the life of individuals that occupational therapists could bring. This perception is shared by Piven,¹⁵ who emphasizes that the performance of occupational therapists is still very much based on the complications of diabetes and the author reflects the importance of our intervention to begin before the complications arise, by changing habits and routines, in order to reduce and even avoid the complications given by an unstructured daily routine.

CONCLUSION

By analyzing the current literature on diabetes and the work of the occupational therapist with these patients, we evidence that the articles show means of interventions those actions that are guided by integration and the realistic insertion of self-care practices into a more structured and organized routine. They reinforce the great differential of Occupational Therapy in emphasizing the integration of daily-oriented behaviors, understanding how the routine is formed and structured and what negotiations are possible and realistic between professionals and patients.

However, despite the importance of the professional and the need for an evidence-based practice, the number of articles is still relatively narrow, restricting itself to some nuclei of researchers. We emphasize the need for occupational therapists to research and disclose the outcome of their interventions, understanding diabetes as a central disease and not just as a comorbidity.

At last, we also identified the importance of additional studies and the need for a review of the broader literature in other databases, so that we can analyze the different actions of Occupational Therapy in patients with Type II Diabetes Mellitus.

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