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SELF-MANAGEMENT SUPPORT INTERVENTIONS INTEGRATED INTO OCCUPATIONAL THERAPY PRACTICE WITH PEOPLE HAVING TYPE 2 DIABETES

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Abstract
The therapeutic approach of patients diagnosed with type 2 diabetes is complex and multidisciplinary. Complementary to specific medication, patients' self-management education and support became key interventions to empower an individual to engage in healthy lifestyle behaviours. Evidence suggests that there are many barriers to successfully integrating these strategies into clinical practice. Also, therapy is more efficient when people get support to continually engage in effective self-management behaviours. Through a case-study research, we aimed to explore the impact of an individualized occupation-based support intervention on the clinical state and quality of life of a 43 years old woman with type 2 diabetes, obesity, and retinopathy. Following the initial assessment of functional status, quality of life, performance, and satisfaction in daily occupations, a six months intervention plan was developed. Through therapeutic education, time management and occupation analyse, we considered integrating the therapeutic recommendations (drugs administration, weight control, blood glucose monitoring, and physical activity) into the daily routine of our client. After revaluation, the obtained results indicate significant improvements in the client's occupational profile, health, and quality of life. Our study provides evidence that supports the beneficial role of the proposed occupational therapy intervention in the clinical management of the patient with type 2 diabetes.

Keywords: occupational therapy, quality of life, self-management support, type 2 diabetes.

1. INTRODUCTION

Type 2 diabetes mellitus is one of the non-communicable diseases that are constantly expanding around the globe. From a clinical and etiopathogenic point of view, it is a hetorogeneous syndrome, characterized by hyperglycemia with, or without clinical signs, caused by impaired insulin secretion, disruption of its action, or both (Matthews and Matthews, 2011).

Considering the International Diabetes Federation (IDF) statistics, in 2017 there were 425 million adults with diabetes, while 1 in 2 people with diabetes was underdiagnosed. Also, two-thirds of them were living in urban areas or were of working age (IDF, 2017). Predictive studies showed that by 2040, the total number of people suffering from diabetes is expected to grow by 227 million or 10,4% of the population, reaching 642 million people in the world (Kibbey et al., 2013; McGuire et al., 2013; Marinho et al., 2016). According to a Romanian study regarding the prevalence of diabetes mellitus and prediabetes in the adult Romanian population (Mota et al., 2016), Romania is among the countries with the highest prevalence of diabetes in Europe (11,6%). Its prevalence increases with age and is higher in men than in women.

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At the same time, the modern lifestyle, which is characterized by physical inactivity and increased consumption of hypercaloric foods, is associated with an increased risk of being overweight, obese, and in consequence, an additional risk of developing type 2 diabetes (Smith et al., 2001; Wallis, 2004; Sieverdes et al., 2010). Another reason of concern is the growing burden of the diabetes epidemic in terms of microvascular and macrovascular complications like cardiovascular diseases, stroke, kidney failure, neuropathy and amputations, vision problems, or various socio-psychological conditions (mood disorders, keeping a job or staying involved in family roles, driving, poor quality of life) (Joo Kim et al., 2016). All these facts highlight the need and importance of cost-effective improvements in managing diabetes treatment (Stead et al., 2007). Improving blood sugar control in patients with diabetes type 2 can reduce the risk of death and vascular complications; however, achieving significant reductions in blood glucose levels can be difficult in practice ((Duran et al., 2010; Piven and Duran, 2014).

In the case of the therapeutic approaches of type 2 diabetes, individual-level interventions such as lifestyle changes, together with patient training and consistent development of disease self-management activities (blood glucose monitoring, adherence to medication, compliance with dietary recommendations, etc.) have a very important role. Patient education programmes can reduce the risk of diabetes-related complications up to four-fold, but many people with type 2 diabetes have never attended structured education programmes to learn how to look after themselves (self-management) (Pyatak, 2001). These activities are often experienced as burdensome and ongoing adherence is a challenge for many (Stavros et al., 2007).

Evidence suggests that some people do not want or cannot make the recommended lifestyle changes for better health and well-being (Wallis, 2004). Occupational therapy is a profession that aims to promote health and well-being through individual empowerment and is effective for many long-term conditions (WFOT, 2016). Often, the personal and environmental factors of the client suffering from type 2 diabetes are those which create barriers to participation in daily occupations.

One of the aims of this profession is to facilitate the participation of individuals in daily activities.

Engagement in occupations is an essential feature of the individual that differentiates people from each other and occupational therapy has proved to be a valuable mean of self-managing for the persons suffering from diabetes (Duran et al., 2010). The occupational therapists can improve the condition of their clients starting from the occupations that serve the important purposes of the clients and have a special significance for them, and from the understanding of different contexts influence on these occupations. Moreover, they can help clients to develop simple, concrete, measurable and achievable goals, according to their needs and desires.

Occupational therapy integrates the patient's feelings and needs, encourages patient participation, seeks to include the patient's perspective, and attempts to fully inform the patient, aspects mentioned as important for the therapeutic approach of people with diabetes (Moran et al., 2008; Hancock et al., 2012).

2. MATERIALS AND METHODS

The main objective of the study was to highlight the process of an intervention based on occupational therapy, in support of recognizing the importance and efficiency of a comprehensive client-centred approach, in managing the therapeutic recommendations of people with type 2 diabetes.

We wanted to assess the potential effects of occupational therapy self-management interventions on the lifestyle, health status and quality of life in the case of a client woman diagnosed with diabetes type 2. We conducted or research starting from the case study of an adult woman, aged 43 years

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old, who confronts with diabetes type 2 for 12 years and more recently microvascular complications. The Canadian Practice Process Framework (CPPF) was used in order to set a coherent practical strategy for intervention; it also provided a helpful guide setting directed towards the development and implementation of specific interventions to enable the client's occupational performance and engagement (Cole and Tufano, 2008).
Diabetes can impact occupational performance in different ways, and therefore we applied the Canadian Occupational Practice Model (COPM) questionnaire to asses our client needs in the areas of self-care, productivity and leisure. The COPM is also a valid measure of changes in self-perceived occupational performance and satisfaction with performance, using a 10-point rating scale, where 1 equals poor performance and low satisfaction, while 10 means very good performance and high satisfaction (Law et al., 1990).
The body mass index (BMI) is a parameter currently in use for defining anthropometric height/weight characteristics in adults and for classifying them as normal weight, underweight, overweight and obese. The BMI has been useful in population-based studies by its wide acceptance in defining specific categories of body mass as a health issue (Meeuwsen et al., 2010).
Each day, our client had to measure her blood sugar glucose level. This was made with a glucose meter for domestic use, which is accessible and easy to manipulate. The blood glucose was measured in mg/dl from the capillary blood and also feedback regarding the values was displayed (normal-, low- or high level). Studies have shown that a self-monitoring of blood glucose level routine integrated into the therapeutic plan helps motivating the patient and empowers him for lifestyle changes (Kempf et al., 2010; Fritz, 2014).
Another research interest was to observe if our intervention will have an impact also on the quality of life of our client. For this reason, we applied the RAND 36-Item Health Survey tool, which investigates several areas of quality of life (Hayes et al., 1993). The questionnaire comprises a set of 36 generic, coherent and easy-to-administer questions, centred around eight basic concepts of health: physical functioning (10 items), role limitations due to physical disabilities (4 items), role limitations due to emotional problems (3 items), energy / fatigue (4 items), emotional well-being (5 items), social functioning (2 items), presence of pain (2 items), general health status (5 items). The answers are evaluated on a visual-analogue scale from 1 to maximum 5, with each answer corresponding to a number, between 0 and 100, respectively: 0, 20, 25, 40, 50, 60, 75, 80, 100 (according to criteria for administration and interpretation of the questionnaire). The interpretation of the answers of the questionnaire is done for each field, calculating the average value of the points obtained for each question (missing values are not taken into account). Thus, a higher score is associated with a better quality of life. Also individualized questionnaire measure can be an efficient method to appreciate the impact of diabetes and its treatment on the quality of life (Bradley et al., 1999).

3. RESULTS AND DISCUSSIONS

The occupational therapy recommendations were made based on the chosen frames of references and model of practice, as well as on evidence. Starting from the clinical manifestations of the disease, the impact on functional status and occupational participation, as well as the unique way in which a person experiences his state of health, the client-centred frame of reference was used during our intervention.
Our client, Dorina, has diabetes mellitus type 2 for 12 years, obesity (class I, with a BMI of 32,1 kg/m^2) and six months ago, after a specialized ophthalmological consultation, she was diagnosed with diabetic retinopathy, pathology also confirmed by the result of a retinal tomography. She

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started treatment with intraocular injections for macular edema and now she is still confronting with diet compliance and body weight control problems, poor time and activities management, as well as lack of regular meals and physical activity. Dorina is aware of her health deterioration and the need to relax and take control over the factors and activities which affect her health, along with improving self-management of the disease, but somehow her efforts were unsuccessful.

Having a passion for photography since childhood, Dorina loves her job as an event photographer. Although she is self-employed now, her program is very busy, sometimes working 12-14 hours/day during a week. Due to the prolonged schedule and stress with deadlines at work, her nutrition is unbalanced (hypercaloric), she doesn't have regular time meals, and because of workload, she became sedentary.

Over time, leisure and recreational activities have lessened, leaving a mark on Dorina's life satisfaction and well-being. From the cheerful, empathetic, proud, confident, positive person with high professional aspirations, she became a nervous, less communicative and sociable, anxious, and unsatisfied person. She likes to have long walks in nature and surprise its beauty in her photos. She even bought a bicycle to make it easier to carry her photo devices, but never got time to use it.

Dorina is aware that at any time her health can deteriorate and therefore she prefers to work from home and to avoid friends or acquaintances, which might feel sorry for her. Sometimes she expresses concern about her health and the fact that she will eventually regress to insulin administration.

Looking at all these aspects revealed by our client during the occupational interview, we can propose some interventions targeting her needs to improve her daily habits, health status, and work-load. Thus, we agreed on a six months intervention program based on self-management strategies to develop our client basic skills for symptoms, blood glucose, diet, and weight monitoring, engage in physical activity, and time management.

Education is an essential component to enable Dorina to manage her health condition and lifestyle. She needs to have a good understanding of the symptoms, possible complications, how the medication works, to adapt or modify tasks, behaviours and her environment in order to continue to engage in desired occupations. Therefore, we also considered therapeutic education sessions for a healthy diet, weight control, and healthy physical activity level. □

Developing a partnership between the therapist and the client, by placing him in the center of attention and giving priority to his needs, is the main pillar of the theoretical and practical approach in the optimization of occupational performance and well-being. Equally important is to determine the complex interactions between the personal factors, environmental factors, and occupation requirements and how these interfere with the ability to engage in meaningful occupations.

Considering all these, the initial assessment was carried out using the COPM, to determine Dorina's occupational problems that influence her wellbeing. She was asked to rank them from most important to less important and for each to give a score (from 1 to 10) for performance and satisfaction. In this respect, having regular meals and a balanced diet (performance score 3, satisfaction score 2), engage in physical activities (performance score 3, satisfaction score 3), stress and free time (performance score 4, satisfaction score 3), and taking control over her health (performance score 4, satisfaction score 2) were the main occupational issues that Dorina would like to improve and also the goals for the occupational therapy intervention.

We chose to apply the Person-Environment-Occupation (PEO) practice model to guide our understanding of the client situation and also setting the SMART objectives. For the next six month we agreed with Dorina to develop simple, specific, measurable, concrete, and achievable objectives according to her needs. Regarding her engagement in physical activities, at the end of six months,

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Dorina will be able to travel on bicycle for at least 30 minutes, to take photographs in the nature, three times/week. She will start with ten minutes, one time/week and then she will gradually progress reaching 30 minutes, one time/week (in three months) and then, for the next three months she will increase the frequency to three times/week. She will monitor her progress by checking in a table how many times she engaged in this behavior and for how long time. This will be beneficial also for reducing her stress level because time spent outdoor and interaction with nature help people to relax and find their calm.
In order to control her weight and diet, Dorina will establish and respect a schedule of three meals/ day at fixed intervals with low calories and low sugar content. She will learn how to calculate her food calories and how to select and prepare healthy food.
For the occupational therapy program, we established three sessions per week of specific activities for glycemic control, therapeutic education, physical activity, relaxation, and meal preparation. During our meetings, we focused on the client's involvement in functional activities (cycling), starting with 10 minutes/session initially, then progressively raising them to 30 minutes three times/week by the end of the intervention period. We recommended starting with therapeutic education for 10 minutes (information, therapeutic guides, educational videos, demonstrations, free discussions, etc.), then blood glucose and weight control and also to introduce 5 minutes of warming up and 5 minutes of cooling down, to satisfy the physiological bases for functional adaptations. For feedback and self-efficacy, we recorded the outcomes after each session, in a structured way, and suggested a few easy to use technology applications to help the client keeping her target regarding the diet, calories intake, and physical activity intensity. Based on the results we organized our discussions at the end of each week.
Active participation of the client is the most important aspect in self-management interventions and the results after reevaluation at the end of our program reflects improvements for performance and satisfaction in all the occupational areas that were problematic for our client at the beginning, as shown in table 1.

Table 1. Evolution of COPM scores after initial and final testing

Occupational performance problems	***Initial testing***		***Final testing***	
	Performance	Satisfaction	Performance	Satisfaction
Regular meals and a balanced diet	3	2	7	7
Engage in physical activities	3	3	8	8
Reduce stress and get more free time	4	3	6	5
Control over her health	4	2	8	9
Total average score	**3.5**	**2.5**	**7.25**	**7.25**

Our comprehensive occupational therapy program resulted in a total change of 3.75 points for performance and 4.75 points for satisfaction. We can observe that changing sedentary behavior and getting involved in physical activities in nature gives our client the highest score and change in performance, while regular meals, balanced diet and control over health issues are responsible for highest satisfaction.
Body mass index and blood glucose had also a good evolution, from initial values of 32.1 kg/m^2 and 350 mg/dl (high level) to 29.6 kg/m^2 and respectively 140 mg/dl (low level) after the intervention program.
Looking at the scores for RAND 36-Item Health Survey we also notice an improvement of the client's quality of life in all eight domains, the biggest effect being registered for role limitation due to physical health and associated emotional problems (figure 1).

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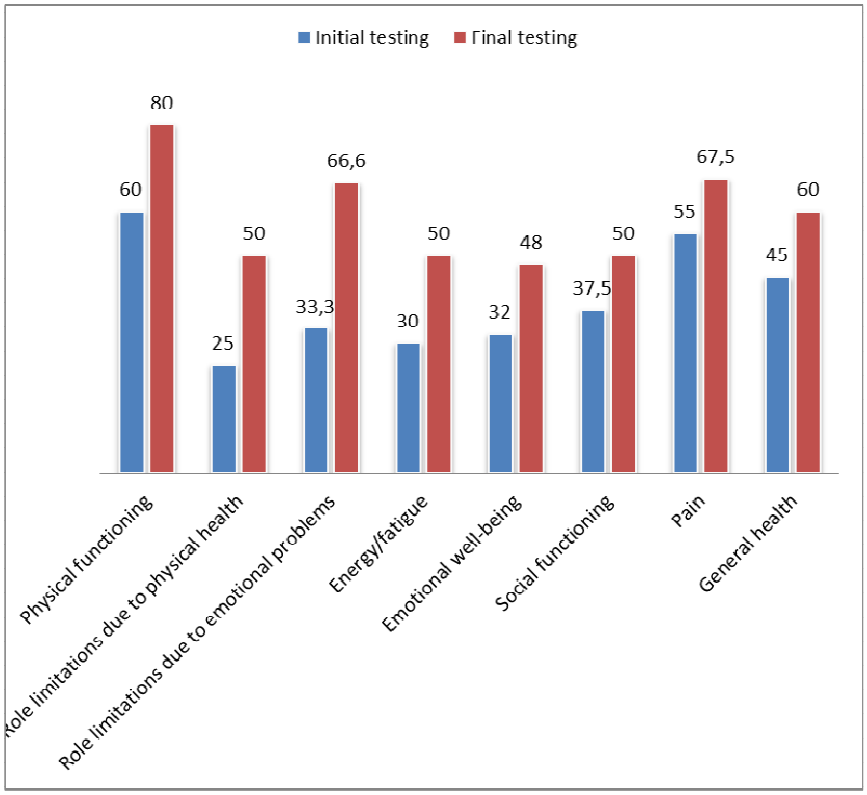

Figure 1. Evolution of scores for RAND 36-Item Health Survey after initial and final testing

Diabetes can impact occupational performance in different ways, and from a social and emotional point of view, self-management strategies help people to better cope with their disease and seek for social interactions.

4. CONCLUSIONS

Our case study illustrates an example of the role of occupational therapy in the treatment of an adult woman with diabetes type 2 and associated comorbidities. It also provides a possible intervention approach in the therapeutic management of the disease, based on literature evidence and the results of this research.

Occupational therapy self-management interventions can improve the health outcomes in type 2 diabetes and provide a cost-effective option for reducing the burdens placed on patients and healthcare systems. A direct involvement of the client in setting the intervention goals and daily objectives supports him to take the responsibility for the disease management, instead of being controlled by it, or restrict his participation in daily activities.

The long-term treatment of diabetes remained primarily a medical approach because of many barriers to successfully incorporate medical advice and therapeutic education into the lifestyle of the individual. Our motivational occupation-based and patient-centred intervention can represent an effective alternative to the traditional, didactic approaches for facilitating lifestyle change and improved self-management of people with diabetes type 2.

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