

**Edu World 2016**  
**7th International Conference**

**A CASE STUDY OF OCCUPATIONAL THERAPY IN ACUTE  
MYOCARDIAL INFARCTION PATIENT**

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**Abstract**

The increasing prevalence of coronary heart disease and heart failure, as well as their multiple consequences on individual level, in terms of functional limitations and occupational participation restrictions, including socio-economic challenges, impose the implementation of new effective methods and strategies for prevention, treatment and rehabilitation. More studies revealed that a comprehensive therapeutic approach of coronary patient, which includes also disease's self-management through counselling and therapeutic education interventions, contributes significantly to reducing morbidity and mortality of this type and the risk of sub-optimal patients' recovery. The aim of this study was to present a strategy for increasing self-efficacy of therapeutic management interventions based on the patient's occupational needs in the context of his living environment. Thus, we proposed, implemented and validated a six weeks intervention plan for the clinical case of a 54 years old man with post myocardial infarction status. Our strategy consisted in teaching the patient how to identify and solve the various occupational problems he is facing, by using a problem solving process approach. In order to evaluate the results, a series of assessments were conducted: self-perception of occupational performance (using COPM), heart rate, level of perceived intensity during physical activity (Borg RPE Scale) and anxiety level. In conclusion, the favourable evolution of the patient, as a result of our proposed therapeutic intervention, provides clinical evidence supporting the idea that the principle of client-centred practice in the context of occupational therapy is a reliable resource for promoting and improving disease self-management in cardiac rehabilitation.

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**Keywords:** Case study; occupational therapy; myocardial infarction.



## 1. Introduction

The increasing prevalence of coronary heart disease and heart failure, as well as their multiple consequences on individual level, in terms of functional limitations and occupational participation restrictions, including socio-economic challenges, impose the implementation of new effective methods and strategies for prevention, treatment and rehabilitation.

Cardiovascular diseases remain a leading cause of morbidity and mortality, despite improvements in outcomes (European Society of Cardiology, 2016) and many survivors suffer lasting disabilities and medical complications, having at least one comorbidity (Mampuya, 2012).

The survivors of myocardial infarction usually experience serious deficiencies of motor, cognitive and sensory functions, causing a decreased quality of life and life expectancy, and in addition, a substantial burden on national economies (Drosselmeyer et al., 2014). Cardiac rehabilitation is a necessity, especially when it comes to providing appropriate and affordable health services, to assist the patients' specific needs during the transition period between the end of hospitalization and reintegration in their home environment (Aronsson et al., 2009).

Considering the epidemiology of CVDs and also the outcomes from the specialty literature, it is estimated that the necessity for tangible programs of secondary prevention and cardiac rehabilitation will increase in the future because people with chronic illnesses are especially vulnerable, requiring continuing recovery assistance (Savage et al., 2011; Wang, Zhao & Zang, 2014; Lay et al., 2015).

## 2. Theoretical Foundation and Related Literature

A lot of recommendations on lifestyle changing and limiting risk factors are gathered in the clinical guidelines for cardiac patients, but we found a considerable oversight of the references on how the patient can continue with the meaningful activities he had before the myocardial infarction (Tooth & McKenna, 1996; Servey & Stephens, 2016). Particularly, the indications are vague and inconsistent with the stage of recovery, thereby restricting a timely return of the person to earlier occupational routines (Désiron et al., 2011).

Consequently, more studies revealed that a comprehensive therapeutic approach of coronary patient, which includes also disease's self-management through counselling and therapeutic education interventions, contributes significantly to reducing morbidity and mortality of this type and the risk of sub-optimal patients' recovery (Piepoli et al., 2014, 2016). The emphasis in this type of approach is on increasing self-efficacy and his confidence in solving problems and making decisions. It is encouraged the partnership between the patient and the therapist and also patient's access to relevant information that can empower him to take the necessary steps in supporting recovery (Aghakhani et al., 2011).

Fear, anxiety and depression may accompany the physical symptoms, making thus difficult the patient's optimal recovery (Watkins et al., 2013; Kala et al., 2016). In such cases, disease self-management approaches are especially relevant to the particular needs of cardiac patients who need to adapt to disease restrictions.

When their health status changes, patients are facing with disruption of daily routines and they need a transition period toward rebuilding professional self. Occupational therapists can respond best at these transitions and, recognizing the key role of occupations as facilitator, are very suitable for the whole

team of cardiac rehabilitation (Feroni & Thielke, 2010). Despite proven positive effects of occupational therapy, there are still little referral in the rehabilitation practice after myocardial infarction (Wells, 2007; Drosselmeyer et al., 2014; Che Daud et al., 2016).

A classic cardiac rehabilitation program involves monitored physical activity and therapeutic education for lifestyle changes. In addition to this, occupational therapy can maximize the benefits of cardiac patient's recovery, especially through supervised occupational engagement (Proudfoot, 2006). The occupational therapist focuses on the impact of the physical activity restrictions on significant occupations for the patient, such as work, self-care and leisure. In the same time he brings guidance, reassurance and practical options for the patient to resume his valuable occupations and to implement the physical activity prescriptions at home.

### **3. Methodology**

Our research was based on the case study on a man aged 54 years, who recently suffered a myocardial infarction. For a logical and coherent working approach, we used the Canadian Practice Process Framework (CPPF), which provides a helpful framework for developing and implementing effective occupational therapy interventions (Cole & Tufano, 2008).

Designed to be used by occupational therapists, COMP questionnaire helps to identify the occupational problems of the client and to detect changes in self-perception of occupational performance and satisfaction scores, 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 Borg Rating of Perceived Exertion (RPE) scale is a valid and frequently used instrument for subjective evaluation of exercise intensity, recommended especially to elderly and cardio-pulmonary patients in the first weeks of resuming physical activity (Borg, 1982; Buckley, Sim & Eston, 2009). Individuals are first thought to identify their body sensations and reactions during physical effort and then to associate its value. Borg proposes a grading scale effort from 6 to 20, respectively from very, very light to very, very hard.

We wanted to measure also the presence of general symptoms of anxiety commonly occurring in cardiac disease. For this reason we used the Depression Anxiety Stress Scale (DASS), which was developed by researchers at the University of New South Wales and it provides a broad coverage of general symptoms of anxiety, depression and stress (UNSW, 1995). We used the short form (DASS 21), which is a 21 item (from 42) self-report questionnaire, where individual is required to indicate the presence of a symptom over the previous week.

DASS-anxiety focuses on physiological arousal, perceived panic, and fear. Each item is scored from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week), in the end resulting five intervals of outcome interpretation: 0-7 normal level of anxiety, 8-9 mild anxiety, 10-14 moderate, 15-19 severe and over 20 extremely severe anxiety (Lovibond & Lovibond, 1995).

The DASS has excellent psychometric properties (reliability, validity and specificity) and few limitations, however clinicians should be aware that certain patient groups (eg. children, developmentally delayed, or those who are taking certain medications) may have difficulty understanding the questionnaire items (Buckley, Sim & Eston, 2009).

## 4. Results

Our research is based on the case study of a man, aged 54 years, who suffered an acute myocardial infarction three weeks ago. From his medical history we found that he was diagnosed with chronic ischemic cardiopathy, ten years ago. He also suffers from hypercholesterolemia and grade I obesity, but he is normotensive. The myocardial infarction occurred during his working program and the prompt reaction of his colleagues has enabled the emergency measures of paramedics' team. He was diagnosed with acute anteroseptal myocardial infarction, for which he received emergency treatment in the intensive care unit. He was discharged from hospital after two weeks with a relative good general health. The results after performing coronary angiography were also good. Following the positive evolution of initial diagnosis, the cardiologist recommended a conservative approach, meaning ambulatory pharmacological treatment (coronary vasodilators, lipid-lowering drugs and anticoagulants) and also medical leave for three months.

Our patient had history of hypertension on maternal side and he used to smoke more than one package of cigarettes in a day, for twenty years, but he quit six years ago. Occasionally he drinks any alcoholic beverage. He works as electrician in a car factory, one of the most important in the town where he lives and in the country as well. The patient is proud been doing this job for more than 20 years and he feels very attached to his team and to the working environment in general, which he considers as the second home. His wife is now working overtime to meet the family economic needs, and after discharge he must do alone with household chores and everything else needed. He likes to be involved in household maintenance and to help his wife, but the greatest wish is to regain his physical fitness as soon as possible and to return to work. However, he is aware that although independent in all occupations, he gets tired very quickly and even fears of the possibility of a new cardiac episode, triggered by too intense effort or emotional stress.

The patient had marked limitation in physical activity and proved an appropriate understanding of the cardiac event he suffered, and also of the secondary prevention measures that must be taken, in order to reduce his comorbid risk factors (obesity and high blood cholesterol).

Considering all these aspects and the time elapsed from hospital discharge, we created a six weeks out-patient program that adopts a self-management approach for the phase II of cardiac rehabilitation. Physical activity and education components were supplemented with opportunities for supervised occupational engagement within the patient's home environment.

Our patient participated in therapeutic education sessions focused on such things as improving dietary habits, motivation, reconditioning the cardiovascular system and safely regaining functional recovery.

Since the occupation plays a critical role in patient's recovery and wellbeing on multiple levels, it is important to determine the fit between the person, the environment and meaningful occupations by the extent of how patient's functional capacity match his environment and specific occupation requirements.

As the patient expressed concerns with respect to a wide range of occupations, the COPM was applied to determine their hierarchy in influencing the patient's wellbeing. He identified that mobility outside the home (performance score 2, satisfaction score 2), being able to participate in discussions on a social network (performance score 1, satisfaction score 1) and participating in housekeeping

(performance score 3, satisfaction score 4) are the main occupational issues that he would like to improve. Together, we established these as goals for the occupational therapy intervention.

The Person-Environment-Occupation (PEO) practice model was used as intervention tool for guiding us in establishing the SMART objectives of our intervention plan. They are the result of the extent in which the patient's functional capacity and environment characteristics fit the selected occupations' requirements. Thus, we agreed that after six weeks, the patient will be able to accompany his wife to shopping in the neighbourhood, he will daily show interest and motivation to check his new social network account and he will be able to perform housekeeping tasks for more than half hour/day, without feeling physical exertion.

The occupational therapy program focused on daily engaging the patient in functional activities (walking, dressing, cleaning the house) starting with 15 minutes sessions initially, then progressively rising them to 30 minutes by the end of the intervention period. For each session we recommended 5 minutes of warming up and then 5 minutes of cooling down, in order to satisfy the physiological bases for functional adaptations. At the end of each occupational therapy session, we had included 10-15 minutes of therapeutic education (free discussions, information, presentation of didactic materials, brochures, flyers, therapeutic guides, videos etc.). Considering the fact that the patient had a good level of understanding and also a high motivation for change, we set a frequency of three therapeutic sessions/week in his home environment.

Also, to enhance self-efficacy, we assisted the patient to monitor his heart rate (HR) and rate of perceived exertion (RPE) following each task of the occupations needs to perform, and record the outcomes at the beginning and at the end of the activity, in a structured way, which then formed the basis for discussions. All demanding activities were graded and monitored according to patient's RPE and he was taught how to incorporate them into his daily occupations. The presence of emotions associated with anxiety were assessed too, using DASS 21 self-questionnaire, initially and then at the end of the OT intervention program.

After six weeks, the improvement of performance and satisfaction of the identified problems was significant for all three items, the patient reporting higher scores at final administration of COPM questionnaire, as shown in table 1.

**Table 1.** The evolution of COPM results after initial and final testing

Occupational performance problems	Initial		Final	
	Performance	Satisfaction	Performance	Satisfaction
Mobility outside the home	2	2	6	7
Being able to participate in discussions on a social network	1	1	5	8
Participating in housekeeping	3	4	5	7
<b>Total average score</b>	<b>2</b>	<b>2.3</b>	<b>5.3</b>	<b>7.6</b>

There is an overall change of 3.3 points for performance and 5.3 points for satisfaction. It is obvious that the most important contribution to these positive results is due to the increase in ambulatory performance, which, not surprisingly, gives also the highest satisfaction to our patient.

Also the patient's functional progress is reflected by the improvements of RPE and anxiety level after the final evaluation (Table 2). The change in RPE perception for the most important physical activity demanding tasks (walking outside the home and housekeeping) was of 5 points decrease, which actually reflects a 25% progress of the patients' physical capacity to maintain a dynamic occupation.

**Table 2.** The evolution of Borg RPE and DASS 21 results after initial and final testing

	<b>Initial</b>	<b>Final</b>
Borg RPE for walking outside the home	14	9
Borg RPE for housekeeping	16	11
Overall anxiety (DASS 21)	13	8

## 5. Discussions

The results of our intervention reflected positively not only on occupations engagement of the patient, but also in his healthy dietary habits, weight control and decreased level of anxiety.

The current trend of cardiovascular rehabilitation is to include comprehensive, evidence-based interventions and to influence health behaviour changes. Most often, patients who have suffered a cardiac episode, and generally, those with chronic diseases would like the most to resume their professional activity in the shortest time (Servey & Stephens, 2016). However, there are other more important areas that contribute to functional independence (self-care, physical endurance, lifestyle changes, energy conservation, and stress management) and which further can sustain their socio-professional reintegration.

Male participation in family life seems to depend on holding a job, succeeding in work, conferring a sense of protection and safety, and uncertainty of maintain these roles after illnesses can induce and maintain anxiety (Mampuya, 2012). For our patient, marriage seems to provide the necessary social support that enhances his sense of control, which in turn helps him to deal with the disease.

Overall, more evidence supports the use of physical activity and occupation engagement in reducing stress, with a tendency for improvements in social and emotional aspects for those who practice it regularly (Taheri & Irandoust, 2014). Also, emerging evidence from preliminary studies has supported that attendance in secondary prevention programs is a safe method to increasing a patient's functional capacity (Rogers et al. 2016).

The results that we obtained confirm the validity of the proposed occupational therapy program in the clinical context which we presented, providing thus the evidence of outpatient applicability of this type of intervention in cardiac patient with a recent history of myocardial infarction.

## 6. Conclusions

After the end of the acute phase, all cardiac patients should be able to follow a multidisciplinary rehabilitation program. Many barriers affect the adherence to secondary preventive measures. Gender, age, socio-economic status, and ethnic minorities are all some of the factors related to lack of participation. The strategies based on home interventions can remove these barriers, so that all patients can benefit from equal opportunities in getting the best care possible. These programs aim to maintain the

patient's motivation for lifestyle change, while the application of occupational therapy services can amplify the benefits of modern healthcare interventions. Moreover, occupational therapy in cardiac rehabilitation addresses to development of life-skills in order to improve an individual's recovery after a life altering cardiac event. Nutrition counselling and therapeutic education are also keys to improving a cardiac patient's health.

The patient needs constantly renewed attention to his emotional, social and professional problems and to develop his motivation towards the effort required during recovery. The entire process is carried out respecting the principles of client-centered practice, which means developing a partnership between the patient and therapist to facilitate the participation, satisfaction and sense of self-efficacy from the patient. The expanding of clinical research on occupational therapy utility in post myocardial infarction patient represents an important research direction in this domain, considering the possibility of providing to patients reliable alternatives for early recovery through accessible, non-pharmacological methods.

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