

## Barriers to participation in cardiac rehabilitation in Malta

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## Declaration

I declare that this research project is solely my original work, and is submitted as part of a Master degree in Cardiovascular Health and Rehabilitation within the Department of Clinical Sciences and Nutrition at the University of Chester.

Signature\_\_\_\_\_

Date: 28<sup>th</sup> September 2015.

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## Abbreviations

CABG: Coronary Artery Bypass Graft

CR: cardiac rehabilitation

CSE: Cardiac Self-Efficacy

CVD: Cardiovascular disease

HSDI: Health Self Determinism Index

PCI: Percutaneous Coronary Intervention

## Glossary of terms:

Phase 3 cardiac rehabilitation: the initial outpatient cardiac rehabilitation program.

Phase 4 cardiac rehabilitation: the maintenance phase of cardiac rehabilitation, emphasising more on lifestyle modifications.

## Review paper

## Review paper

### Abstract

Cardiovascular disease is the leading cause of death and morbidity worldwide. Patients who have had a cardiac event require special attention to regain their quality of life and to maintain and improve their functional capacity; which could be achieved through cardiac rehabilitation. Literature is continuously showing that cardiac rehabilitation needs to be recognised as part of the treatment to cardiovascular disease, as it is beneficial to the patient's health. It reduces morbidity and mortality, improves exercise capacity, and through education enables the patient to adhere to lifestyle changes. Despite its proven benefits, cardiac rehabilitation participation remains low globally. Primarily, lack of knowledge and understanding of the importance of lifestyle changes and maintaining a balanced diet might hinder participation. Gender, age and level of education also plays a role in enrolling in the programme. Timing of cardiac rehabilitation also affects the patient's decision to attend for rehabilitation. Early referral, especially during the patient's hospitalisation by healthcare professionals, particularly doctors, is recommended to improve uptake to cardiac rehabilitation. Encouragement by staff enables the patients more to participate in such programme. Further research is recommended to identify the barriers which patients find in attending cardiac rehabilitation. Research should also focus on preventive cardiology programmes which should be easily accessible by all hospitals worldwide.

## 1. Introduction

Cardiovascular disease (CVD) is the leading cause of death and morbidity in the developed world (Grace et al., 2008). 17.5 million of all global deaths in 2012 were attributed to CVD, with 7.4 million deaths attributed to coronary heart disease (World Health Organisation, [WHO], 2015). However, CVD is eminently preventable, as *'the burden of established cardiovascular disease may also be reduced by early diagnosis, appropriate disease management, rehabilitation, and prevention, including structured lifestyle counselling'* (European Heart Health Charter, 2007, article 7).

Patients who have had a cardiac event, deserve special attention to regain their quality of life and to maintain and improve functional capacity (Piepoli et al., 2010). It is not easy for the patient and relatives to cope with being diagnosed with a myocardial infarction, let alone in identifying and implementing the behavioural and lifestyle practices and changes required to prevent another cardiac event (Lauck, Johnson, & Ratner, 2009). Sometimes, patients and relatives are still in denial to accept what happened to them, and more worrying is that their capacity to recognize their potential risk factors for their cardiac event might be impaired.

Patients who are already diagnosed with cardiovascular disease need to implement lifestyle changes such as diet modification, exercise on regular basis, management of stress, and smoking cessation. This will then lead to better management of cardiovascular disease, and even might stop the condition from worsening, apart from improving the patient's quality of life and preventing another cardiovascular event from

occurring (Mosleh, Campbell, & Kiger, 2009). Through cardiac rehabilitation, these lifestyle changes can be better implemented.

### 1.1. Cardiac rehabilitation

Cardiac rehabilitation is

*The coordinated sum of activities required to influence favourably the underlying cause of cardiovascular disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume optimal functioning in their community and through improved health behaviour, slow or reverse progression of disease*

(British Association of Cardiovascular Preventive Cardiac Rehabilitation, [BACPR], 2012, p. 2).

Cardiac rehabilitation has evolved over the last four decades from a simple monitoring programme for the safe return to physical activities to multidisciplinary programmes including post-operative patient care, the optimisation of medical treatment, nutritional counselling, smoking cessation advice, risk stratification, stress management, hypertension management and the control of diabetes or dyslipidaemia (Kwan-Yee Tsui, Segaram, Jamnik, Wu, & Grace, 2012; Mampuya, 2012).

Cardiac rehabilitation is an evidence-based outpatient programme of structured exercise, education, psychosocial support, and risk reduction (Mosleh et al., 2009). Eligible patients for outpatient cardiac rehabilitation include those with acute

myocardial infarction, coronary artery bypass graft (CABG), and percutaneous transluminal coronary angioplasty (PTCA) (Beswick, et al., 2005; Mampuya, 2012). Cardiac rehabilitation is now considered as an important and essential component of treatment following a myocardial infarction and coronary revascularisation (Daly et al., 2002; National Institute for Health and Care Excellence, [NICE], 2013; Piepoli et al., 2010). The European Society of Cardiology, the American Heart Association and the American College of Cardiology highly recommended CR as part of the treatment to patients with coronary artery disease (Piepoli et al., 2010). It has also been shown that the functional capacity and the way a patient perceives his quality of life after a heart attack are improved when participating in cardiac rehabilitation programmes (Dunlay et al., 2009; Grace et al., 2008). Also, regular physical activity is beneficial for the patient's health, as it improves HDL-cholesterol, decreases visceral fat and reduces glycaemia and controls blood pressure (Mampuya, 2012). Exercise also helps to slow down the process of coronary atherosclerosis, improves coronary collateral circulation and endothelial dysfunction, and enhances the physiological and biochemical status of the cardiovascular system (Ali et al., 2012).

Apart from risk factor modification, cardiac rehabilitation offers education which emphasizes on the importance of the measures of therapeutic life changes (Mampuya, 2012). It provides education for better control of the patient's conditions, and most important allows the patient to fully understand what treatment they need to have and how to adhere to lifestyle changes (Mampuya, 2012). Furthermore, Mampuya describes that cardiac rehabilitation also offers psychological care and management for patients post myocardial infarction, through education on stress management and

other self-control tools. Anxiety and depression are two common conditions which patients having cardiovascular conditions experience. If these conditions are not addressed, patients may have lower exercise capacity, be fatigued and have a reduced quality of life and sense of wellbeing (Lauck et al., 2009; Mampuya, 2012).

## 1.2. Mortality and morbidity

Comprehensive cardiac rehabilitation is beneficial for the patient's health, as consistent evidence has shown that it reduces cardiac mortality by 26-36%, and reduces total mortality by 13-26% (BACPR, 2012; Piepoli et al., 2010) in patients with cardiovascular disease.

Similarly, another meta-analysis, conducted by Taylor et al. (2004), of 48 randomized trials with a large number of 8,940 patients, with coronary disease showed that cardiac rehabilitation, over a median follow up of fifteen months, is related to a significant reduction in all-cause mortality (odds ratio [OR] =0.80; 95% [CI] 0.68 to 0.93) and cardiac mortality (OR =0.74; 95% CI 0.61 to 0.96). Yet, in this meta-analysis, no significant differences were found in the rates of non-fatal myocardial infarction and revascularization (Taylor et al., 2004).

In another large scale research involving more than 600,000 patients, conducted by Hammill, Curtis, Schulman and Whellan (2010), in the United States of America, showed a shift in mortality rate after one year of participation in CR. A 2.2% against

5.3% shift was found in cardiac rehabilitation participants (12.2%) and nonparticipants respectively. This benefit was sustained at 5 years of the study, with a mortality rate of 16.3% for participants as opposed to 24.6% for nonparticipants; showing a positive correlation to cardiac rehabilitation. Patients who attended 25 or more sessions had a 20% lower 5 year mortality rate than those who attended less than 25 sessions (Hammill et al., 2010). This shows that cardiac rehabilitation is beneficial to the patient's health.

### 1.3. Benefits of Cardiac rehabilitation

Literature consistently is showing a positive correlation for participation in cardiac rehabilitation. It is showing that cardiac rehabilitation is leading to a reduction of 28-56% in unplanned hospital readmissions (Daly et al., 2002; BACPR, 2012), as it reduces the incidence of major cardiac events such as restenosis after percutaneous coronary intervention (O'Connell, 2014). Levin, Perk, and Hedback (1991) also showed that cardiac rehabilitation decreases rehospitalisation from 16 to 11 days.

CR has been one of the most clinically and cost effective therapeutic interventions in cardiovascular disease management (BACPR, 2012; Grace et al., 2008). Ades, Pashkow, and Nestor (1997) also showed that cardiac rehabilitation is more cost effective following myocardial infarction, when compared to lipid lowering drugs, thrombolytics and coronary artery bypass graft. The only more cost effective factor than cardiac rehabilitation was smoking cessation (Ades, et al., 1997). Randomised

controlled trials showed that to increase quit rates significantly in patients with myocardial infarction (MI), more cost-effective methods are needed (Ades et al., 1997). Primarily because self-help has little effect when offered without any person to person intervention, hence more staff, such as counsellors are needed. Besides, pharmaceutical agents are advised, as they help to quit smoking early. The EUROACTION trial (Wood et al., 2008) argued that because of costs, the use of smoking cessation therapies is not used, even though smoking cessation intervention reduces relapse in CVD patients. Yet in some countries, including Malta smoking cessation service is being offered, despite the costs induced (personal communication with cardiac rehabilitation unit in Malta, January, 8, 2015).

#### 1.4. Attendance and uptake of cardiac rehabilitation

Despite the benefits attained from CR programmes, attendance for these programmes has remained low around the world. Participation rate of patients in North America, Europe and Australia is approximately 15-20% (Grace et al., 2008). A UK study, investigating the methods used to identify and invite eligible patients to attend to cardiac rehabilitation conducted by Dressler and Lewin (2013) showed that only about 42-44% of those eligible participated in cardiac rehabilitation programmes. Likewise, NICE (2013) stated that in England, Northern Ireland, and Wales, a low uptake of cardiac rehabilitation participation was found; with only 44% of patients enrolling in cardiac rehabilitation.

Gender also plays an important role in a patient's attendance and adherence to cardiac rehabilitation (O'Connell, 2014). Male participation is higher than female participation (Dunlay et al., 2009). Beswick et al. (2005) conveyed that patients attending cardiac rehabilitation are often middle-aged males, and those who had an uncomplicated myocardial infarction. Females are less likely to attend for CR and more likely to drop out from the programme, (Arena et al., 2012; Yohannes et al., 2007), because they perceive that housework, and caring for family members is more important than attending for CR. Women have more non-cardiac morbidity such as arthritis and low back pain, which might further impede them from participation. Beswick et al.'s (2005) literature review, from twenty three relevant articles, acknowledged that CR needs to address the women's needs, as they have a higher level of psychosocial impairment and a lower level of physical function than men, making cardiac rehabilitation more important to attend. It has been suggested that to increase uptake, different exercise capacity sessions and women only groups could be formed (Beswick et al., 2005). If provision of child-care and home care is provided, women's uptake to participation would be improved (Beswick et al., 2005).

Ali et al. (2012), showed that there was no significant difference of gender in relation to the attendance to cardiac rehabilitation. These authors conducted the study in Pakistan over a six month period, recruiting 151 (36.2%) enrolled patients in cardiac rehabilitation, from the 416 patients who were admitted to hospital, during that period; 111 (73.4%) patients completed more than six weeks of outpatient cardiac rehabilitation.

The clinical diagnoses or procedure which the patient had undergone through was related to attendance to cardiac rehabilitation. Ali et al. (2012) found that patients who had undergone coronary artery bypass graft or had a percutaneous coronary intervention, attended more for cardiac rehabilitation (40.8%) ( $p < 0.01$ ) whilst patients who presented with acute myocardial infarction and were later referred for cardiac rehabilitation had a low attendance rate (17.8%). Multiple coronary artery disease before the cardiovascular disease, encouraged patients to participate more in cardiac rehabilitation. Patients with co-morbid conditions, such as diabetes and hypertension, attended more frequently for cardiac rehabilitation sessions, when compared to those with no co-morbidities, as they believe that they are more susceptible for future cardiac events (Ali et al., 2012).

Gallagher et al. (2003) concluded in their study that myocardial infarction patients, show more lack of interest and motivation in participating in CR than CABG patients because they do not experience the same postoperative symptoms and neither do they have visible reminders of the incision. CABG patients spend a longer stay in hospital, and so have more contact time with the healthcare professional, which will result in better cardiac rehabilitation endorsement (Kwan-Yee Tsui et al., 2012).

Smokers are the group of potential participants who are least likely to attend for cardiac rehabilitation, as they are not willing to quit smoking (Ali et al., 2012). Gaalema, Cutler, Higgins, and Ades (2015), in their systematic literature review, explained that smokers do not see the full benefit in cardiac rehabilitation, as they still do not attain their

physical fitness and do not see an improvement in their quality of life. This lack of results will cause frustration to these participants, who then drop out from attending CR.

When the family are involved in cardiac rehabilitation, participation can be more effective. Grace et al., (2008) and Wyer, Joseph and Earll (2001a) showed that spousal support or involvement of adult children in referral discussions and in decision making regarding attendance to the programme, had promoted a better enrolment for cardiac rehabilitation. It was further discussed that when partners or spouses were invited to attend, they would benefit more from the programme as they would be less anxious and depressed than when partners did not attend for the programme (Wyer et al., 2001a). This was affirmed in the EUROACTION preventive trial, where a high participation rate was documented, as it was a family-centred programme, which actively involved the patient's partner and other family members (Wood et al., 2008). Family involvement was deemed important because together, married couples will support each other to make lifestyle changes, which will result in having beneficial results on the patient's health. Similarly, family participation was also deemed important in the MyAction programme, as good evidence shows that healthy lifestyle changes is more likely to occur if the family changes together. This was further supported and matched by the results of patient's partners (Conolly et al., 2011).

Attendance to cardiac rehabilitation is also influenced by who refers the patient. Wyer et al. (2001a), in their literature review conveyed that in Ades et al. (1992) study, a statistically significant link ( $p=.001$ ) was found in relation to physician recommendation

for the programme as the most powerful predictor of attendance. It was shown that attendance rate was 66%, against 1.8% when physicians did not recommend cardiac rehabilitation. Also, Gallagher et al. (2003) analysed that CABG patients were much more consistently referred by healthcare professionals to cardiac rehabilitation than myocardial infarction patients. Yet, Thomas (2007) stated that sometimes physicians forget to refer patients, or are unsure which patient to refer for rehabilitation. Kwan-Yee Tsui et al. (2012) explained in the cross-sectional secondary analysis of a large cohort study, that lack of physician endorsement was one of the key factors for the low participation rate. The authors concluded that those patients who were referred to CR by cardiac specialists or family physicians, rated endorsement as significantly higher than those who were referred to CR by nurses. Correspondingly, Grace et al.'s (2008) study determined the importance of physician endorsement in CR utilization. Further research is needed to determine whether this lack of endorsement is affected by time constraints, or negative perception of physician, or by the perception that other healthcare professionals rather than physicians have to promote CR.

Timing of cardiac rehabilitation is very important in improving uptake to participation (Beswick et al., 2005). Early cardiac rehabilitation after discharge is very fruitful, as in that time the patient would be emotionally vulnerable and would need a lot of support and motivation. Hence this leads to easy uptake of cardiac rehabilitation. Flexibility of the programme might improve uptake in cardiac rehabilitation as the patient can adjust his routine and can still attend for the programme. Literature is consistently showing the need to have evening classes in CR to accommodate better the patient's needs and improve uptake of the programme (Beswick et al., 2005).

The socioeconomic status of the patient also effects attendance and participation to cardiac rehabilitation. In the literature review on participation to cardiac rehabilitation by O'Connel (2014), a link was found between attendance to cardiac rehabilitation and socioeconomic status. It was argued that if patients were unemployed, they were less likely to attend, (Arena et al., 2012; Dunlay et al., 2009), together with financial problems which leads to early return to work (Arena et al., 2012). Likewise, Pack et al. (2013) found that the main reason for not attending the exercise session, from the 22 patients who attended the cardiac rehabilitation sessions, 36% of the participants highlighted health insurance issues.

#### 1.5. Barriers to participation

Although the benefits of cardiac rehabilitation are well recognised, referral and participation rates of eligible patients still remain low. Mosleh et al. (2009) conveyed that typically, fewer than 35% of eligible patients attend for cardiac rehabilitation worldwide. Various authors and studies have shown the barriers which hinder participation in such programme.

One of the reason why the proportion of patients admitted to rehabilitation programmes remain small is that most of the patients are not referred for cardiac rehabilitation after discharge (Scalvini et al., 2013). Similarly, The Commission for Healthcare Audit and Inspection, in England and Wales, discovered that 60% (n=1124) of non-attenders had not been offered cardiac rehabilitation (Commission for

Healthcare Audit and Inspection, 2004), which could partly explain low uptake rates (Dressler & Lewin, 2013).

Lack of knowledge and understanding of the importance of lifestyle change and maintaining a healthy balanced diet, might hinder participation in cardiac rehabilitation (Lauck et al., 2009). This might be related to the patient's impression that he is now cured since a stent was deployed, and no further follow-up is required (O'Connell, 2014). Patients may not appreciate the incremental value of cardiac rehabilitation above and beyond what they can do on their own or with the help of the healthcare provider (Thomas, 2007). Lauck et al. (2009), in a descriptive, correlation design study, which was conducted in Canada, showed that this recognition is the point of behavioural change and management of long term risk factors. Of the ninety-eight participants in Lauck et al.'s study, in a six months follow-up, 43% explained that they did not understand what caused their heart disease at all or very well, whilst 50% were not aware of what changes they have to implement to prevent their condition from worsening. Consistently with previous literature, 38% of the participants believed that they were cured after having a percutaneous coronary intervention (PCI) successfully deployed. This might lead to the low participation in cardiac rehabilitation (Lauck et al., 2009).

Barriers to participation to CR might also be related to the reduced contact time between health care professionals, the patient and the family (Lauck et al., 2009). Unfortunately, healthcare professionals might focus more on the paperwork, the procedure itself and discharge planning, whilst risk factor counselling and discussion

might be kept at bay (Arena et al., 2012; Lauck et al., 2009). Risk factor counselling by healthcare professionals is essential because, better understanding of heart disease and information giving yields for better participation (O'Connell, 2014; Taylor et al., 2011). Taylor et al. (2011) point out that the type and format of information that is presented to the patient might influence the patient's decision on whether to participate in cardiac rehabilitation or not. Moreover, the enthusiasm and knowledge of physicians, and of other healthcare professionals, influence the patient's decision to attend and improve uptake of cardiac rehabilitation (Beswick et al., 2005).

Effective rehabilitation is a multifactorial intervention requiring involvement of many health professionals. Yet, not all healthcare professionals perceive cardiac rehabilitation as an important treatment for CVD. Physicians might have the impression that cardiac rehabilitation could offer nothing better than what they are offering to the patients at the clinic, hence would not refer patients for rehabilitation (Thomas, 2007). Boyden, Rubenfire, and Franklin (2010), also stated that physicians are a significant obstacle to cardiac rehabilitation participation. It was shown that although the benefits of participation in cardiac rehabilitation are well documented, various recent studies showed a low referral rate (20%) for CR programme by physicians (Boyden et al., 2010). Kwann Yee- Tsui et al., (2012) conveyed that literature shows that many physicians fail to refer patients for CR and so many patients are not receiving physician endorsement. The authors furthermore found that patients attend more for cardiac rehabilitation when they were endorsed by a physician or cardiac specialist when compared to referrals by cardiac rehabilitation nurse or other health care professionals. This could be because patients perceive the physician's

recommendation more strongly than the advice given by other healthcare professionals (Kwann Yee-Tsui et al., 2012). Hammil et al. (2010) added the importance that physicians promote more the benefits and importance of cardiac rehabilitation, and more importantly try to understand the problems patients encounter when not attending cardiac rehabilitation.

Timing of referral for cardiac rehabilitation might also pose a barrier to attending CR. Pack et al. (2013), in the single-blind study, showed that when people are referred late for cardiac rehabilitation, they do not show up. Pack et al. assessed 148 patients, referred for cardiac rehabilitation, who were either given an early appointment (after 10 days) or a standard appointment (after 35 days). The study showed that there was a higher attendance rate (77%) among patients who were given an early appointment, when compared to the attendance rate (59%) of those given standard appointments ( $p=.022$ ). Late appointments lead patients to lose contact with the hospital and lose all the interest in attending to the programme. Patients might get back to their normal routine, and if a late appointment is given to them, they might find it difficult to fit CR in their schedule. But, if the patients are given an early appointment, they can easily remember to attend (Pack et al., 2013).

Late appointment for cardiac rehabilitation can also coincide with the time that the patient is fit to return back to work (Cooper et al., 2005). Patients may feel embarrassed to ask for more time off from work, being afraid that they might be dismissed from work (Cooper et al., 2005; Kwann Yee-Tsui et al., 2012). The decision of not attending cardiac rehabilitation causes a personal conflict for the patients

especially during the time when they most need support. Early referral to cardiac rehabilitation is advised to overcome this barrier.

Loss of patient contact is also a factor which hinders participation in cardiac rehabilitation; 64% of participants lost contact after discharge in Pack et al.'s (2013) study, and this was the common reason given for not attending orientation, even though prior to discharge, confirmation of contact information was done by staff. Grace et al. (2011) stated that patients are lost when they still need to be referred, rather than in the invitation stage. An improved referral system for cardiac rehabilitation enrolment should be introduced, so that all patients would be referred for CR. Better linkage and liaison with all health care professionals should also be considered to resolve this issue (Dressler & Lewin, 2013). The American Heart Association [AHA] (2007) identified that in order to reduce the gap of delivery of cardiac rehabilitation, a better outpatient medically supervised programme should be delivered, and, initiated from one to three weeks post discharge.

Organisational factors, like lack of transport, poor public transport and parking facilities also discourage participation to cardiac rehabilitation (Arena et al., 2012; Dunlay et al., 2009; Mosleh et al., 2009). Participants (26.9%) in Dressler and Lewin's (2013) study identified lack of transport or transportation issues as factors which reduce participation in cardiac rehabilitation. Others perceive it negatively as a gymnasium-based group exercise programme that is not for them and is too far from home, too expensive, too inconvenient, and too time consuming (Thomas, 2007).

Arena et al. (2012), add that low participation rate in cardiac rehabilitation is also related to old age, and low education. Some have the perception that old age is a natural process which causes the patient to slow down, so there will be little benefit if the patient attends for cardiac rehabilitation (Wyer et al., 2001a). Women and older people are less likely to be invited by healthcare professionals, and if they receive an invitation, they are more likely to turn it down (Gallagher et al., 2003; Mosleh et al., 2009). Cooper et al. (2007) also concluded that patients relate cardiac rehabilitation to patients who are younger and previously active. Cooper et al. (2007) further discussed that these patients were extremely concerned about the exercise sessions, as they had weaker beliefs in personal control over their condition, and held a poor understanding of their condition. Beswick et al. (2005) further state that people who do not participate in cardiac rehabilitation often have greater degrees of functional impairment. These patients are the ones who benefit more from rehabilitation (Beswick et al., 2005). In fact studies have shown that cardiac rehabilitation is of benefit to older patients, even those with severe clinical status and have multiple co-morbidities, as it improves their exercise capacity, the behavioural characteristics (such as depression and anxiety) and the overall quality of life (Piepoli et al., 2010). To improve older people's participation, careful planning of cardiac rehabilitation is essential, with the main goals being preservation of mobility, independence and mental function, encouragement of social adaptation and enabling the patient to return back to the same lifestyle as before the acute event (Piepoli et al., 2010).

## 1.6. The way forward

Literature is now showing that cardiac rehabilitation should be initiated as early as possible after admission and before discharge from hospital, ideally within ten days after discharge from hospital (NICE, 2013; Pack et al., 2013). Studies show that for each day delay from discharge to referral for cardiac rehabilitation, there is an associated decrease of 1% in participation (Pack et al., 2013). Lauck et al. (2009), conveys that cardiac rehabilitation should commence two weeks from either discharge or diagnosis, rather than wait for an average of fifty three days from commencement of the outpatient cardiac rehabilitation programme (NICE, 2013). This time frame is quite feasible and safe, and it can also be beneficial as it reduces unplanned readmissions whilst in the 30 day discharge period; which therefore will reduce the extra hospital bed expenses (Lauck et al., 2009). Furthermore, an early appointment shows the importance of attending and participating in cardiac rehabilitation and that the programme is needed for integral to full recovery (Pack et al., 2013). Early participation in cardiac rehabilitation improves the patients' uptake and adherence (Beswick et al., 2005; Lauck et al., 2009). National guidelines should be published and emphasize that an early appointment is ideal in medically stable patients and hence will avoid long delays (Pack et al., 2013).

Good organisation of the programme is recommended. The cardiac rehabilitation staff should ensure that all eligible participants are invited to the programme (Mosleh et al., 2009). Furthermore, Mosleh et al., (2009) mentioned that although invitation to the programme is crucial, the healthcare provider has to also keep in mind that enough

places are available for interested patients. However, coordinating and following a cardiac rehabilitation programme is very challenging especially when resources are very limited (Mosleh et al., 2009).

In order to encourage and increase patient participation, patients who do not attend cardiac rehabilitation should be contacted to be reminded about the programme. Such reminder could be through a motivational letter, a visit by one of the cardiac rehabilitation nurses, a telephone call or a combination of these (NICE, 2013). Dressler and Lewin (2013) conveyed that motivational invitation letters increased participation in cardiac rehabilitation, as was shown by Wyer et al., (2001) and Mosleh et al (2009). Beswick et al. (2005) discussed that a motivating conversation before discharge, and a telephone call follow up will improve participation in cardiac rehabilitation. Mampuya (2012), recommended the use of modern technology, such as internet, video lectures and other communication tools. Reason being is that it offers interesting prospects for the delivery and the expansion of the cardiac rehabilitation programme (Mampuya, 2012). This will therefore increase enrolment and improve benefit cost ratio.

Encouragement by staff to participate in cardiac rehabilitation enables the patients to participate in such programme (Dressler & Lewin, 2013; NICE, 2013), especially when they are referred whilst being in-patients (Dunlay et al., 2009). The inpatient nurse is a pivot in referring patients for cardiac rehabilitation, as she or he serves as an advocate for referral and encourages patients to enrol in outpatient cardiac rehabilitation. Nurses must be familiar with the importance of cardiac rehabilitation and should make sure that this opportunity is not missed (Arena et al., 2012). Besides,

nurses have to be provided with time, education and resources in order to help the patient to maintain risk factor modification, which will then lead to evidence based interventions (Lauck et al., 2009). In addition, by nurse led strategies, adherence to lifestyle changes may be improved in order to aid self-management and delivering appropriate education (Beswick et al., 2005). Kadda, Marvaki, and Panagiotakos (2012) believe that education of health professionals is a prerequisite of an effective treatment. Apart from being knowledgeable, health professionals also need to have educational programmes on how to improve their knowledge transmission skills, so that they will be able to help patients express their feelings. Good communication between cardiac rehabilitation staff and referring physician is essential in order to have a smooth and coordinated programme, and a better uptake of attendance (Kadda et al., 2012; Thomas, 2007).

In addition, extra encouragement together with a home based programme or evening classes, might increase attendance to cardiac rehabilitation (Taylor et al., 2011). Scalvini et al. (2013), also recommended home-based cardiac rehabilitation to increase participation to cardiac rehabilitation. The authors conveyed that home based cardiac rehabilitation is still beneficial as it still gives similar outcomes to out-patient cardiac rehabilitation, with a positive impact on some area of health care utilisation (Scalvini et al., 2013). Besides, home visits by healthcare professionals relates to a better uptake of cardiac rehabilitation as it provides a continuity of care from discharge to phase 3 of the cardiac rehabilitation programme (Beswick et al., 2005). This also maintains the patient's motivation to maintain a lifestyle change (Beswick et al., 2005).

Integrated care and involvement of primary care have been discussed by the Department of Health in 2013, (Dressler & Lewin, 2013), as an increasingly important step with the new commission of services in the United Kingdom. Nowadays, cardiac rehabilitation is a separate entity from primary care. The study by Dressler and Lewin (2013) showed that not all cardiac rehabilitation programmes offer all phases of rehabilitation. This result leads to the question where the continuity of care is after phase 4 of cardiac rehabilitation. Piepoli et al. (2010) suggests that the interventional cardiologist should work hand in hand with the primary care physician and the cardiac rehabilitation team, to ensure that continuation of care initiated at hospital is maintained after discharge. The EUROACTION study further affirmed that local preventive cardiology programmes adapted to individual countries are needed (Wood et al., 2008)

#### 1.7. Conclusion.

Cardiovascular disease is one of the most common conditions which patients suffer from. Cardiac rehabilitation is beneficial for the patients' health as it allows the patient to adhere and implement lifestyle changes such as good nutritional intake, better management of hypertension, hypercholesterolemia, and better exercise tolerance and offers good psychological support. This programme provides education and guidance on how to maintain these life style changes. The earlier patients are referred for cardiac rehabilitation, the better uptake and attendance to cardiac rehabilitation. Despite the benefits of cardiac rehabilitation, participation rate still remain low globally. It is important to address the performance gap in the care of patients with established cardiovascular disease. The barriers which are experienced by patients need to be

addressed by the cardiac rehabilitation unit, in order to maintain and improve attendance to cardiac rehabilitation. In Malta, no local studies have ever been conducted to study the reasons why there is a low uptake of cardiac rehabilitation. The aim of this research study is to identify the barriers which patients are finding in attending cardiac rehabilitation in Malta.

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Research article

**Barriers to participation in cardiac rehabilitation in Malta**

## Research article

### **Barriers to participation in cardiac rehabilitation in Malta.**

Keywords: cardiac rehabilitation, barriers to participation, attendance at cardiac rehabilitation, improving uptake in cardiac rehabilitation

#### Rationale for journal selection.

Literature is consistently highlighting the benefits that cardiac rehabilitation has on patients with cardiovascular disease, despite the low participation rate globally. This study aims to identify the barriers which patients with cardiovascular disease encounter when referred for cardiac rehabilitation in Malta. Further research on this topic is recommended as no local studies were conducted to identify the barriers to participation to cardiac rehabilitation. Publication in Maltese Medical Journal is recommended as this study provides factors for better participation in cardiac rehabilitation in Malta.

#### Abstract

Purpose: To identify the barriers to participation in cardiac rehabilitation in Malta. By identifying these barriers, the existing cardiac rehabilitation programme in Malta can be amended and improved, which will lead to better uptake in participation.

Method: A total of 517 participants were referred for cardiac rehabilitation in 2014 in Malta. 476 participants were eligible to participate. A postal questionnaire, which was developed for a study by Dunlay et al. (2009) was sent to all eligible participants.

Results: 108 (22.7%) questionnaires were returned. Participants perceived that cardiac rehabilitation is important for their health. Timing of the programme is the major concern that patients have to attend for CR (16.7%), whilst others (28.7%) wish that they could have the time adjusted. Encouragement from healthcare staff (77.8%) increased the desire for patients to participate in this programme. Information given (69.4%) also increases patient's desire to attend for cardiac rehabilitation. No difference was found in age and participation in cardiac rehabilitation. Level of education poses different perceptions to participation to cardiac rehabilitation.

Discussion: Participants believe that cardiac rehabilitation is very important for their health. However, patients find that timing of the programme is not convenient for them, or do not have time to attend for the programme especially those who work. Participants also hold misconceptions about what cardiac rehabilitation is about. Supportive staff increases the willingness for patients to attend for cardiac rehabilitation. Physician referral is the strongest link to participation, more physician involvement is recommended to increase participation rate. Patients with a lower educational level, find more barriers to participation in cardiac rehabilitation.

Conclusion: Cardiac rehabilitation is important for the patient's health, however barriers to participation exist. These barriers include lack of physician endorsement, timing of cardiac rehabilitation, patient's misconceptions about the programme, lack of healthcare support, and level of education.

## 1. Introduction

Cardiac rehabilitation programmes are important to the comprehensive care of patients with cardiovascular disease (CVD). Over the past four decades, secondary prevention has become identified as a substantial factor in the continuity of care of these patients (American Heart Association [AHA], 2007). Dunlay et al. (2009) showed that after a myocardial infarction, both males and females of all ages benefit when participating in CR, as CR improves survival, decreases the risk of a recurrent myocardial infarction, and improves exercise capacity. It also improves the psychological status of the patient. These programmes aim to minimise the risk for another cardiovascular event, through fostering and adhering to a healthy diet and lifestyle, and to reduce disability (Balady et al., 2007).

Although the benefits of cardiac rehabilitation are well documented, it is still being underutilised, with fewer than 35% of eligible participants participating in the programme after a CVD event worldwide (Mosleh et al., 2009). The AHA (2007) conveyed that the primary reason in this gap in CR participation is due to the initial referring system of patients to CR programmes. Lack of physician endorsement, timing of cardiac rehabilitation, patient's misconceptions and lack of healthcare support are amongst the barriers mentioned for lack of participation to cardiac rehabilitation (Dunlay et al., 2009; Kadda et al., 2012; Piepoli et al., 2010).

## 1.1. Rationale for research

Participation in cardiac rehabilitation, following myocardial infarction or coronary artery bypass graft (CABG) remains low in Malta (personal communication with the Cardiac rehabilitation team, January 8<sup>th</sup>, 2015), even though the incidence of cardiovascular disease is increasing in Malta (Department of Health Promotion and Disease Prevention, 2010).

This prospective research aims to identify the barriers which Maltese people find to attend to cardiac rehabilitation. By identifying these barriers through the patients themselves, the existing cardiac rehabilitation programme in Malta can be amended and improved, which will lead to better uptake in participation. Although various studies were conducted abroad on this topic, no local study was ever conducted.

## 2 Method.

This study was conducted as a part of Master of Science degree in Cardiovascular Health and Rehabilitation within the Department of Clinical Sciences and Nutrition at the University of Chester. Supervision was organised from the department.

### 2.1. Participants.

A total of 517 patients were referred for cardiac rehabilitation in 2014 in Malta, however only 476 participants were eligible to participate in this study. Fourteen of the referred

patients passed away during this year, whilst fifteen of the referred participants were above the age of 80, hence were automatically excluded from the study. Two of the referred participants lived in a nursing institutional home, hence were also excluded from the study. Ten of the referred participants did not have a complete home address on the hospital's registry, and the questionnaire could not be sent to them by post.

The names and addresses of the participants were obtained from the database of the cardiac rehabilitation unit. Prior to sending the questionnaires, the hospital registry was analysed to see if any of the potential participants had passed away during this year. This was done by the use of the CPAS programme; a database programme used in the local hospital.

## 2.2. Inclusion/ exclusion criteria.

All patients who resided in Malta, both Maltese and foreigners, who were referred for cardiac rehabilitation post myocardial infarction, post coronary artery bypass graft, and post valve replacement, were all included in the study. Participants had to be between the age of twenty five and eighty years old. Patients who were above the age of eighty years old, or lived in an elderly institutional home, were excluded from this research.

## 2.3. Research design

A questionnaire was used for data collection. This was developed for a study conducted by Dunlay et al. (2009), which studied the barriers to participation to cardiac

rehabilitation. The tool was already validated by the Health Self-Determinism Index (HSDI) and Cardiac Self efficacy questionnaire (CSE) (Dunlay et al., 2009). The HSDI is a validated instrument which is used to measure health motivation (Dunlay et al., 2009). Participants had to choose the responses from a 5-point Likert scale. Thirteen questions from the survey consisted of a modified version of the Cardiac Self-efficacy questionnaire (CSE), which is a validated measure of a person's judgement of their own capabilities, in relation to controlling their heart disease (Dunlay et al., 2009). The CSE was scored on a 5-point Likert scale. The rest of the items assessed the importance of cardiac rehabilitation to the patient, the motivating factors, education, transport availability and concerns about cardiac rehabilitation (Dunlay et al., 2009).

Permission to use the tool for this study was obtained from the authors themselves (appendix 1). The questionnaire (appendix 2), invitation letter (appendix 3) and information letter (appendix 4) describing the purpose of the study was sent to all participants. Enclosed in the envelope was a pre-paid postal envelope, which was returned to a Maltese postal box, and the researcher collected the questionnaires from there. Pre-paid postal envelopes might increase response to the study (Curtis & Redmond, 2009; Edwards et al., 2009). Participants were given three weeks to fill and send back the filled questionnaires.

The questionnaire, invitation letter and information letter were translated by direct translation to the Maltese language. Reason being is that most of the patients were elderly and may not understand English. Direct translation is a simple method used by

the translator, who in his/her best ability, produces one translation in a traditional method (Harkness and Schoua-Glusberg, n.d). Although this method was deemed the best for the researcher, in view of the limited time available, direct translation poses some drawbacks on the research material, as it only rely on one person's perception and skills, and have minimal support of materials for translation (Harkness & Schoua-Glusberg). Due to time constraints, validation of the tool after translation was not conducted (Harkness & Schoua-Glusberg).

#### 2.4. Data analysis

Data was analysed using SPSS statistics, version 22. Questionnaires use non-parametric data analysis, as data is nominal and ordinal (Greasley, 2008; Nolan & Heinzen, 2008). Since data is non parametric, no hypothesis was formulated prior to initiating this research study (Nolan & Heinzen, 2008).

For each statement, variables were given names, and data was coded, as data in SPSS should be entered as numbers (Greasley, 2008). Codes for categorical variables were coded on a copy of the questionnaire, so that a record of the codes is easily accessible by the researcher (Greasley, 2008).

Descriptive statistics for categorical data are presented in tables for frequencies and percentages (Greasley, 2008). Cross tabulation was used to assess the sex and age of participants, in order to have better specific information on these two variables (Greasley, 2008).

## 2.5. Ethics

Permission to conduct the study was obtained from the University of Chester, (FREC) reference number 991/15/MG/CSN (appendix 5), and from the University of Malta ethics board (UREC), (appendix 6). Permission was also sought from the ethics committee of Mater Dei hospital (appendix 7), the cardiac rehabilitation unit (appendix 8), cardiologists and cardiothoracic surgeons (appendix 9).

## 3. Results.

Out of the 476 questionnaires sent by post, only 108 (22.7%) filled questionnaires were returned back.

From these 108 participants, 90 were males (83.3%) whilst 18 were females (Table 1). The mean age of participants was of 66-75 years. The youngest participant was between the age of 25-35 and the eldest participants, six, were between the ages of 75-80 years.

**Table 1: Sex & Age of participants**

		Age						Total
		25-35	36-45	46-55	56-65	66-75	76-80	
Sex	Male	1	5	15	33	33	3	90
	Female	0	1	2	5	7	3	18

88% of participants (n=95) said that whilst being in patients, they were approached and given information by a healthcare professional to attend for cardiac rehabilitation. The nurse was the most quoted health care professional who informed the participant to attend for the programme (n=61), followed by doctors (n=54), family and friends (n=7).

The received questionnaires showed that 64.8% of participants (n=70) perceive cardiac rehabilitation as very important, whilst 28.7% (n=31) believe that cardiac rehabilitation is important. Only 6.5% do not recognize the importance of cardiac rehabilitation.

### 3.1. Awareness of CR content.

Participants are aware of the topics which are included in the cardiac rehabilitation programme; including education on diet (83.3%, n=90), risk factors (85.2%, n=92) physical exercise and education on heart disease (80.6%, n=87), information about medicines (75%, n=81), and information about related diseases (77.8%, n=84), together with help to quit smoking (49.1%, n=53) and education on stress management (65.7%, n=71). Only 44 participants (40.7%) were aware that information about when to return back to work is also provided at cardiac rehabilitation, whilst only 1.9% of the participants did not know what is included in cardiac rehabilitation (table 2).

**Table 2: Awareness of CR content**

<u>Cardiac rehabilitation Programme Content</u>	<u>n</u>	<u>%</u>
Education on diet	90	83.3%
Education on risk factors	92	85.2%
Physical exercise	87	80.6%
Education on heart disease	87	80.6%
Help to quit smoking	53	49.1%
Information on related diseases	84	77.8%
Stress management	71	65.7%
Physical therapy	71	65.7%
Reassurance and support about symptoms	65	60.2%
Information on medicines	81	75%
Information on when to go back to work	44	40.7%
I do not know what is included in cardiac rehabilitation	2	1.9%

### 3.2. Participants' concerns in attending CR

Time of programme is crucial for participants, as eighteen participants (16.7%) claimed that they do not have the time to attend for cardiac rehabilitation, whilst thirty-one participants (28.7%) wish to have it adjusted in order for them to attend the programme. Yet, forty-two participants (38.9%), stated that they are happy with the way cardiac rehabilitation is being offered in Malta (table 3).

**Table 3: Participants' concerns in attending CR**

<u>Concern</u>	<u>n</u>	<u>%</u>
I do not have time to attend CR	18	16.7%
I have too many responsibilities	9	8.3%
I have too many medical problems to go to rehabilitation	5	4.6%
It will cause another heart attack	16	14.8%
It will be strenuous or painful	6	5.6%
I'm afraid they will push me too hard and make me do things I'm not ready to do	14	13%
Seeing people sicker than me will make me nervous	7	6.5%
I'm embarrassed or shy about being in a group	11	10.2%
I would rather not have to leave home, I prefer staying at home with my family	7	6.5%
I'm afraid it won't be convenient, I wish I could schedule it when I want to go	31	28.7%
I do not know how to get there	10	9.3%
I am not concerned about any of these things	42	38.9%
Others	3	2.8%

49.1% of the participants (n=53) had no apparent health problems before their cardiovascular event, however 40.7% of the participants (n=44) had already started experiencing occasional slight pain. Whilst, 7.4% (n=8) were already suffering from other co-morbidities, such as diabetes, hypertension and shortness of breath.

### 3.3. Factors which increase participation in CR.

Encouragement from health care professionals to attend cardiac rehabilitation increases the desire for patients to attend the programme. 77.8% of participants

(n=84) expressed that supportive staff increases their desire to attend for rehabilitation. Also information giving increases desire to attend as 69.4% (n=75) participants stated so. Only 2.8% of participants stated to lose interest if they are provided with information in relation to their heart disease. Participants reported that when close monitoring is provided during cardiac rehabilitation, their willingness to attend increases (69.4%, n=75). Individual activities at cardiac rehabilitation neither increase, 38% (n=41) nor effect the participant's desire to attend, 38% (n=75). Conversely, for 39.8% of participants, group activities also increase their desire to attend, whilst 27.8% are not affected.

From the received questionnaires, participants expressed that it is more convenient if they are able to choose which activities to do (49.1%, n=53) and be able to customize the programme according to their needs (48.1%, n=52).

**Table 4: Factors which increase desire to participate in CR**

<u>Factors which increase desire to participate</u>	<u>n</u>	<u>%</u>
Supportive staff	84	77.8%
Provide information you need to know about your heart disease	77	71.3%
Close monitoring while at rehabilitation	75	69.4%
Group activities	43	39.8%
Individual activities	41	38%
Ability to choose what activities you do	53	49.1%
Separate activities for men & women	17	15.7%
Separate activities for younger & older people	17	15.7%
Ability to customize programme to your own needs	52	48.1%

### 3.4. Health self- determinism

The health self-determinism index showed that 46 participants (n=42.6%) do worry about their health, and 51 (47.2%) participants feel the need to have more will power to do things which are good for their health. Patients rely a lot on the health care professionals' opinion about their health. 50.9% (n=55) more often agree to what doctors and nurses think, instead of what they think of their own opinion. In accordance, 53.7% (n=58) participants prefer that doctors and nurses help them plan their health practices. 55.6% of participants (n=60) perceive that the doctor's opinion about their health is better than what they think. 37% participants (n=40) believe that they are capable of doing things on their own, without the need for doctors and nurses to give them suggestions. 56 participants (51.9%) believe that they feel confident in taking care of themselves (table 5).

### 3.5. Cardiac self-efficacy

Overall, 50 (46.3%) participants feel confident that they know when to call or visit the doctor when they are concerned about their health, and 43.5% (n=47) feel confident in explaining what concerns they have in relation to their health. 61 (56.5%) participants stated that they are knowledgeable enough on how to take their medications. 50% of the participants (n=54) also feel confident that they can still maintain their social life at home with their family. However, only 38% (n=41) feel confident that they can maintain their activities at work whilst 35.2% (n=38) are unsure

whether they can maintain their usual activities at work. Participants expressed that they are not at all confident in doing regular exercise and increase their heart rate. 25.9% of the participants (n=28) were not at all confident, and 20.4% (n=22) were unsure if they were able to increase their heart rate during exercise. Only 25.9% (n=28) feel confident (Table 6).

**Table 5: Health Self-Determinism Index**

	<u>agree</u>		<u>disagree</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
I worry about my health	46	42.6%	5	4.6%
For me it takes more will power than I have to do the things that I know are good for my health	51	47%	4	3.7%
Only a doctor really knows whether or not I am in good health	34	3.5%	21	19.4%
Some think that a doctor should decide, but I feel that I should decide	42	38.9%	23	21.3%
Whatever a doctor suggests about my health is OK for me to do	48	44.4%	13	12%
I know without someone else telling me when I am in good health	29	26.9%	28	25.9%
I more often agree with what doctors and nurses think instead of my own opinion	55	50.9%	11	10.2%
I feel good about how I take care of my health	56	51.9%	8	7.4%
I do things to help my health even though a doctor or nurse has not suggested these things to me	40	37%	30	27.8%
I'm really never sure that I am doing the right things for my health until I've checked it out with a doctor	42	38.9%	22	20.4%
I prefer that doctors and nurses help me plan my health practices	58	53.7%	9	8.3%
What a doctor thinks about my health is more important than what I think	60	55.6%	8	7.4%

**Table 6: cardiac self-efficacy**

	<u>Confident</u>		<u>Not confident</u>	
	<u>n</u>	<u>%</u>	<u>n</u>	<u>%</u>
When you should call or visit your doctor about your heart disease?	50	46.3%	10	9.3%
How to take your medications	61	56.5%	2	1.9%
How to make your doctor understand your concerns about your heart	47	43.5%	2	1.9%
How much physical activity is good for you	39	36.1%	9	8.3%
Maintain your usual social activities	52	48.1%	3	2.8%
Maintain your usual activities at home with your family	54	50%	4	3.7%
Maintain your usual activities at work	41	38%	4	3.7%
Maintain your sexual relationship with your spouse/ partner	51	47.2%	10	9.3%
Get regular aerobic exercise and works up a sweat and increase your heart rate	28	25.9%	28	25.9%

### 3.6. Participant's demographics

Ninety four participants did not have a heart attack before this one, whilst 72 (66.7%) participants stated that they did not attend for cardiac rehabilitation in the past.

The majority of participants, 84.3% lived with their spouses/ partners. Transportation to attend for cardiac rehabilitation is not an issue for participants. 66.7% (n=72) are able to drive a car. As an alternative method of transportation, 20.4% of the participants conveyed that they will be driven by either their spouses/ partners or either by their children (19.4%, n=21).

### 3.7. Age and cardiac rehabilitation

The difference in perception to participation in cardiac rehabilitation between young and older participants was analysed. In this study, young (n=24) refers to participants aged 25 to 45 years, and older (n=84) refers to participants aged 46 to 80 years. Both groups held similar opinions on factors which increase participation to CR. Supportive staff increase desire to attend for the programme (n=21 in young participants, n=63 in older participants). Information giving about heart disease in young participants (n=18) and older participants (n=59) also increase the desire to participate in CR. Both young (n=5) and older participants (n=13) are not affected if activities are performed in the same group of younger and older adults, nor if males and females are in the same group (n=2, in young participants, n=13 in older participants). Both young (n=8) and older participants (n=10) perceive time as another barrier to participation in CR. Similar misconceptions about cardiac rehabilitation were raised by both groups as young participants (n=5) and older participants (n=9) believed that CR would push them hard. The latter group also believe that CR may also cause another heart attack (n=13), and that the programme would be strenuous or hard (n=5).

The minimal difference found was that young participants (n=19) perceive close monitoring during the programme as a factor which increases desire to participate, whilst older participants (n=40) feel that the ability to customise the programme according to their needs and the ability to choose which activities to do (n=40) increases the willingness to participate in the programme.

### 3.8. Level of education and CR

The majority of participants had low level of education. 31 (28.7%) participants finished only primary school, whilst 51 (47.2%) participants finished up to secondary school. Only 16 (14.8%) participants completed tertiary school, and 10 (9.3%) graduated from university. In total, 82 participants had a low level of education, whilst 26 participants had a high level of education.

Participants with a higher level of education conveyed that their desire to participate in cardiac rehabilitation increases when there is supportive staff (n=21). Information giving about heart disease (n=19) also increases the desire to participate in the programme.

A difference in the barriers to participation in CR is found. Patients with a low level of education stated that they do not have time to participate in CR (n=13), and believe that time would not be convenient for them to attend (n=23). Misconceptions about the contents of CR is mainly found in the low level of education group, as they believe that CR might cause another heart attack (n=13), it would be strenuous (n=5) or they would be pushed hard during the programme (n=10).

#### 4. Discussion

476 patients were eligible to participate in this prospective study, however only 108 (22.7%) patients returned the questionnaires and participated in this study. The majority of participants, 90 were males, whilst only 18 were females, aged between twenty-five to eighty years old. The barriers which patients might find to participate in cardiac rehabilitation were highlighted in this study.

Similar to Beswick et al. (2005) study, the majority of participants in this study were males and middle-aged (between 66 to 75 years). Low female participation rate has consistently been identified as one of the barriers to participation to cardiac rehabilitation in previous studies and this study (18%). Clark et al. (2013) argued that CR programmes are less suited for women. It poses a conflict with the women's occupational demands, and the other domestic responsibilities, such as childcare, house work and family. Most often, women place their family's needs before their own health needs and even before their desire to attend for the programme (Clarke et al., 2013). Gallagher, McKinley and Dracup (2003) further explained that one of the major barriers identified by women themselves in their study, was lack of referral by physicians. The authors conveyed that in their study and other studies, physicians do not see the importance of referring women for the programme.

Participants believe that cardiac rehabilitation is very important for their health (64.8%), yet there is this low participation rate in Malta (personal communication with

the cardiac rehabilitation team in Malta, January 8<sup>th</sup>, 2015). 66.7% of participants never attended cardiac rehabilitation before, which might be a factor of this low participation rate. The patients' expectations of the components which are included in cardiac rehabilitation in this prospective study are very similar to the results of Dunlay et al. (2009) study. Participants perceived information on diet (83.3%) and education on risk factors, as the commonest topics which are included in the programme.

The difference in results between Dunlay et al.'s (2009) study and this local study is shown in the participants' perception about smoking. In this study, only 49.1% believed that smoking cessation should be included in the programme, however in Dunlay et al. (2009), 72.2% expected to receive help regarding smoking cessation. This difference is not affected by smoking prevalence as in Malta, smoking prevalence is less than 20%, (Eurostat, 2008), which is similar to the 17.8% prevalence of smoking in the United States of America (where Dunlay et al's study was conducted) (Centres for Disease Control and Prevention [CDC], 2015). This difference in this study might be due to the fact that Maltese participants do not associate smoking with cardiovascular disease. This is in accordance to Cooper, Jackson, Weinman and Horne, (2005) study, as participants held misconceptions regarding cardiac rehabilitation, cardiovascular disease, and causes of CVD. Hence more information and publicity about the topics covered in cardiac rehabilitation should be initiated, so that the patients would be fully informed about the service being offered.

Timing of cardiac rehabilitation raises concern for patients to participate in this programme. 28.7% of participants conveyed that the time of CR is not convenient for

them, and they wish that they could reschedule it according to their needs. Fleury, Lee, Matteson, and Belyea (2004) in their study found that 6% of their participants found that programme scheduling as the most common barrier to participation. The authors further conveyed that the reasons highlighted for dropout and discouragement from programme adherence included limited, inconvenient and unfavourable hours of the programme. This was also affirmed in Dunlay et al. (2009) study as 14% of the participants raised the same concern. Furthermore, 16.7% stated that they do not have time to attend for the programme. This issue was further addressed by Cooper et al. (2005). The authors argued that for patients who are still working, time of cardiac rehabilitation is an issue, as usually the programme commences when they return back to work. Patients will then be reluctant to ask their employers for more time off from work, following hospitalisation and recovery period, to attend for CR programme as they wish to protect their job (Cooper, et al. 2005). In order to overcome this problem, timing of cardiac rehabilitation should be adjusted according to the patient's needs. Also, awareness of the importance of cardiac rehabilitation should be given to employers, so that the employees would be excused from work to attend the programme (Cooper et al. 2005).

Participants' misconceptions prior to attending cardiac rehabilitation are important to be addressed. 14.8% of the participants are afraid that participation might induce another heart attack, whilst 13% are afraid that during the programme they would be pushed too hard, or would be ordered to make things which they feel that they are not up to them yet. This was also highlighted in Cooper et al., (2005) study, as the study showed that although prior to discharge patients were given information about the

programme, they still misunderstood certain concepts of cardiac rehabilitation and were afraid to attend. Cooper et al. further explained that this could be due to the timing when information is given. This shows, that cardiac rehabilitation should be started before discharge and more information at different periods during hospitalisation needs to be given to patients prior to leaving hospital, so that any concerns could be answered, and participation in cardiac rehabilitation could be improved. Education should be started immediately after the diagnoses of the patient's condition. Kadda, Marvaki, & Panagiotakos (2012) also highlights that the appropriate time to start cardiac rehabilitation is during hospitalisation as the patient's needs could be easily identified and a programme plan could be formulated. Relevant and accurate information regarding the role of cardiac rehabilitation should be provided in a way to be incorporated into the patient's implicit model of heart attack, especially in those who do not wish to attend, or in those who think that it would exacerbate their symptoms (Cooper et al., 2005).

The patient's decision to attend for cardiac rehabilitation depends on various factors. The most important factor which was highlighted by the participants was supportive staff, (77.8%), which was also raised in Dunlay et al. (2009) (75%). Furthermore, Kadda et al. (2012) expressed in their review that nursing support is beneficial and essential for the patient's health outcomes and might also reduce the risk of a new cardiac event. Kadda et al. further added that it is imperative that nurses provide support to patients as they need to meet the rehabilitative needs of the patients through education, support, supervision, and reinforcement.

Patients rely a lot on a healthcare professional's opinion about their health especially when a doctor gives them his/ her opinion about their health; 55.6% of the participants claimed that the doctor's opinion is more important than what the patient thinks. Also, 50.9% of the participants mentioned that they more often agree with what doctors and nurses think, instead of valuing their own opinion. This was also affirmed in Kwan-Yee Tsui, Segaram, Jamnik, Wu, and Grace (2012) cross-sectional study. The authors concluded that patients who were referred by cardiac specialists or family physicians, rated endorsement as significantly higher than those who were referred by nurses. Reason being is that patients weigh more the recommendations provided by the physician, given their medical status in society (Kwan-Yee Tsi et al., 2012).

Yet this finding is worrying, as physicians do not spend as much time with patients as nurses or other health care professionals do, therefore they do not have a lot of time to discuss with them the importance of cardiac rehabilitation (Kwan- Yee Tsi et al., 2012). In fact, in this local study, 56.5% (n=61) of the participants stated that they were approached by a nurse whilst only 50% (n=54) were approached by a doctor. A reason for this is that nurses attend patients from admission to hospital until discharge, and thus having an overall perspective of patient's problems and needs (Kadda et al., 2012). Besides, literature shows that physicians do not perceive cardiac rehabilitation as an essential treatment for cardiovascular disease, therefore do not usually refer patients to the programme (AHA, 2007; Cooper et al., 2005; Kwan-Yee Tsi et al., 2012).

In this study, age was not identified as one of the barriers to participation to CR. Conversely to Grace et al. (2009) study, this study found that both young and older participants hold misconceptions about CR, as they believe that they will be pushed hard during the programme. Older participants also believed that it would cause them another heart attack. Grace et al. (2009) conveyed in their study that only older participants believe that they will be pushed hard during exercise which will then result in fatigue and pain. Whilst, the authors further conveyed that only young participants find time as a barrier to participation as they are restricted by work responsibilities and time constraints. Yet in this study, time of cardiac rehabilitation was a problem for both young and old participants.

Low level of education is one of the barriers found in this study which might hinder participation to CR. Evenson and Fleury (2000) also found that low education was one of the barriers perceived by physicians. Fleury et al. (2004) showed a significant difference in acceptance of sedentary lifestyle to maintenance of physical activities between participants who were less educated, compared to participants with a higher level of education. Kayaniyil et al. (2009) further found in their study that patients with less than high school education had significantly lower CHD knowledge, which further leads to inadequate health literacy.

Participants with low level of education held misconceptions in this study, as they believed that CR might cause another heart attack, or be pushed hard during the programme. This issue was affirmed in Baker et al. (2007) study, who showed that

lower educational level participants had poor health literacy, which results in less health knowledge, worse disease knowledge, and lower use of preventive services such as cardiac rehabilitation.

#### 4.1. Limitations:

One of the limitations which this study encountered was a low response rate (22.7%). The low response rate from the questionnaires may have led to non-response bias as it is probable that non-participants might have answered differently from the received response of participants (Curtis & Redmond, 2009). However, since there is no standard norm of how much an acceptable response rate is, this response rate is still acceptable (Baruch, 1999). From the 476 potential participants, 359 were men whilst 117 were females; already having a disproportional balance in gender participation. This explains why in this study, a discrepancy in the proportion of males (83.3%) to females (16.7%) was found. Also, sex-related differences in the predictors of participation may have been underestimated.

Prior to sending questionnaires, these were not coded, as anonymity of participants was maintained. By so doing, the researcher could not trace and send a reminder letter to the participants who did not respond. This could have increased the response rate. Also, distribution of questionnaires were in time that a local referendum was held. A lot of information, and flyers were being posted at homes, and the envelope received

with the questionnaire could be considered as junk mail, and hence discarded immediately without opening.

#### 4.2. Recommendations

To enhance patient participation, and address the barriers which patients might encounter, cardiac rehabilitation should be adjusted according to the patient's needs. Timing of cardiac rehabilitation should be improved, and maybe evening classes should be introduced for those who are still working or have other commitments.

More information on the benefits and the subjects covered during the programme should be given to patients prior to discharge. By so doing, misconceptions that patients may have about cardiac rehabilitation will be reduced, leading to an increased in patient's participation for the programme. This could be implemented by having more staff, in order to reach patients prior to discharge. Staff should be provided with courses and knowledge about the subject, to explain better the service offered to the patient.

Apart from this, better cardiologist involvement is required, as patients weigh more the doctor's decision about their health, rather than other health professionals' opinion. Physician endorsement is one of the strongest predictors of full participation.

More research is needed in order to identify in depth the barriers and improve adherence to participation in cardiac rehabilitation. Gap in delivery of cardiac rehabilitation can be reduced by the introduction of standing orders and other tools for CR referral, as these will induce change in the clinical area and so these barriers can be reduced.

## 5. Conclusion

Cardiac rehabilitation is important for the patients' health, and is now recognised as an important treatment option to be given to patients with cardiovascular disease. However, barriers to participation to this programme exist. Primarily, patients are restricted by time, and are not always able to attend to CR, due to work or other commitments. Flexibility of this programme is essential to accommodate the participant's needs and improve attendance. Low level of education is another barrier found to participation to CR. Physician endorsement is an important component of patients' participation to cardiac rehabilitation, as patients value the physician's advice more than the advice given by other health care professionals. More input from physicians is required to minimise the barriers to participation. Yet, it is imperative that nurses (and other allied healthcare providers) are encouraged and empowered to strongly endorse the importance of CR to cardiac patients and its role in recovery. All healthcare providers should universally encourage CR participation among their patients. Cardiac rehabilitation should be initiated from admission, and information should be given at appropriate times during hospitalization prior to discharge. By so

doing, any misconceptions which the patient might have and would impede participation, could be addressed immediately by the health care professional. By addressing these barriers, attendance to cardiac rehabilitation could be improved. Further research is recommended to find ways to improve uptake and adherence to cardiac rehabilitation.

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## Appendix 1. Permission to use the tool

On Monday, December 1, 2014 7:13 PM, "Koepsell, Ellen E., R.N." <koepsell.ellen@mayo.edu> wrote:

Marilyn

I have attached a copy of the questionnaire that we used.

It includes the Health Self-Determinism Index (HSDI), a validated instrument used to measure health motivation and a modified version of the Cardiac Self-efficacy Questionnaire (CSE), a validated measure of a person's judgment of their own capabilities as related to controlling their heart disease.

You may need to check with the authors (referenced in the article) of the HSDI and CSE to see if you need permission to use the questions for your study.

Ellen

**Ellen E. Koepsell, RN, CCRC** | Lead RN Study Coordinator | Cardiovascular Research Unit |

Phone: 507-538-0047 | Pager: 127-06088 | Fax: 507-538-7180 [koepsell.ellen@mayo.edu](mailto:koepsell.ellen@mayo.edu) |

**Mayo Clinic** | 200 First Street SW | Kahler 1A-18 | Rochester, MN 55905 | [www.mayoclinic.org](http://www.mayoclinic.org)

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- Approval from the HSDI author- Dr.Sullivan.

sullimar@u.washington.edu

Wed 17/12/2014 21:56

MARILYN GAUCI;

Ms Gauci-

You may use our questionnaire as long as you cite our original Psychosomatic Medicine paper and send us any translations that you make of the questionnaire.

Mark Sullivan, MD, PhD  
Psychiatry and Behavioral Sciences  
University of Washington  
Box 356560  
Seattle, WA 98195  
Phone:(206)685-3184  
Fax: (206) 221-5414

Phone: (206) 685-3184  
Fax: (206) 221-5414

MARILYN GAUCI

Fri 30/01/2015 14:27

**To:** sullimar@u.washington.edu;

1 attachment

translation of Questionnaire.docx91 KB

Dear Dr. Sullivan,

Thank you for your email and permission to make use of the questionnaire. attached kindly find the translation of questionnaires that I will be using.

kind regards

Marilyn Gauci

University of Chester

Appendix 2. Questionnaire



Cardiac Rehabilitation Survey (copyright Dunlay et al., 2009)

Please check the appropriate box or fill in the blank as indicated.

Gender:      male                       female

Age:    25-35                       36-45                       46-55

          56-65                       66-75                       76-80

1. Did someone from your health care team tell you to go to cardiac rehabilitation during this hospital stay?

Yes     No

1.1 If you were told to go, who told you? (check all that apply)

Doctor                       Nurse                       Family/ friends

2. How important do you believe cardiac rehabilitation is for you?

Very important       important       not so important       do not know

3. Which of these do you believe are included in cardiac rehabilitation programs?

- Diet information

- Education on heart disease
- Education about risk factors
- Help to quit smoking
- Information on related disease (high cholesterol, diabetes)
- Physical exercise
- Stress management
- Physical therapy
- Reassurance and support about symptoms
- Information about my medicines
- Information on when to go back to work
- I don't know what is included in cardiac rehabilitation
- Other, please specify.

4. Are you concerned about any of the following in regarding attending rehabilitation?  
(check all that apply)

- I don't have time to attend cardiac rehabilitation
- I have too many other responsibilities
- I have too many other medical problems to go to rehabilitation
- It will cause another heart attack
- It will be painful or too strenuous
- I'm afraid they will push me too hard and make me do things I'm not ready to do
- Seeing people sicker than me will make me nervous
- I'm embarrassed or shy about being in a big group
- I would rather not have to leave home, I prefer staying at home with my family

- I'm afraid it won't be convenient. I wish I could schedule it when I want to go
- I don't know how I will get there
- I am not concerned about any of these things
- Others please specify.

5. Before you had this heart attack, how would you say your health was?

- No apparent problems
- Experienced slight pain occasionally
- Was suffering from heart disease/ related diseases

6. Please rate each statement by how it would influence your decision to attend cardiac rehabilitation:

	Increase desire to attend	Decrease desire to attend	Doesn't affect desire to attend
Supportive staff			
Provide information you need to know about your heart disease			
Close monitoring while at rehabilitation			
Group activities			
Individual activities			
Ability to choose what activities you do			
Separate activities for men and women			
Separate activities for younger and older people			
Ability to customize program to your own needs			

Health Self- Determination Index (copyright: Sullivan, LaCroix, Russo &, Katon, 1998).

The following statements are about health- and health related issues. Please mark the box to indicate how much you disagree or agree with each statement below.

		Strongly disagree	disagree	Undecided	agree	Strongly agree
7.	For me it takes more will power than I have to do the things that I know are good for my health					
8.	Most of the time I know what to do for my health without needing to contact a doctor					
9.	Only a doctor really knows whether or not I am in good health					
10.	Some people think that a doctor should decide about what to do about their health care, but I feel that I should decide					
11.	I worry about my health					
12.	Whatever a doctor suggests about my health is ok for me to do					
13.	I know, without someone else telling me, when I am in good health					
14.	I more often agree with what doctors and nurses think instead of my own opinion					
15.	I feel good about how I take care of my health					
16.	I do things to help my health even though a doctor or nurse has not suggested these things to me					
17.	I'm really never sure that I'm doing the right things for my health until I've checked it out with a doctor					
18.	My own ideas about taking care of my health are often better than the ideas which doctors and nurses have					

		Strongly disagree	disagree	Undecided	Agree	Strongly agree
19.	I don't do as well at taking care of my health as other people I know					
20.	I prefer that doctors and nurses help me plan my health practices					
21.	I know, without a doctor telling me, that I'm doing the right thing for my health					
22.	What a doctor thinks about my health is more important than what I think					

Cardiac self-efficacy questionnaire (copyright: Cox, 1985).

The following statements are about how well you believe you can control your heart disease. Please check on number that corresponds to your answer for each.

	<u>How confident are you that you know:</u>	<u>Not at all confident</u>	<u>Minimally confident</u>	<u>Confident</u>	<u>Very confident</u>	<u>Unsure</u>
23.	When you should call or visit your doctor about your heart disease?					
24.	How to take your heart medications?					
25.	How to make your doctor understand your concerns about your heart?					
26.	How much physical activity is good for you?					
	How confident are you that you <u>can</u> :	Not at all confident	Minimally confident	confident	Very confident	Unsure
27.	Maintain your usual social activities?					
28.	Maintain your usual activities at home with your family?					
29.	Maintain your usual activities at work?					
30.	Maintain your sexual relationship with your spouse/ partner?					
31.	Get regular aerobic exercise (works up a sweat and increases your heart rate)?					

32. Have you had a heart attack before this one? Yes  No

33. Have you attended cardiac rehabilitation in the past? Yes  No

34. Who do you live with?

- Adult children
- Alone
- Friend (s)
- Spouse/ partner
- Other

35. Are you able to drive a car? Yes  No

36. If you cannot drive a car, how do you get to places you need to go?

- Adult child
- Friend
- Public transportation
- Spouse/ partner

37. What is the highest grade you completed at school?

- Primary school
- Secondary school
- Tertiary school
- Graduate from university

38. What is or was your occupation: \_\_\_\_\_

Thank you. If you wish you can contact the researcher on 1316773@chester.ac.uk

Kwestjonarju dwar rijabilitazzjoni kardijaka. (Drittijiet ta' l-awturi Dunlay et al., 2009)



University of  
Chester



Jekk jogħgbok agħzel il-kaxxa addatta, jew imla l-ispazju l-vojt kif indikat.

Sess: Ragel

Mara

Eta: 25-35

36-45

46-55

56-65

66-75

76-80

1. Meta kont l-isptar, spjegalek xi ħadd dwar rijabilitazzjoni kardijaka?

Iva

Le

1.1. Min qallek biex tattendi? (agħzel dawk kollha li huma applikabli)

Tabib

infermiera

familjari/ ħbieb

2. Kemm taħseb li rijabilitazzjoni kardijaka hi importanti għalik?

Importanti hafna

importanti

mhux importanti

Ma nafx

3. Liema minn dawn taħseb li jkun inkluz fil-program ta' Rijabilitazzjoni Kardijaka?

• Informazzjoni dwar id-dieta

• Edukazzjoni dwar mard tal-qalb

- Edukazzjoni dwar ir-riskji relatati ma' mard tal-qalb
- Għajnuna biex taqta s-sigaretti
- Informazzjoni dwar mard relatat mal-qalb (bħal dijabete u kolesterol għoli)
- Eżercizju fiżiku
- Maniġjar ta' stress
- Terapija fiżika
- Assigurazzjoni u sapport dwar is- sintomi relatati ma mard tal-qalb
- Informazzjoni dwar il-mediċini
- Informazzjoni għal meta nidhol lurax-xogħol
- Ma nafx x'inhu nkluż fil-program tar-rijabilitazzjoni kardijaka.
- Oħrajn

4. Jinkwetawk uħud minn dawn li ġejjin dwar l-attendenza tiegħek fir-rijabilitazzjoni kardijaka? (agħzel dawk kollha li japplikaw għalik)

- M'għandix ħin biex nattendu għal program
- Għandi ħafna aktr responsabilitajiet
- Għandi problemi oħra ta' mard li jimpeduni milli nattendu għar-rijabilitazzjoni
- Jerga jaqbadni attakk tal-qalb ieħor
- Il-program ikun strenjuż
- Nibza li jisfurzawni u jgagħluni nagħmel affarijiet li għadni minix lest/a li nagħmel
- Nsir nervuż meta nara pazjenti oħra morda
- Nistħi meta nkun fi grupp kbir ta' nies
- Nippreferi nibqa d-dar mal-familja milli noħrog biex nattendu għal program.
- Nibza li l-ħin ma jkunx konvenjenti għalija. Nippreferi li kieku nagħzel il-ħin jien meta nattendu.
- Ma nafx kif ser nasal fil-post fejn isir il-program tar-rijabilitazzjoni kardijaka.

- Minix inkwetat rigward ir-rijabilitazzjoni kardijaka.
- Ohrajn.

5. Kif tiddeskrivi saħħtek qabel ma tak l-attakk tal-qalb?

- Qatt ma ħassejt uġiegħ
- Ġieli ħassejt xi uġiegħ
- Kont diġa nbati minn mard ieħor.

6. Jekk jogħġbok iddeskrivi l-aħjar frażi ta' kif int tkun affettwat li tattendi r-rijabilitazzjoni kardijaka:

	Inżid ix-xewqa li nattendi	Nnaqqas ix-xewqa li nattendi	Ma taffetwax ix-xewqa li nattendi
Staff li jagħtik support			
Tkun pprovduta nformazzjoni dwar il-mard tal-qalb tiegħek			
Moniteraġġ kontinwu waqt ir-rijabilitazzjoni			
Attivitajiet fi grupp			
Attivitajiet individwali			
Nkun nista nagħzel l-attivitatijiet li nagħmel			
Attivitajiet separati bejn nisa u rġiel.			
Attivitajiet separati bejn persuni żgħar u dawk kbar fl-eta'			
Nkun nista nqassam il-programm skond il-bzonnijiet tiegħi.			

Health Self- Determination Index (Dritt ta' l-awtur: Sullivan, LaCroix, Russo &, Katon, 1998).

Il-frazzjiet li ġejjin huma dwar is-saħħa u suġġetti relatati mas-saħħa. Jekk jogħġbok immarka fil-kaxxa addatta għalik.

		Ma naqbilx Kompletament	Ma naqbilx	Minix deċiż/a	Naqbel	Naqbel ħafna
7.	Meta nkun naf li l-affarijiet huma tajbin għal saħħti, ikolli bżonn aktar determinazzjoni li nsegwihom.					
8.	ħafna mid-drabi nkun naf x'irrid nagħmel għal saħħti mingħajr ma nkellem tabib					
9.	It-tabib biss jaf jekk jien inhiex f'saħħti					
10	ħafna nies jaħsbu li t-tabib biss għandu jiddeċiedi għal saħħithom, imma jien naħseb li jien irrid niddeċiedi					
11	Ninkwieta dwar saħħti					
12	Dak kollu li jissuġġerixxi t-tabib hu tajjeb għalija					
13	Jien naf meta nkun f' saħħti mingħajr ma jgħidli ħadd.					
14	ħafna mid-drabi iktar naqbel ma' dak li jgħidu t-tobba u n-nurses milli nagħti kas ta' l-opinjoni tiegħi					
15	Inħossni tajjeb/tajba dwar il-mod ta' kif nieħu ħsieb saħħti					
16	Jien nagħmel affarijiet li jgħinu biex nieħu ħsieb saħħti mingħajr ma qaluli t-tobba u nfermiera					
17	Sakemm ma jgħidlix tabib, qatt ma nkun ċerta jekk dak li nkun qed nagħmel hux tajjeb għal saħħti.					

			Ma naqbilx Komple tament	Ma naqbilx	Minix deciz/a	Naqbel
18	Il-mod u l-ħsieb ta' kif nieħu ħsieb saħħti hu aħjar mill-mod ta' kif jaħsbuha u jgħiduli t-tabib u l-infermiera.					
19	Jien ma niħux ħsieb saħħti sew daqs kemm jeħduha persuni oħrajn li naf					
20	Nippreferi li kieku t-tabib u l-infermiera jgħinuni nippjana sew il-mod ta' kif nieħu ħsieb saħħti.					
21	Mingħajr ma jgħidli t-tabib naf li dak li qed nagħmel hu tajjeb għal saħħti					
22	Għalija hu aktar importanti dak li jgħidli t-tabib dwar saħħti milli dak li naħseb jien.					

Cardiac self-efficacy questionnaire (Drittijiet ta' l-awtur Cox, 1985.).

Jekk jogħġbok imla skond kif japplika għalik.

	Kemm tħossok kunfidenti li <u>taf</u> :	Ma nħossnix kunfidenti	Ftit kunfidenti	kunfide nti	Kunfident i ħafna	Ma nafx
23	Meta għandek iċċempel jew tmur għand tabib minħabba l-problemi tal-qalb?					
24	Kif għandek tieħu l-medicini?					
25	Kif tispjega lit-tabib tiegħek l-ħsibijiet li jkollok dwar is-saħħa tal-qalb?					
26	L-ammont t'attivitá fizika tajba għal saħħtek?					

		Xejn kunfidenti	Ftit kunfidenti	kunfidenti	Kunfidenti ħafna	Ma nafx
	Kemm tħossok kunfidenti li <u>tista</u> :					
27	Iżżomm l-attivitajiet soċjali tiegħek?					
28	Iżżomm l-istess attivitajiet d-dar mal-familja?					
	Kemm tħossok kunfidenti li <u>tista</u> :	Xejn kunfidenti	Ftit kunfidenti	kunfidenti	Kunfidenti ħafna	Ma nafx
29	Iżżomm l-attivitajiet fuq ix-xogħol?					
30	Iżżomm l-attivitajiet sesswali mas-sieħeb/ sieħba tiegħek?					
31	Tagħmel eżerċizzju erobiku regolari (li żżid t-taħbita tal-qalb)?					

32. Kellek attakk tal-qalb ieħor qabel dan? Iva  Le

33. Attendejt program ta' rijabilitazzjoni kardijaka fil-passat? Iva  Le

34. Ma min tgħix?

- Tfal adulti
- Waħdek
- Ħbieb
- Mara/ raġel- sieħeb/ sieħba
- Oħrajn

35. Int issuq?

Iva

le

36. Jekk ma tistax issuq, kif tivvjaġġa bejn post u ieħor?

- Mat-tfal
- Fbieb
- Transport pubbliku
- Mara/ raġel- sieħeb/ sieħba

37. Sa liema livell ta' skola wasalt?

- Skola primarja
- Skola sekondarja
- Skola terzjarja
- Gradwat mill-Universita.

38. X'inhu jew x'kien xogħlok? \_\_\_\_\_

Grazzi.

Appendix 3. Letter of invitation.

Dear participant,

I am a Masters student in the Cardiovascular Health and Rehabilitation within the Department of Clinical Sciences & Nutrition at the University of Chester, England, who is currently collecting information for the purpose of my dissertation entitled: 'Barriers to participation in cardiac rehabilitation in Malta'. This study is under the supervision of Dr. S. Fallows, from the University of Chester, England.

I am inviting you to be part of my research project, by filling in the enclosed questionnaire, and kindly return it back in the self-addressed envelope. More information regarding this study is found in the participation information sheet.

If you require further information, you can contact me on [1316773@chester.ac.uk](mailto:1316773@chester.ac.uk).

Thank you for your interest.

Regards

Marilyn Gauci

University of Chester.

Letter of invitation (Maltese version). Ittra ta' stedina.

Għażiż parteċipant/a,

Jien studenta tal-Masters dwar is-Saħħa Kardjovaskulari u Rijabilitazzjoni fid-dipartiment tal-*Clinical Sciences & Nutrition*, fl-Universita' ta' Chester, l-Ingilterra, u qed niġbor informazzjoni dwar "il-fatturi li jimpeđu parteċipazzjoni fir-rijabilitazzjoni kardijaka f'Malta". Dan l-istudju hu sorveljat minn Dr. S. Fallows, mill-Universita' ta' Chester, l-Ingilterra.

Int ġejt mistiedna biex tipparteċipa f'dan l-istudju, billi timla l-kwestjonarju misjub fl-envelope, u jekk jogħġbok irritornah lura fis- *self-addressed envelope*. Aktar informazzjoni dwar dan l-istudju tinsab fl-ittra ta' parteċipazzjoni.

Jekk tixtieq aktar informazzjoni tista tibgħat email fuq [1316773@chester.ac.uk](mailto:1316773@chester.ac.uk).

Grazzi ta' l-interess tiegħek f'dan l-istudju.

Tislijiet

Marilyn Gauci

Universita' ta' Chester.

## Appendix 4. Information letter.



University of  
Chester



### **Participant information sheet**

#### **Barriers to participation in Cardiac Rehabilitation in Malta.**

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

#### **What is the purpose of the study?**

Cardiac rehabilitation is very important for the health of patients after having a heart attack. These programmes aim to minimise the risk for another cardiovascular event through fostering and adhering to a healthy diet and lifestyle modification. This programme is still in the initial phase, and being developed in Malta, and the participation rate is still low. In order to have more participation in this programme, the barriers to participation in cardiac rehabilitation in Malta needs to be highlighted by you, the patient and participant, and problems raised will be rectified accordingly, and a better cardiac rehabilitation programme will be developed.

#### **Why have I been chosen?**

You have been chosen because all patients who were referred for cardiac rehabilitation in 2014 are being asked to participate in this study.

#### **Do I have to take part?**

It is up to you to decide whether or not to take part. If you decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a

reason. A decision to withdraw at any time, or a decision not to take part, will not affect you in any way.

### **What will happen to me if I take part?**

If you agree to participate, kindly fill the questionnaire enclosed with this information letter. It will only take about 10 minutes to fill. Please return your questionnaire in the self-addressed envelope. Questionnaires have to be returned back by 13<sup>th</sup> April, 2015.

### **What are the possible disadvantages and risks of taking part?**

There are no disadvantages or risks foreseen in taking part in the study.

### **What are the possible benefits of taking part?**

By taking part, you will be contributing to identifying the barriers to participation in cardiac rehabilitation in Malta, which will contribute to improving the cardiac rehabilitation programme.

### **What if something goes wrong?**

If you wish to complain or have any concerns about any aspect of the way you have been approached or treated during the course of this study, please contact Professor Sarah Andrew, Dean of Faculty of Life Sciences, University of Chester Parkgate Road, Chester, England. Tel: 0044 1244 511310.

### **Will my taking part in the study be kept confidential?**

All information which is collected about you during the course of the research will be kept strictly confidential so that only the researcher carrying out the research will have access to such information.

### **What will happen to the results of the research study?**

The results will be written up into a dissertation for my final project of my MSc. Individuals who participate will not be identified in any subsequent report or publication.

### **Who is organising the research?**

The research is conducted as part of an MSc in Cardiovascular Health and Rehabilitation within the Department of Clinical Sciences & Nutrition at the University of Chester, England. The study is organised with supervision from the department, by Marilyn Gauci, an MSc student.

**Who may I contact for further information?**

If you would like more information about the research before you decide whether or not you would be willing to take part, please contact:

Marilyn Gauci on [1316773@chester.ac.uk](mailto:1316773@chester.ac.uk).

**Thank you for your interest in this research.**

Information letter (Maltese version). Informazzjoni għal pazjent



University of  
Chester



**Informazzjoni għal-partecipant.**

### **Fatturi li jimpedu partecipazzjoni fir-Rijabilitazzjoni Kardijaka f'Malta.**

Int ġejt mistieden/a biex tiegħu sehem fi studju dwar il-‘Fatturi li jimpedu partecipazzjoni fir-Rijabilitazzjoni Kardijaka f'Malta’. Qabel tiddeciedi jekk tippartecipax f’ dan il-programm, importanti li tifhem sew għalxiex qed isir dan l-istudju, billi taqra sew din l-ittra t’informazzjoni. Tiddejjaq xejn tistaqsini jekk hemm xi ħaġa li tixtieq tikkjarifika. Hu l-ħin tiegħek biex tiddeciedi jekk tixtieqx tipparticipa f dan l-istudju.

Grazzi li qrajt din l-informazzjoni.

#### **L-għan ta l-istudju.**

Rijabilitazzjoni kardijaka hi importanti għas-saħħa tal-pazjent wara attakk tal-qalb. Dan il-programm jgħin biex innaqqsu r-riskju t’ attakk tal-qalb ieħor, billi nsegwu dieta tajba u nbiddlu l-istil tal-ħajja ta’ kif ngħixu. F’Malta dan il-programm għadu qed ikun żviluppat, filwaqt li l-partecipazzjoni t’ attendenza hi baxxa. L-għan hu li jkun hawn aktar partecipazzjoni f’ dan il-programm; għalhekk hu importanti li l-fatturi li jimpedu partecipazzjoni fir-rijabilitazzjoni kardijaka, jkunu msemija minnek, il-partecipant, biex dawn il-fatturi jigu ndirizzati, u b’hekk ikun ifformulat programm aħjar ta’ Rijabilitazzjoni Kardijaka.

#### **Għaliex ġejt magħżul?**

Inti ġejt magħżul għaliex persuni li kienu referuti biex jattendu għall-programm ta rijabilitazzjoni kardijaka fis-sena 2014, huma mistiedna biex jippartecipaw f’dan l-istudju.

#### **Obligatorju li nieħu sehem f’dan l-istudju?**

Id-deċizzjoni hi f’idejk jekk tixtieqx tipparticipa f’dan l-istudju. Jekk tiddeciedi li tipparticipa, l-informazzjoni dwar dan l-istudju tinstab f’din l-ittra. Jekk jogħġbok iffirma

I-ittra ta' kunsens li hemm meħmuża ma' din l-ittra. Ġaladarba tiddeċiedi li tipparteċipa, inti liberu/ libera li tista tiegaf meta trid mill-parteċipazzjoni tiegħek. Ma jkun ġara xejn jekk ma tipparteċipax.

### **X'irrid naqħmel jekk niddeċiedi li nipparteċipa?**

Jekk tiddeċiedi li tipparteċipa, int ġentilment mitlub/a biex timla l-kwestjonarju li jinsab meħmuż ma' din l-ittra. Dan il-kwestjonarju jieħu madwar għaxar minuti biex jimtela. Jekk jogħġbok ibgħat il-kwestjonarju flimkien ma' l-ittra ta' kunsens, fis-*self-addressed envelope*. Il-kwestjonarju jrid ikun rritornat sat-13 t'April, 2015.

### **X'inhuma l-iżvantaġġi u r-riskji jekk nipparteċipa f'dan l-istudju?**

Ma hemm l-ebda żvantaġġ jew riskju jekk tipparteċipa f'dan l-istudju.

### **X'inhuma l-vantaġġi jekk nipparteċipa?**

Meta timla l-kwestjonarju int tkun qed tgħin lir-riċerkatur jidentifika x'inhuma l-fatturi li jimpedu parteċipazzjoni fir-Rijabilitazzjoni Kardijaka f'Malta. B'hekk il-programm tar-rijabilitazzjoni kardijaka jkun jista jiġi żviluppat aħjar, u aktar nies jattendu għall-programm.

### **X'nista naqħmel jekk ma jogħġobnix xi ħaġa waqt il-proċess ta' parteċipazzjoni?**

Jekk waqt il-proċess ta' parteċipazzjoni m'għoġbokx xi ħaġa, tista tikkuntatja lil Professur Sarah Andrew, *Dean of Faculty of Life Sciences, University of Chester, Parkgate Road, Chester, England*. Tista ċċempel fuq in-numru 0044 1244 511310.

### **Tinzamm kunfidenzjalita waqt il-parteċipazzjoni tiegħi f'dan l-istudju?**

L-informazzjoni miġbura dwarek waqt il-kors ta' dan l-istudju tibqa kunfidenzjali. Ir-riċerkatur biss ser ikollu aċċess għall-informazzjoni tiegħek.

### **X'jsir minnhom ir-riżultati ta' dan l-istudju?**

Ir-riżultati jinġabru u jinkitbu f'teżi għal-proġett ta' l-istudju tal-Masters (MSc.). Ma jkun hemm l-ebda identifikazzjoni tal-parteċipant meta jkunu ppublikati r-riżultati.

### **Min qed jorganizza dan l-istudju?**

Dan l-istudju hu parti minn studju ta' Masters dwar is-Saħħa Kardjovaskulari u Rijabilitazzjoni fid- dipartiment tal-*Clinical Sciences & Nutrition*, fl- Universita' ta' Chester, l-Ingilterra. L-istudju qed isir minni, Marilyn Gauci, studenta tal- Masters (MSc).

### **Kif nista nikseb aktar informazzjoni?**

Jekk tixtieq aktar informazzjoni dwar dan l-istudju qabel tiddeciedi jekk tixtieqx tipparteċipa f'dan l-istudju, tista tibgħat email lil Marilyn Gauci fuq [1316773@chester.ac.uk](mailto:1316773@chester.ac.uk).

**Grazzi ta' l-interess tiegħek f'dan l-istudju.**

Appendix 5. Permission from University of Chester



University of  
Chester



*Faculty of Life Sciences*  
*Research Ethics Committee*

frec@chester.ac.uk

Marilyn Gauci  
79 Deo Gratias  
St. Edward Street  
Qormi  
QRM2135  
Malta

13 February 2015

Dear Marilyn

**Study title:** Barriers to participation in Cardiac Rehabilitation in Malta  
**FREC reference:** 991/15/MG/CSN  
**Version number:** 1

Thank you for sending your application to the Faculty of Life Sciences Research Ethics Committee for review.

I am pleased to confirm ethical approval for the above research, provided that you comply with the conditions set out in the attached document, and adhere to the processes described in your application form and supporting documentation. However, the Committee would like to request the following amendments:-

The final list of documents reviewed and approved by the Committee is as follows:

Document	Version	Date
FREC Application Form	1	Jan 2015
Appendix 1 – List of References	1	Jan 2015
Appendix 2 – C.V. for Lead Researcher	1	Jan 2015
Appendix 3 – Letter of Invitation to Participants	1	Jan 2015
Appendix 4 – Letter of Invitation to Participants (Maltese)	1	Jan 2015
Appendix 5 – Participant Information Sheet	2	Feb 2015
Appendix 6 – Participant Information Sheet (Maltese)	2	Feb 2015
Appendix 7 – Written permissions from relevant authorities	1	Jan 2015
Appendix 8 – Approval from Dr Sullivan to use questionnaire	1	Jan 2015
Appendix 9 – Validated questionnaire	2	Feb 2015
Appendix 10 – Translation of questionnaire (Maltese)	2	Feb 2015
Response to FREC	1	Feb 2015
Confirmation that translation of questionnaire sent to Dr Sullivan	1	Feb 2015

Please note that this approval is given in accordance with the requirements of English law only. For research taking place wholly or partly within other jurisdictions (including Wales, Scotland and Northern Ireland), you should seek further advice from the Committee Chair / Secretary or the Research and Knowledge Transfer Office and may need additional approval from the appropriate agencies in the country (or countries) in which the research will take place.

With the Committee's best wishes for the success of this project.

Yours sincerely,



**Dr. Stephen Fallows**

Chair, Faculty Research Ethics Committee

Enclosures: Standard conditions of approval.

Cc. Supervisor/FREC Representative

Appendix 6. Permission from University of Malta

**UNIVERSITY OF MALTA**

**UNIVERSITY RESEARCH ETHICS COMMITTEE**

***Check list to be included with UREC proposal form***

Please make sure to tick **ALL** the items. Incomplete forms will not be accepted.

		YES	NOT APP.
1a.	Recruitment letter / Information sheet for subjects, in English	x	
1b.	Recruitment letter / Information sheet for subjects, in Maltese	x	
2a	Consent form, in English, signed by supervisor, and including your contact details		x
2b	Consent form, in Maltese, signed by supervisor, and including your contact details		x
3a	In the case of children or other vulnerable groups, consent forms for parents/ guardians, in English		x
3b	In the case of children or other vulnerable groups, consent forms for parents/ guardians, in Maltese		x
4a	Tests, questionnaires, interview or focus group questions, etc, in English	x	
4b	Tests, questionnaires, interview or focus group questions, etc, in Maltese	x	
5a	Other institutional approval <i>for access to subjects</i> : Health Division, Directorate for Quality and Standards in Education, Department of Public Health, Curia...	x	
5b	Other institutional approval <i>for access to data</i> : Registrar, Data Protection Officer Health Division/Hospital, Directorate for Quality and Standards in Education, Department of Public Health...	x	
5c	Approval from person <i>directly responsible for subjects</i> : Medical Consultants, Nursing Officers, Head of School...	x	

Received by Faculty office on	
Discussed by university Research Ethics Committee on	6-5.2005

For the following reason/s:

Signature

Date

---

*To be completed by University Research Ethics Committee*

We have examined the above proposal and grant

**Acceptance**

**Refusal**

**Conditional acceptance**

For the following reason/s:

Signature

*Paul Day*

Date

*13/3/2015*

## Appendix 7. Permission from Mater Dei Hospital

- Approval from chairman of cardiology:

Xuereb Robert G at MDH-Health

**To:** Gauci Marilyn A at MDH-Health

**Cc:** Farrugia Bernardette at MDH-Health; 'mandy.zaffarese.13@um.edu.mt'

16 February 2015 15:19

Dear Ms Gauci

Consent granted. Go ahead.

Regards

Dr Robert G Xuereb  
MD FRCP(L) FRCP(E) FASA FESC FACC  
Chairman, Department of Cardiology

- Approval from Director of Nursing at Mater Dei Hospital.

Sultana Victoria at MDH-Health

**To:** Gauci Marilyn A at MDH-Health

16 February 2015 11:05

It needs to be approved from UREC too – check with them.  
Once you get the go ahead form the local ethics committee then you can go ahead  
with the research

Vicky

Dr Victoria Sultana

Director Nursing & Midwifery Services

- Chief Executive Officer Mater Dei Hospital

**To:** Gauci Marilyn A at MDH-Health

**Cc:** Xuereb Robert G at MDH-Health; Young Sharon at MDH-Health

17 February 2015 08:26

Dear Marilyn,

From my side proceed. Copying Dr Xuereb and Ms Young to guide you further as regards to standard procedures that apply.

Regards,

Ivan

Ivan Falzon  
Chief Executive Officer | TeaMDH

Marilyn's reply on 18/02/2015 21:52.

Dear Mr. Falzon,

Thanks alot for your email. I had been given approval by Dr. Xuereb.

Kind regards

Marilyn Gauci

# Approval from ethics committee of Mater Dei Hospital

MINISTERU GHAS-SABHA



MINISTRY FOR HEALTH

## POLICY ON ACCESS TO PATIENT DATA

Access to patient data by a health professional\*, whether in paper or electronic form, is permitted solely for the purpose of delivering or supporting delivery of health care, as part of the performance of official working duties.

All patient data is "personal data" or "personal sensitive data" in terms of the Data Protection Act. Therefore, access to patient data is subject to compliance with the provisions of the Data Protection Act, as well as those of the Professional Secrecy Act and other relevant legislation and regulations, including the computer misuse provisions of the Criminal Code.

Person-identifiable patient data may not be copied, printed or otherwise exported from information systems (paper or electronic) except as part of the performance of official working duties.

## DECLARATION BY HEALTH PROFESSIONAL\* ON ACCESS TO PATIENT DATA

I hereby declare that I will respect the confidentiality and privacy of any personal data or information that I am in contact with and will in no circumstance disclose any such information to third parties not directly involved in the patient's care without the patient's prior and informed consent.

I also declare that I am aware of and will abide to the provisions of the

- Data Protection Act<sup>1</sup>
- Computer Misuse provisions of the Criminal Code<sup>2</sup>
- Professional Secrecy Act<sup>3</sup>
- Government and hospital regulations related to data, information and use of IT systems and services<sup>4</sup>

Signature:

M. Gowa

Full name:

Marilyn Gowa

ID / Passport number:

306887 (M)

Email Address:

marilyn.a.gowai@gov.mt

Date:

4/3/15

MFH0001v01.0

\* The term "health professional" is defined in Article 15 of the Data Protection Act as "a person in possession of a warrant to exercise a profession regulated by the Medical and Kindred Professions Ordinance and any person acting under the personal direction and supervision of such a person".

<sup>1</sup> Data Protection Act: <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lon&itemid=8906&l=1>

<sup>2</sup> Computer Misuse provisions of the Criminal Code:

<http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lon&itemid=8574&l=1>

<sup>3</sup> Professional Secrecy Act: <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lon&itemid=8844&l=1>

<sup>4</sup> Government and hospital regulations related to data, information and use of IT systems and services: <http://cinolicies.gov.mt>  
<http://www.kura.gov.mt>

Data Protection Statement: The personal data supplied on this form will be processed in accordance with the provisions of the Data Protection Act (2001).

Graciella

Information Management  
& Technology Directorate

04 MAR 2015

RECEIVED

Caruana Simon at MDH-Health on behalf of Data Protection at MDH

**Actions**

To:

M

Gauci Marilyn A at MDH-Health

Cc:

M

Buhagiar Nadine at MDH-Health; Aquilina Graziella at MDH-Health

28 February 2015 07:17

You replied on 02/03/2015 07:35.

Dear Dr. Gauci

Good Morning

On the basis of the documentation you submitted, from the MDH data protection point of view you have been cleared to proceed with your study provided that you obtain approval from MDH CEO and the University Ethics Committee.

Please contact Ms. Nadine Buhagiar on 2545 5334 or Ms. Graziella Aquilina on 2545 5346 to present a copy of your approvals and fill in the appropriate Data Protection Form.

Remember that in no way should you retain any personal details you obtain from your research and this should be destroyed at the end of your study.

All medical records are to be viewed at the Medical Records Department MDH.

You are requested to submit a copy of your findings to this office at the end of your study.

Regards

Sharon Young

Data Protection Officer

Mater Dei Hospital

## Appendix 8. Permission from the cardiac rehabilitation unit

From: Xuereb Clifford at MDH-Health [clifford.xuereb@gov.mt]  
Sent: 19 December 2014 14:01  
To: MARILYN GAUCI  
Cc: Desira Josette at MDH-Health  
Subject: Request for permission to conduct a research study at Mate Dei Hospital

Xuereb Clifford at MDH-Health <clifford.xuereb@gov.mt>  
Fri 19/12/2014 14:01

Dear Marilyn,

We hereby give you consent to carry out your research study within the cardiac rehabilitation unit at Mater Dei Hospital, Malta.

We wish you luck in your project.

Regards,

(c/o Ms. Josette Desira, Charge Nurse Cardiac Rehabilitation Unit)

Clifford Xuereb  
Deputy Nursing Officer  
Mater Dei Hospital  
t: +356 25454236 e: clifford.xuereb@gov.mt  
[[[www.health.gov.mt](http://www.health.gov.mt)][www.health.gov.mt](http://www.health.gov.mt)]

*Kindly consider your environmental responsibility before printing this e-mail*

MINISTRY FOR HEALTH  
Mater Dei Hospital, TRIQ TAL-  
QROQQ, MSIDA, MALTA

## Appendix 9: Permission from cardiologists and cardiothoracic surgeons

### Permission from cardiothoracic surgeons

- Mr. A. Manche.

Manche Alexander at MDH-Health  
**To:** Gauci Marilyn A at MDH-Health

11 March 2015 07:34

Dear Marilyn  
You have my permission  
Alexander Manche

- Mr. Walter Busuttill.

Busuttill Walter J at MDH-Health  
**To:** Gauci Marilyn A at MDH-Health

16 March 2015 12:57

Hi Marilyn I have no problems with you carrying out the study. You can proceed as regards to my patients Walter

- Mr. Galea

Dear Mr. Galea,

I am Marilyn Gauci, a student in MSc in Cardiovascular Health and Rehabilitation, at the University of Chester. The research which I wish to conduct for my masters' study is on 'Barriers to participation to cardiac rehabilitation in Malta'. This project will be conducted under the supervision of Dr. Stephen Fallows, Research Coordinator - Department of Clinical Sciences & Nutrition Graduate School, Sub-Dean for PGR Studies, at the University of Chester, England.

I am hereby seeking your consent to ask patients who were referred to cardiac rehabilitation in 2014, to identify the barriers to participation to cardiac rehabilitation through questionnaires.

I have provided you with a copy of the questionnaire and the proposed method of data collection, together with copies of information sheet for the participants. I was given approval from the Faculty of Life Sciences Research Ethics Committee, University of Chester, England.

If you require any further information, please do not hesitate to contact me on 79449928, or email on [1316773@chester.ac.uk](mailto:1316773@chester.ac.uk). Thank you for your time and consideration in this matter.

Kind regards

Marilyn Gauci

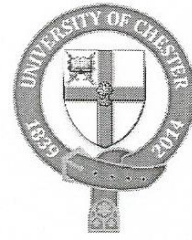
I hereby grant permission to Ms. Marilyn Gauci to conduct this research study.



information letter for permission



University of  
Chester



The Sample population for this study will include all patients, who were referred for cardiac rehabilitation in 2014, after being admitted to Mater Dei Hospital following a myocardial infarction, a coronary artery bypass graft or after having valve replacement.

Each year, around 500 patients are referred for cardiac rehabilitation, however only around 200-300 patients a year attend.

Participants have to be residing in Malta; both Maltese and foreign citizens, aged between 25 to 80 years.


A questionnaire will be used. The questionnaire for this study was developed for a study conducted by Dunlay et al. (2009). The tool was already validated by the Health Self Determinism Index (HSDI) which was developed by Cox (1985) and by the cardiac self efficacy questionnaire (CSE) which was conducted by Sullivan, LaCroix, Russo, & Katon (1998).

Permission to me to use the tool was given by the authors themselves.


Questionnaire and information letter describing the study will be sent to all participants. Enclosed in the envelope will be a pre-paid postal envelope, which will be returned to a Maltese postal box, and the researcher will collect the questionnaires from there. These need to be returned back after 3 weeks.

Prior to sending the questionnaires, the hospital registry will be analysed to see if any of the participants passed away during this year.

*Ms. Sanci can review my patients  
for this study*

  
*DR. O. ARVIDSSON  
4/3/15*

*Ms. Sanci is free to review my  
patients for this study.*

  
*Dr. MARK STAMMERS  
25/4*

Dear Cardiologist,

I am Marilyn Gauci, a student in MSc in Cardiovascular Health and Rehabilitation, at the University of Chester. The research which I wish to conduct for my masters' study is on 'Barriers to participation to cardiac rehabilitation in Malta'. This project will be conducted under the supervision of Dr. Stephen Fallows, Research Coordinator - Department of Clinical Sciences & Nutrition Graduate School, Sub-Dean for PGR Studies, at the University of Chester, England.

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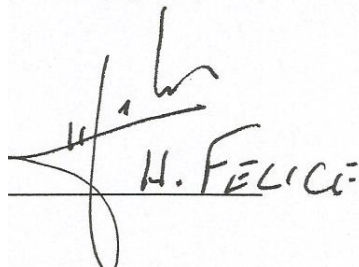
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Kind regards

Marilyn Gauci

University of Chester

I hereby give permission to Ms. Gauci to conduct the research study.



H. FELICI

16th February, 2015.

Dear Cardiologist,

I am Marilyn Gauci, a student in MSc in Cardiovascular Health and Rehabilitation, at the University of Chester. The research which I wish to conduct for my masters' study is on 'Barriers to participation to cardiac rehabilitation in Malta'. This project will be conducted under the supervision of Dr. Stephen Fallows, Research Coordinator - Department of Clinical Sciences & Nutrition Graduate School, Sub-Dean for PGR Studies, at the University of Chester, England.

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Kind regards  
Marilyn Gauci  
University of Chester

I hereby give permission to Ms. Marilyn Gauci, to conduct the study on Barriers to participation to cardiac rehabilitation in Malta.



Dr. A. Cassar