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## Outpatient cardiac rehabilitation: Patient perceived benefits and reasons for non-attendance

Fergus William Gardiner<sup>a,b,\*</sup>, Ezekiel Uba Nwose<sup>a</sup>, Elizabeth Regan<sup>b</sup>, Bo Kyung Park<sup>b</sup>, Phillip Taderera Bwititi<sup>c</sup>, Judith Crockett<sup>a</sup>, Lexin Wang<sup>c</sup>

<sup>a</sup> School of Community Health, Charles Sturt University, Australia

<sup>b</sup> Calvary Public Hospital Bruce, ACT, Australia

<sup>c</sup> School of Biomedical Science, Charles Sturt University, Australia

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### ABSTRACT

**Objective:** To determine patients' perceptions of the benefits of participating in outpatient cardiac rehabilitation and the reasons why some decline to take part.

**Method:** Data collected included patients' responses to the self-administrated 'Outpatient Cardiac Rehabilitation Program Evaluation' form, after attending a cardiac rehabilitation program. The evaluation involved analysis of 9 binary and open ended questions. A retrospective study was completed on data collected from January 2010 to December 2015 (6 years) and included 643 adult cases comprising 500 men and 143 women. A between subject *t*-Test was used to compare patient means before and after attendance of perceived changes to their lifestyle, and overall sense of physical and emotional well-being. Fishers Exact Test was used to compare attendance percentages, gender distribution, and primary diagnosis.

**Results:** Two hundred and seventy nine (43.4%) of the 643 invited patients participated in the cardiac rehabilitation program, while 364 (56.6%) declined, with this result being significantly lower ( $p < 0.001$ ) than those reported in other Australian locations. The sex distribution of those that participated was 234 (83.8%) males and 45 (16.2%) females while those that declined were 266 (73.1%) males and 98 (23.9%) females. The male prevalence of both attendance and non-attendance was significant ( $p < 0.001$ ). Patients with a primary referral diagnosis of having a percutaneous coronary intervention and acute myocardial infarction were significantly ( $p < 0.05$ ) more likely to decline cardiac rehabilitation. Of those who participated, 96.1% indicated they received benefits from attending the cardiac rehabilitation program, with 96.8% identifying significant changes to their lifestyle ( $p < 0.01$ ) and sense of well-being improvement ( $p < 0.001$ ) as key benefits, in addition to perceived quicker recovery. According to participants, these positive outcomes resulted from a healthier diet, exercise, better stress management, and support from other patients with similar conditions. The major reasons for declining participation was 'not wanting to attend' (19.3%), 'referred to another hospital service' (10.6%), and 'work related commitments' (7.3%).

**Conclusion:** Considering the reported benefits of attending cardiac rehabilitation, the number of people who decline to attend has important implications for their health and related health system costs related to ongoing disease.

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### Problem or issue

No international studies have explored patients' perceptions of the benefits of attending a cardiac rehabilitation program or their reasons for not attending.

### What is already known

Studies have considered the ongoing medical benefits associated with cardiac rehabilitation programs, and the barriers to patient attendance.

### What this paper adds

The results from this study show that patients who attend the cardiac rehabilitation program perceive it as beneficial. If barriers to

\* Corresponding author at: School of Community Health, Charles Sturt University, Australia.

E-mail address: [gus.gardiner@health.gov.au](mailto:gus.gardiner@health.gov.au) (F.W. Gardiner).

attendance are reduced, it is possible that participants who might otherwise decline participation will perceive the cardiac rehabilitation program as beneficial. Findings from this study provide support for the benefits of cardiac rehabilitation programs in hospitals, suggesting it is important to recognise that comprehensive models of cardiac rehabilitation have significant benefits for healthcare.

## 1. Introduction

Cardiovascular disease (CVD) accounts for millions of preventable deaths each year (World Health Organisation, 2013). Cardiac rehabilitation (CR) is a recommended treatment protocol for the treatment of CVD, and has evolved from a simple patient monitoring process to a multidisciplinary approach focusing on patient education, tailored exercise programs, modification of patient risk factors, and overall well-being of the patient. The patient benefits associated with a CR program include reduced mortality, symptom relief, smoking cessation, enhanced physical ability, and improved psychological well-being (World Health Organisation, 2013; Piepoli et al., 2010). Guidelines recommend CR for patients with acute coronary syndrome (ACS), and for patients who have received coronary revascularisation, including coronary artery bypass graft (CABG) surgery or percutaneous coronary interventions (PCI), or valvular surgery (Piepoli et al., 2010; Aragam et al., 2011).

This study's CR program includes patients who experience both acute and chronic coronary artery disease (CAD). These comprise of acute myocardial infarction, cardiac stents, cardiac surgeries such as Coronary Arterial Bypass Grafts (CABG) and Cardiac Valve replacements and repairs. Those with medically managed CAD, heart failure, atrial fibrillation (AF) and at high risk of coronary artery disease (CAD) are also welcomed. The program has varied patient participation of all ages and sexes including patients who are debilitated, in wheel chairs, with developmental conditions and those who are fit e.g. personnel recently engaged in active duty in the armed forces or high level athletic competition. Patients need to be medically stable prior to commencing the CR program, and if not they wait until their condition stabilizes. For example, a patient undergoing staged stents will have the final stent in place before starting rehabilitation exercise, those with diabetes mellitus participate when blood glucose levels are under control and participants with severe cardiomyopathies may need to have an implanted cardiac defibrillator. There are also conditions where exercise is contraindicated. The selection criteria used is based on the Heart Foundation Australia recommended framework and the American Association of Cardiovascular and Pulmonary Rehabilitation Guidelines for Cardiac Rehabilitation and Secondary Prevention Programs (Contra-indications, 2016; The Heart Foundation of Australia, 2004). Participants were routinely screened by a Registered nurse and excluded from exercise in the CR program if exercise contraindicated or at risk of exercise-related complications. Appropriately prescribed exercise by the relevant clinical staff is indicated for most patients with a clinically stable heart condition after relevant screening, as reflective of the guidelines (Contra-indications, 2016; The Heart Foundation of Australia, 2004).

Patients in the CR programs had a comprehensive multidisciplinary rehabilitation of normal duration of 6 weeks. This consisted of one or more group-based therapies, including education (risk factors for heart disease; anatomy and physiology of the heart), physiotherapy and exercise, stress management, medications, healthy eating, general practitioner presentations and support, consumer input from Health Support Australia and balanced lifestyle and relaxation. Therapy segments were operated by a multidisciplinary team, including cardiac nurses, physiothera-

pists, social workers, pharmacists, dietitians, general practitioners and occupational therapists.

CR programs are a cost effective and comprehensive approach to address CVD risk factors, and help restore an individual's physiological, psychological, nutritional, and functional status (Papadakis et al., 2005; Wenger, 2008; Lavie and Milani, 2011; Heran et al., 2011). Outpatient CR programs have shown dramatic reductions in morbidity and mortality by nearly 25% compared to conventional care (Clark, Hartling, Vandermeer, & McAlister, 2005; Taylor et al., 2004). For example, de Vries et al. (de Vries, Kemps, vanEngen-Verheul, Kraaijenhagen, & Peek, 2015) showed that receiving multidisciplinary CR was associated with a substantial survival benefit in the first 4 years following an ACS or cardiac intervention. This was regardless of age, diagnosis, type of intervention, and follow-up duration.

The American Heart Association (AHA) advised that a lack of knowledge about the benefits of CR programs is a major contributor to its underutilisation and stressed that more research is needed to demonstrate CR program benefits (de Vries et al., 2015). Studies have considered the ongoing medical benefits associated with CR programs (Clark et al., 2005; Taylor et al., 2004), and the barriers to patient attendance (Worcester, Murphy, Mee, Roberts, & Goble, 2004), although no Australian studies have considered the benefits associated with CR programs as perceived by the patient.

This research therefore is aimed at determining the patients' perceived benefits in participating in the CR program and the various reasons for declining the program and hypothesises that patients perceive the CR program as beneficial.

## 2. Methods

### 2.1. Redacted for blind review: Hospital description and ethics committee

The project was approved by the Calvary Public Hospital Bruce Research Ethics Committee (reference number: 33-2016), and the Charles Sturt University (CSU) Human Research Ethics Committee (reference number: H17009). The Calvary Hospital Bruce is a 256 bed public hospital located in Canberra Australia with various services, including an Emergency Department, an Intensive and Coronary Care Unit, Medical and Surgical Wards, a Maternity Unit, a voluntary Psychiatric Ward, and Ambulatory Care and outreach facilities and services. The hospital also serves as a teaching hospital and it is associated with local universities.

#### 2.1.1. Inclusion criteria

A total of 643 patients were referred and offered to participate in the CR program, with 364 declining. To be included in this study, patients were required to attend the cardiac rehabilitation sessions; any participants who attended less than 10 sessions were excluded from the study. This was based on previous research (Gardiner et al., 2017) indicating that enhanced medical benefits are associated with patients attending at least 10 cardiac rehabilitation sessions.

#### 2.1.2. Instrument and data collection

At completion of the CR program 279 evaluation forms (details on instrument are below) were distributed. Data collected included patients' responses to the de-identified "Outpatient Cardiac Rehabilitation Program Evaluation" form (see Fig. 1) after attending the CR program. The evaluation data was collected prospectively from 01st January 2010 until the 31st December 2015 (6 years) directly by the senior cardiac rehabilitation nurse, as the patient concluded the program, with final data entry and analysis being conducted retrospectively at the end of the study period by the senior medical research scientist on the research team. All patients that finished the CR program were invited to complete the evaluation, and made

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