

Research Article

PROBLEMS OF LOW CARDIAC REHABILITATION PARTICIPATION AT A TERTIARY HOSPITAL - A REVIEW

Bipin Puneeth J



JSS College of Physiotherapy, Mysuru, Karnataka, India

ARTICLE INFO

Corresponding Author:

Bipin Puneeth J
JSS College of Physiotherapy,
Mysuru, Karnataka, India
bipin7716@gmail.com

Key words: Heart Disease, Cardiac Rehabilitation



DOI:<http://dx.doi.org/10.15520/ijmhs.2017.vol7.iss1.149>

ABSTRACT

India has the dubious distinction of being the heart disease (HD) and diabetes capital of the world. HD is the leading cause of death and the worst part is that it strikes Indians during the prime years of their life. The HD is a largely preventable disease and if appropriate lifestyle measures, medication and appropriate physical exercises are taken early enough one may never need to undergo the emotional turmoil. Cardiac Rehabilitation (CR) program is for those who have already suffered a cardiac event, such as a heart attack, bypass surgery or angioplasty. CR is an intervention that has a well-documented history of benefiting patients. These benefits include improvements in functional capacity, quality of life, and morbidity and mortality. Reductions in morbidity and mortality with CR are equivalent to many of the best available pharmacologic and invasive interventions. The CR is Class-I-level recommendation (signifying a treatment that should be performed or administered) for referral to CR in those groups of patients mentioned above. Yet CR participation and referral has not increased over the last decade; a time during which invasive interventions (largely PCI) have skyrocketed, despite the observation that PCI does not improve outcomes. Firstly, the reason was cost. The government schemes in Karnataka applicable to the tertiary hospital like yeshaswini, BPL, APL card and the insurance companies needs to include the CR program at a cost so that all type of cardiac patients can benefit which is now lagging. The benefits of CR are greatly under-appreciated in both the public and the medical community in this part of the world. Greater efforts are needed to educate health care providers and the public regarding the benefits of CR. Hence educating these health care professionals, other health care providers, patients, families, health care systems regarding the indisputable benefits of multidisciplinary CR will go a long way toward broadening the proportion of patients who receive these benefits.

©2017, IJMHS, All Right Reserved

INTRODUCTION

India has the dubious distinction of being the heart disease and diabetes capital of the world. Heart disease is the leading cause of death and the worst part is that it strikes Indians during the prime years of their life. Heart disease can be a life changing event and many patients never fully recover from the blow and end up being 'cardiac cripples'. It starts with a lack of self-confidence leading to a drop in physical ability, which further reduces the self-belief and the vicious cycle continues. The good news is that heart disease is a largely preventable disease and if appropriate lifestyle measures, medication and appropriate physical exercises are taken early enough one may never need to undergo the emotional turmoil.

Heart disease can be a life changing event but it can also be a positive life-changing event, if appropriate

care is taken, most people not only recover from their event but go on to improve their quality of life to a higher level than before. After a heart event post-care and rehabilitation is a vital part of the process. A structured cardiac rehabilitation program is crucial to get the patient on the path to recover and to prevent further illness.

The term cardiac rehabilitation, as defined by the World Health Organization (WHO) refers to coordinated, multifaceted interventions designed to optimize a cardiac patient's physical, psychological, and social functioning, in addition to stabilizing, slowing, or even reversing the progression of the underlying atherosclerotic processes, thereby reducing risk of further disease.

Cardiac Rehabilitation program is for those who have already suffered a cardiac event, such as a heart

attack, bypass surgery or angioplasty. It is a Secondary prevention program for those who have been detected with heart diseases on routine tests, and want to avoid an interventional procedure, such as bypass surgery and a prevention program for those who are at risk for heart disease, and want to avoid suffering, example those with a high BP, or cholesterol, or diabetes or a family history of heart disease. Cardiac rehabilitation (CR) is an intervention that has a well-documented history of benefiting patients.^{1,2} These benefits include improvements in functional capacity, quality of life, and morbidity and mortality.¹⁻⁴ Reductions in morbidity and mortality with CR are equivalent to many of the best available pharmacologic and invasive interventions.^{5,6}

Cardiac rehabilitation is often divided into phases that involve monitored exercise, nutritional counseling, emotional support, and support and education about lifestyle changes to reduce the risks of heart problems. The goals of cardiac rehabilitation are to establish an individualized plan to help regain strength, to prevent the condition from worsening, to reduce the risk of future heart problems, and to improve health and quality of life.

A study recently published in the journal *Circulation* showed that patients who had heart attacks lived longer with such rehab sessions. It was especially true for patients who had undergone coronary by-pass graft surgery or had been hospitalized for chronic stable angina (chest pain accompanying exertion). Decades of research have shown that the numerous physiological adaptations following rehabilitation that underlie improvements in exercise capacity have met the fundamental scientific tenet of replication. These adaptations include changes in skeletal muscle metabolism that enhance aerobic potential, improved endothelial function leading to enhanced oxygen delivery to the muscle, improved skeletal muscle function and strength, and optimal autonomic nervous system balance.⁷

Today, CR represents more than an exercise program; it typically includes core components that aim to optimize risk reduction, foster healthy behaviors and compliance with these behaviors, reduce disability, and promote an active lifestyle for patients with cardiovascular disease (CVD). Regular participation in exercise has at least some positive effect on all the major risk factors for cardiovascular disease.^{7,8} The range of patients demonstrating benefits from CR has expanded in recent years; in addition to post-myocardial infarction (MI) patients, this range includes patients post-percutaneous coronary intervention (PCI), heart failure, cardiac transplantation, cardiac resynchronization therapy, heart valve repair or replacement, and those receiving implantable cardiac defibrillators (ICD). Finally, CR has been shown to be cost-effective⁹; this is generally in contrast to PCI, which is less cost-effective than maximal medical therapy.^{5,10-12}

METHOD:

Several meta-analyses have underscored the marked reductions in morbidity and mortality following participation in CR. The most recent studies included 47 studies with 10,794 patients following MI, PCI, coronary artery bypass graft, or who had known coronary artery disease. Compared to those receiving usual care, those randomized to exercise-based CR had a 13% reduction in all-cause mortality, a 26% reduction in cardiovascular mortality, and a 31% reduction in hospital

admissions.³ Given the well-documented benefits of participation in CR, it is surprising how few eligible patients are referred to CR. A number of recent surveys have reported referral rates in the order of 20%.^{13,14} The underutilization of CR is particularly apparent in women, those with low socioeconomic status, and the elderly¹³, groups that are significantly more likely to die within 5 years following a first MI.¹⁵ This occurs despite many scientific statements, commentaries, guidelines, and performance measures directed toward increasing referral and participation rates for CR.^{1,2,7,8,13,16-19} These include evidence-based guidelines from the American Heart Association and the American College of Cardiology Foundation.¹⁹ The CR is a Class-I-level recommendation (signifying a treatment that should be performed or administered) for referral to CR in those groups of patients mentioned above. Yet CR participation and referral has not increased over the last decade; a time during which invasive interventions (largely PCI) have skyrocketed¹⁵, despite the observation that PCI does not improve outcomes.^{11, 12,20}

So why isn't there greater participation and referral for cardiac rehabilitation? The just-published Scientific Statement from the American Heart Association (AHA) highlights some of the reasons.²¹ First, the benefits of CR are greatly under-appreciated in both the public and the medical community. Greater efforts are needed to educate health care providers and the public regarding the benefits of CR. Second, several recent investigations have outlined the barriers to CR referral and participation, including availability of programs, perception of its value, and public policy.^{13,14,16,17} Efforts must be made to overcome these barriers. Another barrier is the perception that CR is an exercise-only treatment, rather than a multidisciplinary intervention (including risk factor management, physical activity counseling/training, and psychosocial counseling). A better understanding of the range of benefits from CR would likely enhance its status among health care providers and health care systems. Perhaps the most important impediment to CR referral is lack of reimbursement. While insurance coverage clearly needs to be expanded to include a broader scale of patients who are known to benefit from CR, this barrier is in part due to the erroneous perception that CR is not covered by most insurance companies or Medicare.

DISCUSSION:

Participation in Cardiac rehabilitation program post cardiac event and post coronary intervention has been minimal in this tertiary hospital which is although a class 1 indication by American Heart Association. It is been found that the reasons for minimal participation is due to insurance schemes and benefits are been under appreciated in both public and medical community. Similarly in this tertiary hospital the government schemes like yeshaswini and scheme for BPL card holders and the insurance companies needs to include Cardiac Rehabilitation at a cost so that all type of cardiac patients can benefit which is now lagging. Another barrier found was the distance the patient needed to travel to the tertiary hospital for the rehab program from their home town as many patients were from various neighboring villages and districts and they were reluctant to enroll for CR program due to the amount of distance needed to travel every week to attend the phases of CR program.

The total number of Angioplasty done at this tertiary hospital in 2013-14 is 250 and in 2014-15 is 149 and 70 patients under went CABG in 2013-14 and 55 patients 2014-15. All patients have undergone hospital based rehab which is called phase 1 rehab but ironically the no. of patients enrolled for phase II cardiac rehab post angioplasty is 6% in 2013-14 and 4.5% 2014-15 and post CABG 6.25% 2013-14 5% in 2014 -15 . No doubt the number was less because majority of patients enrolled for surgery were under various government scheme or insurance which do not reimburse the rehabilitation cost. The total no. of patients enrolled for phase II cardiac rehab were 15 patients with PCI and 5 patients post CABG. Another 10 % of patients were interested to enroll for Phase II cardiac rehab but the travelling distance to reach the tertiary hospital thrice a week was another barrier and also found that the benefits of CR are greatly under-mined in both the public and the medical community. Greater efforts are needed to educate health care providers in rural areas and the public regarding the benefits of CR especially the physician referral makes it important for the patient to get educated and enroll for CR which is also lacking.

Finally, new delivery models that is more inclusive for more eligible patients must be embraced. For low-risk patients (which includes the vast majority of patients appropriate for CR), home-based programs have been shown to be more cost-effective and to be comparable in safety and efficacy as more traditional center-based programs.^{22,23} Other less traditional but effective methods include community programs and case management during home rehabilitation by CR staff, which typically includes the use of activity surveillance devices (pedometers, heart rate monitors, accelerometers, and activity logs) along with frequent phone, internet, transtelephonic ECG monitoring or some combinations of these.^{8,16} The referral for CR has frequently been the responsibility of the physician, who largely due to time constraints and lack of awareness of its value, has generally not been as strong an advocate for CR as other allied health professionals.¹⁸ The new AHA advisory more specifically characterizes the roles of these allied health care professionals in both the acute care and home-health settings to improve outpatient CR referrals and participation.²¹

Nurses frequently have immediate and direct contact with the patient and therefore have a pivotal role following a cardiac event or procedure. Since being referred while in the hospital and the patient perceiving the need for CR are both strong predictors of CR participation (odds ratios >6 and >13, respectively)²⁴, these two factors are most easily addressed by the nurse during inpatient hospitalization and most of the patients enrolled for CR Program in this tertiary hospital was also directed by nurses. The inpatient physical therapist has a role in advocating for CR because they often evaluate the patient's functional capabilities, determine discharge status and placement on discharge, and can reinforce education regarding the importance of CR.

The clinical exercise physiologist may be involved in the inpatient and/or outpatient program, and provides expertise related to exercise prescription, exercise training, and education. Their frequent contact with patients can help ensure that all eligible patients are referred to the outpatient program prior to discharge. Registered dietitians have a critical role as part of the multidisciplinary CR team; nutrition therapy and counseling is an essential

component of the secondary prevention of CVD. Dietitians in the inpatient setting are thus in an important position to educate patients on the value of CR. By encouraging patients to participate in outpatient CR, the dietitian can help patients achieve their long-term nutritional goal which was also supported in this tertiary hospital. Importantly, the physician must be supportive since it has been demonstrated that physician endorsement of CR is a critical factor in achieving higher rates of referral and enrollment, and direct physician encouragement to patients has been shown to markedly improve enrollment.²⁵ Finally, all of these health professionals should routinely recommend exercise to their patients because it has fundamental benefits to each of these subspecialties (e.g. weight loss, mental health, exercise tolerance).

Exercise training and secondary prevention in appropriate patients is a well-established, safe, and comparatively inexpensive intervention that increases exercise capacity, reduces symptoms, and improves outcomes in patients with CVD. The new AHA Scientific Advisory underscores the fact that many health care professionals have a role in enhancing the proportion of eligible patients who are referred and participate in CR.

CONCLUSION

Educating the health care professionals, other health care providers, patients, families, and health care systems regarding the indisputable benefits of multidisciplinary CR will go a long way toward broadening the proportion of patients who receive these benefits. A goal of the recent AACVPR/AHA/ACC task Force on Performance Measures in Cardiac Rehabilitation¹⁹ was, in effect, to make referral to CR as common as giving medications to patients with heart disease and making this happen will require the combined efforts of health care professionals, the implementation of novel approaches (automated discharge sets, education, home and community programs), inclusion of CR in performance measures, and a greater focus on underserved populations.

REFERENCES

1. Balady GJ, Williams MA, Ades PA, et al. Core Components of Cardiac Rehabilitation/Secondary Prevention Programs: 2007 Update: A Scientific Statement From the American Heart Association Exercise, Cardiac Rehabilitation, and Prevention Committee, the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing, Epidemiology and Prevention, and Nutrition, Physical Activity, and Metabolism; and the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2007;115:2675-2682.
2. Wenger NK. Current status of cardiac rehabilitation. *J Am Coll Cardiol* 2008;51:1619-1631.
3. Heran BS, Chen JMH, Ebrahim S, et al. Exercise-based cardiac rehabilitation for coronary heart disease. *Cochrane Database Syst Rev* 2011;7:CD001800
4. Taylor RS, Brown A, Ebrahim S, et al. Exercise-based rehabilitation for patients with coronary heart disease: systematic review and meta-analysis of randomized controlled trials. *Am J Med* 2004;116:682-692.
5. Wijeyesundera HC, Ko DT. Does percutaneous coronary intervention reduce mortality in patients with stable chronic angina: are we talking about apples and

- oranges? *Circ Cardiovasc Qual Outcomes* 2009;2:123-126
6. Ebrahim S, Taylor F, Ward K, et al. Multiple risk factor interventions for primary prevention of coronary heart disease. *Cochran Database Syst Rev* 2011;1:CD001561.
 7. Pedersen BK, Saltin B. Evidence for prescribing exercise as therapy in chronic disease. *Scand J Med Sci Sports* 2006;16 (Suppl 1):3-63.
 8. Leon AS, Franklin BA, Costa F, et al. Cardiac Rehabilitation and Secondary Prevention of Coronary Heart Disease: An American Heart Association Scientific Statement From the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in Collaboration With the American Association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 2005;111:369-376.
 9. Lee AJ, Strickler GK, Shepard DS. The economics of cardiac rehabilitation and lifestyle modification: a review of literature. *J Cardiopulm Rehabil Prev* 2007;27:135-142.
 10. Weintraub WS, Boden WE, Zhang Z, et al. Cost-effectiveness of percutaneous coronary intervention in optimally treated stable coronary patients. *Circ Cardiovasc Qual Outcomes* 2008;1:12-20.
 11. Mehta SR, Cannon CP, Fox KA, et al. Routine vs. selective invasive strategies in patients with acute coronary syndromes: a collaborative meta-analysis of randomized trials. *JAMA* 2005;293:2908-2917.
 12. Boden WE, O'Rourke RA, Teo KK, et al. Optimal medical therapy with or without PCI for stable CAD (COURAGE). *N Engl J Med* 2007;356:1503-1516.
 13. Suaya JA, Shepard DS, Normand SL, et al. Use of cardiac rehabilitation by Medicare beneficiaries after myocardial infarction or coronary bypass surgery. *Circulation* 2007;116:1653-1662.
 14. Boyden T, Rubenfire M, Franklin B. Will increasing referral to cardiac rehabilitation improve participation? *Prev Cardiol* 2010;13:198-202.
 15. Roger VL, Go AS, Lloyd-Jones DM, et al., on behalf of the American Heart Association Statistics Committee and Stroke Statistics Committee. Heart disease and stroke statistics - 2011 update. a report from the American Heart Association. *Circulation* 2011;123:e18-e209.
 16. Balady GJ, Ades PA, Bittner VA, et al. Referral, Enrollment, and Delivery of Cardiac Rehabilitation/Secondary Prevention Programs at Clinical Centers and Beyond. A Presidential Advisory From the American Heart Association. *Circulation* 2011; 124: 2951-2960.
 17. Brown TM, Hernandez AF, Bittner V, et al. Predictors of cardiac rehabilitation referral in coronary artery disease patients: findings from the American Heart Association's Get With The Guidelines Program. *J Am Coll Cardiol* 2009;54:515-521.
 18. Thomas RJ. Cardiac rehabilitation/secondary prevention programs: a raft for the rapids: why have we missed the boat? *Circulation* 2007;116(15):1644-1646.
 19. Thomas RJ, King M, Lui K, et al. AACVPR/ACC/AHA 2007 performance measures on cardiac rehabilitation for referral to and delivery of cardiac rehabilitation/secondary prevention services endorsed by the American College of Chest Physicians, American College of Sports Medicine, American Physical Therapy Association, Canadian Association of Cardiac Rehabilitation, European Association for Cardiovascular Prevention and Rehabilitation, Inter-American Heart Foundation, National Association of Clinical Nurse Specialists, Preventive Cardiovascular Nurses Association, and the Society of Thoracic Surgeons. *J Am Coll Cardiol* 2007;50(14):1400-1433.
 20. Katriotis DG, Loannidis JP. Percutaneous coronary intervention versus conservative therapy in nonacute coronary artery disease: a meta-analysis. *Circulation* 2005;111:2906-2912.
 21. Arena R, Williams M, Forman DE, et al. Increasing referral and participation rates to outpatient cardiac rehabilitation: the valuable role of healthcare professional in the inpatient and home health settings. *Circulation*. Published online before print January 30, 2012, doi: 10.1161/CIR.0b013e318246b1e5.
 22. Taylor RS, Dalal H, Jolly K, et al. Home-based versus centre-based cardiac rehabilitation. *Cochrane Database Syst Rev*. 2010;1:CD007130.
 23. Dalal HM, Zawada A, Jolly K, et al. Home based versus centre based cardiac rehabilitation: Cochrane systematic review and meta-analysis. *BMJ* 2010;340:b5631.
 24. Dunlay SM, Witt BJ, Allison TG, et al. Barriers to participation in cardiac rehabilitation. *Am Heart J* 2009;158(5):852-859.
 25. Gravely-Witte S, Leung YW, Nariani R, et al. Effects of cardiac rehabilitation referral strategies on referral and enrollment rates. *Nat Rev Cardiol* 2010;7(2):87-96.