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Barriers to participation in a phase II cardiac rehabilitation programme

妨礙心臟病人進入第二階段心臟病康復計劃的原因

Objectives. To identify barriers to participation in a phase II cardiac rehabilitation programme and measures that may enhance participation.

Design. Prospective study.

Setting. Regional hospital, Hong Kong.

Patients. Cardiac patients recruited for a phase I cardiac rehabilitation programme from July 2002 to January 2003.

Main outcome measures. Reasons for not participating in a phase II cardiac rehabilitation programme.

Results. Of the 193 patients recruited for a phase I cardiac rehabilitation programme, 152 (79%) patients, with a mean age of 70.3 years (standard deviation, 11.9 years), did not proceed to phase II programme. Eleven (7%) deaths occurred before commencement of phase II and 74 (49%) patients were considered physically unfit. Reasons for the latter included fractures, pain, or degenerative changes in the lower limbs (24%), and co-morbidities such as cerebrovascular accident (19%), chronic renal failure (11%), congestive heart failure (9%), and unstable angina (8%). Phase II rehabilitation was postponed until after completion of scheduled cardiac interventions in 13% of patients. Failure of physicians to arrange the pre-phase II exercise stress test as per protocol was reported in 7% of patients. Other reasons were reported: work or time conflicts (16%), non-compliance with cardiac treatment (5%), financial constraints (4%), self-exercise (3%), fear after exercise stress testing (3%), and patients returning to their original cardiologists for treatment (3%).

Conclusions. A significant (79%) proportion of patients did not proceed to a phase II cardiac rehabilitation programme for a variety of reasons. These included physical unfit, work or time conflicts, and need to attend scheduled cardiac interventions. Further studies are required to determine how to overcome obstacles to cardiac rehabilitation.

Key words:

Cardiovascular diseases;
Motivation;
Patient dropouts;
Patient participation

關鍵詞：

心血管疾病；
動力；
病人退出；
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目的：探討妨礙心臟病人進入第二階段心臟病康復計劃的原因，以及提高他們參與率的方法。

設計：前瞻性研究。

安排：地區醫院，香港。

患者：2002年7月至2003年1月期間，參加了第一階段心臟病康復計劃的心臟病患者。

主要結果測量：沒有參與第二階段心臟病康復計劃的原因。

結果：193名病人參加了第一階段心臟病康復計劃，其中152人(79%)沒有進入第二階段，他們的平均年齡是70.3歲(標準差為11.9歲)。分析原因顯示11人(7%)在第二階段開始前已死亡，74人(49%)被斷定體質不適合參加第二階段。體質不適合的原因包括下肢骨折、痛楚和退化病變(24%)、腦血管事故(19%)、慢性腎衰竭(11%)、充血性心臟衰竭(9%)和不規律的絞痛(8%)等病發。有13%病人因為要進行已安排的心臟病治療，須暫停第二階段康復計劃。有7%病人因為醫生未有依照治療方

案，安排病人進行康復計劃前運動壓力測試。其他原因包括：時間或工作未能配合（16%）、病人未依照心臟病治療方法（5%）、財政困難（4%）、自行運動（3%）、在運動壓力測試後感到恐懼（3%）和病人向自己的心臟科醫生求醫（3%）。

結論：極大比率（79%）的病人因不同原因，沒有參加第二階段心臟病康復計劃。這些原因包括體能問題、工作時間不配合、或須定期接受心臟介入治療等。要克服這些障礙，還需要進一步研究。

Introduction

Cardiac rehabilitation (CR) is a secondary preventive measure against coronary artery disease. Improved quality of life, increased exercise and functional capacity, reduced rate of future coronary events, as well as decreased cardiac morbidity and mortality risk have been documented in patients who followed a cardiac rehabilitation programme (CRP).¹⁻⁶

Cardiac rehabilitation is constantly underutilised despite evidence of its remarkable benefits. Figures from the United Kingdom, Australia, and the United States reveal that only 14% to 30% of patients participated in an out-patient CRP following myocardial infarction.^{2,4,6,7} In our hospital, about one quarter of cardiac patients referred for CR participated in a phase II CRP.

Although barriers to CR have been discussed in western studies, data in Asian countries are scarce. This study was designed to identify barriers that prevent patients from participating in a phase II CRP, and to identify factors that can encourage participation.

Methods

Patients

This was a prospective study carried out at the United Christian Hospital from July 2002 to January 2003. Patients were screened for suitability and then recruited by cardiologists for in-patient CRP following hospitalisation for acute myocardial infarction, unstable angina pectoris, or coronary artery bypass graft surgery.⁸⁻¹⁰ Those who completed phase I but did not proceed to phase II CRP were studied.

Baseline assessment before phase II cardiac rehabilitation programme

An exercise stress test was a prerequisite for phase II CRP. Patients were excluded if they had a physical disability, cardiac condition, or associated illness.¹¹ The exercise stress test was performed 2 to 4 weeks following hospital discharge. The Bruce protocol was generally applied in testing.¹²

Patients discharged without a follow-up appointment for exercise stress testing were reassessed in a cardiac specialty clinic. Tests were subsequently arranged when their cardiac condition had stabilised. Blood pressure, heart rate, electrocardiographic and symptomatic responses to exercise, and exercise intensity were recorded during treadmill testing. Patients' cardiac risk and fitness for intensive physical training were determined based on these data and eligible patients were recruited to the phase II programme. An individualised exercise regimen based on test results was designed by a physiotherapist.^{1,12}

Comprehensive phase II cardiac rehabilitation programme

Out-patient CRP was a 4-week comprehensive training course, consisting of three classes per week in the mornings (9:00 am-12:00 noon) or afternoons (2:00-5:00 pm). Seven patients participated in the group training at a cost of HK\$660 per patient. The programme was managed by various health care professionals and consisted of exercise, functional skill training, stress management, qigong, and health education about how to modify cardiovascular risk factors and prevent coronary artery disease.

Documentation of barriers

Reasons from non-participation were documented in the patients' medical file. Data were collected from patients in the cardiac specialty clinic or by phone. Patients were reassured that their decision of non-participation would not affect subsequent treatment by their cardiologist. All barriers were listed, compared, and categorised according to similarity.

Results

Of the 193 patients recruited for phase I CRP, 41 patients with a mean age of 66.1 years (standard deviation [SD], 8.7 years; range, 44-80 years) proceeded to phase II. The mean waiting period between phases I and II was 9 weeks (range, 4-25 weeks). A total of 152 (79%) patients who did not participate in phase II were studied. There were 91 (60%) males and 61 females (40%) with a mean age of 70.3 years (SD, 11.9 years; range, 34-94 years).

Table. Summary of barriers to participation in phase II cardiac rehabilitation programme

Reason*	Patients, n=152 No. (%)
Physical unfitness as determined by cardiologists	74 (49)
Work or time conflicts	24 (16)
Need to attend scheduled cardiac interventions	19 (13)
Lack of referrals	10 (7)
Non-compliance with cardiac treatment	7 (5)
Financial constraints	6 (4)
Self-exercise	5 (3)
Fear after exercise stress testing	5 (3)
Receive treatment elsewhere	4 (3)
Deaths	11 (7)
Others	7 (5)
Consider CR† non-essential or reluctant to join	3
Received CR services before	1
Pending non-cardiac surgery	1
Family members did not support CR	1
Lived far away from hospital	1

* Patients could give more than one reason

† CR cardiac rehabilitation

Previous cardiac history included acute myocardial infarction (n=148, 97%), unstable angina (n=3, 2%), and coronary artery bypass graft surgery (n=1, 1%).

Barriers

Cardiologist assessment revealed that 74 (49%) patients were physically unfit for phase II CRP (Table). Walking aids were required by 37 patients before their heart attack. Fractures, pain, or degenerative changes in the lower limbs were the causes of physical limitation in 18 (24%) of 74 patients. Patients with associated illnesses such as cerebrovascular accident (14/74, 19%), chronic renal failure (8/74, 11%), congestive heart failure (7/74, 9%), and unstable angina after myocardial infarction (6/74, 8%) were considered unsuitable for the pre-phase II exercise stress test. Patients with high-risk cardiac conditions, such as uncontrolled arrhythmia, malignant hypertension, and severe triple vessel disease without revascularisation were also considered unsuitable for CR.

Conflict with work schedule (n=16) or insufficient time (n=8) prevented 24 (16%) patients from participating in the CR. Nineteen (13%) patients requested completion of scheduled essential cardiac interventions prior to rehabilitation—two patients were awaiting coronary artery bypass graft surgery, and 17 patients

were waiting for coronary angiogram, percutaneous coronary interventions, or a cardiac nuclear scan. Ten (7%) patients were not scheduled for pre-phase II exercise stress test by doctors on discharge from hospital, after completion of cardiac interventions, after stabilisation of their unstable cardiac conditions, or during follow-up in the cardiac clinic. Seven (5%) patients did not comply with treatment. Non-compliance factors included self-discharge from hospital against medical advice and failure to attend cardiac follow-up and/or investigation. Six (4%) patients could not afford the cost of CR and were either ineligible or unwilling to seek financial support from the Medical Social Welfare Department. Five (3%) patients reported that they exercised regularly and preferred to continue doing so on their own. Five (3%) patients expressed fear following the exercise stress test. They believed the test was too vigorous and their exercise tolerance was poor such that they would be unable to tolerate the high-intensity exercise training of a phase II CRP. Four (3%) patients went to another hospital for treatment—one patient was a visitor to Hong Kong and three patients returned to their own cardiologist.

Eleven (7%) patients died before commencement of a phase II CRP, seven were aged over 75 years. Seven (5%) patients did not participate in the programme due to a variety of other reasons: pending non-cardiac surgery (n=1), lack of family support (n=1), considered CRP non-essential (n=3), previous experience of CR (n=1), and resided too far away from hospital (n=1).

Discussion

A low proportion (21%) of patients participated in phase II CRP. Nonetheless this figure was similar to other CR centres in developed countries.^{4,6,7} This study attempted to identify barriers to participation from the patients' and cardiologists' viewpoint.

Phase II CRP offers high-intensity physical training. It is therefore essential that patients first perform an exercise stress test so that cardiac risks can be stratified and an appropriate exercise regimen designed.^{1,12,13} The stress test itself can provoke fear in some patients. Detailed information or videos that advise what to expect during the test will help allay such fears. It should also be emphasised that any phase II CRP will involve exercise at a lower intensity than the stress test, and that patients' conditions will be closely monitored by experienced physiotherapists and occupational therapists.

Patients whose mobility is limited by stroke, fractures, or degenerative changes in the lower limbs will be less able to exercise. Likewise patients with severe congestive cardiac failure or chronic renal failure may exercise but at a lower intensity provided that their condition is stable. Patients with unstable coronary anatomy and severe myocardial ischaemia should be revascularised before commencing any exercise training. Modification of training modules would be an alternative to provide CR to patients who are unsuitable for exercise stress test. A home-based exercise programme that can be tailored to individual needs may also be appropriate for some patients.² Patients should be advised of the dangers of commencing an unsupervised exercise programme that has not been determined according to their specific cardiac needs.⁵ According to New Zealand Guidelines Group, all eligible patients should participate in CR.⁸ Patients should commence or resume out-patient CRP as soon as cardiac interventions are complete.

While in hospital, patients can be advised of what CRPs are available and where they are located so that referrals to appropriate centres can be made. Physicians' recommendation and encouragement can motivate patients to participate in CR.² If physicians acknowledge and explain the importance and benefits of CR, more eligible patients may be referred for the programme.¹⁴

Commencing any type of exercise programme may be difficult for patients in full-time employment. Flexible timing of exercise classes outside regular office hours may encourage more patients to attend. It has been shown that when the patient is busy, but keen to make a good recovery, participation in just one out-patient session can reduce risk factors.¹⁵

The rate of cardiac re-admissions for cardiac events is much lower in patients who have attended CRPs.¹ Hong Kong should follow the example set by Australia where such programmes are available for eligible patients at no or minimal cost.¹⁴

Co-morbidity, lack of physician referral, and work or time conflicts were common barriers to CR although financial restraint was not. This is contrary to the findings of other non-Asian countries.^{2-4,9,15} Different health care delivery policies and cultural backgrounds may account for the variation between Asian and non-Asian countries.

Conclusions

A significant proportion of patients did not participate in phase II CRP. Major barriers to participation were being physically unfit, undergoing a scheduled cardiac intervention, and work or time conflicts. Attempts should be made to minimise factors that prevent patients from attending CRPs.

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