Factors determining non-attendance at a cardiac rehabilitation programme following myocardial infarction

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Abstract

Aim. To identify factors contributing to patient non-attendance at an outpatient cardiac rehabilitation programme following hospital admission for a first myocardial infarction.

Methods. Consecutive patients admitted over a two year period to the Auckland or Green Lane Hospital Coronary Care Units for a first myocardial infarction were identified. All patients had been invited to attend the cardiac rehabilitation programme during their admission. A questionnaire was mailed to all identified patients.

Results. Overall 324 patients were identified with a mean age of 61 years, of whom 212 (65%) subsequently attended the cardiac rehabilitation programme. 220 of the 324 patients (68%) responded to the questionnaire. Univariate analysis revealed that non-attenders were less well educated (p <0.05), more often from a lower socioeconomic status (p<0.05) and lived alone (p<0.05). Non-attendance and withdrawal from the programme were most frequently related to transport and inconvenient scheduling.

Conclusions. Patients with less education, lower socioeconomic status and patients living alone were less likely to attend a cardiac rehabilitation programme. Provision of a transport service and more flexible scheduling of the programme may improve attendance.

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There is evidence from randomised controlled trials that multifactorial cardiac rehabilitation programmes improve psychological well being,[1,2] exercise tolerance[3-5] and may improve survival.[6,7] Rehabilitation after myocardial infarction usually involves the implementation of physical activity and educational programmes. Ideally, rehabilitation commences during hospitalisation (phase I) and then proceeds to a supervised outpatient programme (phase II), lasting between six weeks and six months. This is followed by a long-term maintenance programme (phase III). The Auckland-Greenlane cardiac rehabilitation programme is a phase II educational programme of six weeks' duration which provides instruction on the aetiology of coronary artery disease, risk factor modification, dietary change, stress reduction and physical activity.

Attendance at phase II cardiac rehabilitation programmes which include a structured exercise component is generally much greater in younger patients and varies from 20 to 60%.[5,8] Various factors have been shown to be associated with non-attendance. These include social isolation[9,10] lower socioeconomic status[5,8,11] and lower educational attainment.[12] After initially commencing a cardiac rehabilitation programme patients may later withdraw. The rate of withdrawal from phase II programmes is high, commonly around 50%.[8,11,13] Reasons for this include post infarction angina, continued smoking and uncontrolled hypertension.[5,11] Non-medical reasons include lack of interest or motivation[14] and logistical reasons or work commitments.[5,14]

In the present study a descriptive profile, including demographic, social, ethnic and clinical factors, of non-attenders at the Auckland-Greenlane cardiac rehabilitation programme was obtained. Identification of factors which may potentially limit attendance should facilitate efforts to improve programmes and patient outcomes.

Methods

Ethical approval was obtained from the University of Auckland and North Health Ethics Committees. Management approval for the use of the hospital computer systems was obtained. Patients were requested to fill in a structured postal questionnaire. A pilot questionnaire was initially utilized to ensure that the postal questionnaires were comprehensible and could be interrogated statistically.

Baseline population characteristics. The baseline population consisted of 324 consecutive first myocardial infarction patients who had been admitted in 1994 or 1995 to either the Auckland or Greenlane Coronary Care Units and referred to the Auckland-Greenlane cardiac rehabilitation programme during their admission. Eligible were patients who had no previous history of cardiac disease documented on hospital files and a definite first myocardial infarction according to standard diagnostic criteria.

Rehabilitation attendance. Information regarding the frequency of attendance at the cardiac rehabilitation programme was collected from programme records. Patients who attended no classes were referred to as 'non-attenders' whereas those who attended one to five classes were referred to as 'withdrawals'. Patients who attended all six classes were referred to as 'full-attenders'.

The completed questionnaire provided self-ascribed data on ten demographic variables. These included age, sex, ethnic origin, language, marital status (four categories), number of household members, caring responsibility, highest level of education (four categories), years of schooling and occupation of patient (and spouse where applicable). In addition, coronary heart disease risk factors including smoking status at admission, history of dyslipidaemia, hypertension, diabetes or family history of coronary heart disease were noted from patient records. The International Socioeconomic Index[15] was used for the translation of occupations into socioeconomic status. The socioeconomic status of married women of the older age group (who may not have worked since marriage) was determined from their husband's level of employment.

Six categories were used for classification of ethnic origin: Maori, European, Pacific Island People (which includes people of Polynesian, Samoan, Tongan, Tokelauan, Cook Islands, Nuiean and Tuvaluan origin), Indian, Asian and other. Where a person was of mixed Pacific Island/Maori or European/Maori ancestry they were classified as Maori. Patients chose from a 19-options list (which included a non-specified (other) category) their individual three most important reasons for not attending or discontinuing the cardiac rehabilitation programme.

Statistical methods. Data were analysed using Statistical Analysis Systems (SAS) software. Univariate analysis was performed using the chi-squared test for categorical variables and by analysis of variance (ANOVA) for continuous variables. All tests were two-tailed and a 5% significance level was maintained.

Results

Patient characteristics. The study group was 324 patients with a mean age of 61 years (range, 35 to 85 years), of whom 74% were male. The ethnic composition of the group was (%): Maori (3.5), Pacific Island (3.1), European (87), Asian (0.7), Indian (4.8) and other (0.7). 112 of these patients (35%) attended no classes and 212 (65%) attended one to six classes. Of those attending, 75% attended fully (six classes). Of the 25% who attended one to five classes, more than half discontinued after only one class. The response rate to the mailed questionnaire was 220 out of 324 eligible patients (68%) with thirteen patients having died during the follow-up period. The response rate was 72% for full-attendees, 64% for withdrawals and 56% for non-attendees.

Attendance at the cardiac rehabilitation programme among respondents. The most commonly stated reasons for non-attendance at the cardiac rehabilitation programme were (Figure 1): transport problems (33%), 'people were sicker than me' (19%) and scheduling inconvenience (12%). Frequently stated reasons for withdrawal from the programme were similar and included transport problems (31%), scheduling inconvenience (13%) and 'people were sicker than me' (9%). In addition, the recommencement of employment (16%) was a frequently provided reason for withdrawal.
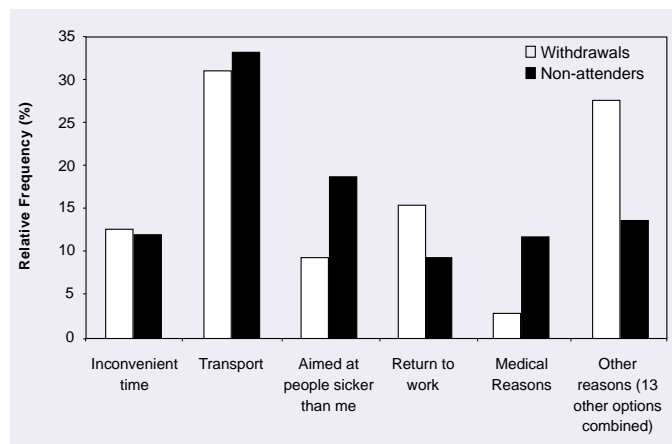

Figure 1. Reasons for non-attendance and withdrawal from outpatient cardiac rehabilitation.

Univariate analysis reconfirmed that lesser education (primary/secondary school versus polytech/university, p<0.05), a lower socioeconomic status (p<0.05), marital status (married versus other, p<0.05) and living situation (alone versus with others, p<0.05) were significantly different between rehabilitation attenders and non-attenders.

Discussion

The results show that patients with lesser education, a lower socioeconomic status and those living alone were less likely to attend this cardiac rehabilitation programme. A low socioeconomic status has previously been shown to be associated with non-attendance at comparable programmes following myocardial infarction.[5,8,11,16,17] A recent UK study found social deprivation to be the only factor significantly associated with poor uptake of cardiac rehabilitation.[18] The response rate of 68% to the questionnaire was favourable with an expected but modest difference between full attenders and others.

An occupation based index of socioeconomic status (Ganzeboom's International Socioeconomic Status Index) was used in the present study since education, as the sole indicator of socioeconomic status, has the potential to mask age cohort differences and regional differences. For example, an education based index would be expected to underestimate the socioeconomic status of women in older age groups for whom tertiary education opportunities were not readily available earlier this century. As stated earlier in this study, the socioeconomic status of married women of the older age group (who may not have worked since marriage) was determined from their husband's level of employment (and education). When patient and spouse stated an occupation, the higher of the two was used for classification. Although bias in the classification of occupations was minimised by following an *a priori* set of rules, 20% of retired patients failed to state their previous occupation.

In accord with previous work,[9,10,19] social isolation was associated with non-attendance at this programme. Other studies have shown that people with a low level of social integration have more than twice the relative risk of death than those who are highly socially integrated.[20] Moreover, social isolation has been suggested to impose a high negative impact on recovery from myocardial infarction.[21,22]

While ethnicity did not appear to influence attendance at rehabilitation, only a small number of Maori (3.5%) and Pacific Island (3.1%) patients were included in this study and thus the overall results cannot reasonably be extrapolated to these groups. There is evidence that cultural differences between ethnic groups are likely to influence the use and acceptance of medical facilities and services.[23] None of the Maori and Pacific Island patients included in this study reported that the programme was 'not culturally specific' and 'language' was only twice identified as a problem in attending the programme.

Smoking status and history of hypertension or dyslipidaemia were shown to exert no influence on rehabilitation attendance in contrast to previously reported high early withdrawal rates for smokers in a one-year cardiac rehabilitation programme.[11] The influence of gender on cardiac rehabilitation attendance is unclear. Women, particularly older women, have been reported to attend cardiac rehabilitation programmes less often than men.[5,17] Furthermore, women are less likely to own and drive a car thereby rendering access to a rehabilitation programme more difficult.[5] In the present study, gender, however, did not influence attendance.

Patients most often stated transport problems and inconvenient scheduling of the programme as reasons for withdrawal or non attendance at the cardiac rehabilitation programme. Although patients living in the central Auckland area only were eligible, the results showed that transport to and from the programme was still a major concern. A transport service and an alternative evening session, especially for the significant fraction of patients who resume fulltime employment,[24] may improve attendance.

In conclusion, lesser education, lower socioeconomic status and social isolation were factors contributing to non-attendance at a phase II cardiac rehabilitation programme. Attendance could be improved by provision of both a transport service and alternative programme times. Providers of such programmes should consider these factors to optimise attendance and patient outcomes.

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