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'Just not for me' – Contributing Factors to Non-Attendance/Non-Completion at Phase III Cardiac Rehabilitation in Acute Coronary Syndrome Patients: A Qualitative Enquiry

Running head: Factors for Non-Attendance/Non-Completion at Cardiac Rehabilitation

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ABSTRACT

Aims and objectives. To explore what reasons do non-attenders and non-completers give for their patterns of participation or non-participation in cardiac rehabilitation programmes and how future uptake could be enhanced.

Background. Cardiac rehabilitation is a cost effective clinical intervention designed for adults with acute coronary syndrome. Despite evidence from meta-analyses demonstrating that cardiac rehabilitation programmes facilitate physical and psychological recovery from acute coronary syndrome, only 20 to 50% of eligible patients attend Phase III outpatient programmes.

Design. A qualitative study using thematic analysis.

Method. Within the context of a larger mixed-method study, acute coronary syndrome patients were recruited between 2012 and 2014 from three hospitals in Scotland. Out of 214 patients who consented to enrol in the main study, a purposive sub-sample of 25 participants was recruited. Semi-structured interviews were conducted and analysed using thematic analysis.

Results. Three major influences of participation were identified: (1) personal factors, (2) programme factors, (3) practical factors. In addition valuable suggestions for future programme modifications were provided. A significant barrier to attending cardiac rehabilitation programmes is that participants perceived themselves to be

unsuitable for the programme alongside a lack of knowledge and/or misconceptions regarding cardiac rehabilitation.

Conclusion. The responses of non-attenders and non-completers revealed misconceptions related to programme suitability, the intensity of exercise required and the purpose of a cardiac rehabilitation programme. As long as these misconceptions continue to persist in coronary syndrome patients this will impact upon attendance. The lack of perceived need for cardiac rehabilitation stems from a poor understanding of the programme, especially among non-attenders and non-completers and subsequently an inability to comprehend possible benefits.

Relevance to clinical practice. The knowledge of common misconceptions puts clinical nurses in a better position to identify and pro-actively address these erroneous assumptions in their patients in order to improve participation in cardiac rehabilitation.

Keywords

Cardiac rehabilitation programme, acute coronary syndrome, barriers, facilitators, qualitative research, non-attendance, non-completion, cardiovascular disease, patient participation, face-to-face interviews

SUMMARY BOX

What does this paper contribute to the wider global clinical community?

- A significant barrier to commencing and/or continuing participation in cardiac rehabilitation programmes is that participants perceived themselves to be not suitable for the programme due to numerous misconceptions that persist among this population.
- The lack of perceived need for cardiac rehabilitation stems from a poor understanding of the programme and misconceptions, especially among non-attenders and non-completers and subsequently an inability to comprehend possible benefits.
- The knowledge of common misconceptions puts nurses in a much better position to identify and pro-actively address erroneous assumptions related to the purpose of the cardiac rehabilitation programme, its relevance and format, personal suitability and exercise intensity.

INTRODUCTION

Cardiovascular diseases (CVDs) remain the leading cause of mortality in many industrialised countries including North America, Europe and the UK; more people die annually from CVDs than from any other cause (WHO, 2015). Acute Coronary Syndrome (ACS), an umbrella term used to describe unstable angina and acute myocardial infarction, affects a huge number of people with severe consequence to individual, healthcare and society. In the US, 85.6 million people had an ACS generating high costs to the healthcare system (Mozaffarian *et al.* 2015). Cardiac rehabilitation (CR) is a cost effective clinical intervention that is routinely offered to patients who have been hospitalised with ACS across all established healthcare systems (Nichols *et al.* 2015). Despite CR being a mainstay of treatment (Heran *et al.* 2011) attendance rates in many countries are poor. Attendance rates of those eligible to take part in a cardiac rehabilitation programme (CRP) range between 42% and 50% for the UK and the US respectively (Clark *et al.* 2012).

The primary aim of CR is to improve the health and well-being of people with ACS and to allow a return to at least pre-morbid levels of physical function (Jones *et al.*, 2015). Cardiac rehabilitation forms part of an integrated cardiology service that positively influences patient participation, adherence and long-term behaviour change and is an essential element of cardiovascular healthcare service (British Association for Cardiovascular Prevention and Rehabilitation 2012). The mode of CR delivery varies within and between countries, but usually includes some form of exercise, education and psychological support (Karmali *et al.* 2014). The behavioural change component of CR aims to positively change cardiovascular risk through

improved diet, reducing smoking and increased activity levels in order to reduce the risk of recurrent cardiac events.

BACKGROUND

Given the complexity and heterogeneity of patients' needs and the potential variation in modes of delivery of cardiac rehabilitation programmes (CRPs) there is currently no standard CRP. Depending on the country, CR may be offered in a range of forms, delivered in hospital, community or home-based settings (Dalal *et al.* 2015). Whilst exercise continues to be a core component of CR there is significant variation in service provision. For example, in the US an outpatient CRP typically consists of 36 sessions, with 2 to 3 per week over 12-18 weeks (Oldridge 2012). In contrast, many UK out-patient programmes start around 4-6 weeks following discharge (Bethell *et al.* 2009) and are offered once to twice weekly over 8 to 12 weeks (British Heart Foundation 2014).

During study duration (2011-2014), parts of Scotland provided CR in the form of the following four phases: The local service within the study health board provided input to ACS patients at various stages of their CR journey. This included a pre-discharge consultation, where in-patients are seen by a cardiac rehabilitation specialist nurse who provides information and education about their cardiac condition. During the consultation the nurse carries out a comprehensive assessment of patients to identify and correct cardiac misconceptions, individual cardiovascular risks, psychological, vocational and social status to guide future CR intervention and has a key role in preparing patient for discharge (Phase I). Within a week of discharge patients were

visited in their homes by a specialist community nurse to further reinforce the pre-discharge information. This included psychological assessment, advice on future cardio vascular risk modification, symptom management, adaptation to and self-management of their long term condition (Phase II). Prior to engagement in the exercise-based outpatient CRP participants attend an exercise risk stratification clinic led by the physiotherapist. This allows assessment of their exercise capacity and considers their willingness to engage in exercise and their preference over type and venue. The outpatient exercise based CRP took place either in a home, hospital or community setting, e.g. local sports facilities or community hospitals and included the provision of two-hourly sessions, once or twice weekly over 8 weeks or for the less able patients a lower intensity weekly class over 12 weeks. Nurses and physiotherapists are present at the outpatient exercise classes which are supplemented by a series of educational sessions (Phase III). CR participants then had the opportunity to link into long-term community programmes to facilitate the maintenance of exercise and lifestyle changes (Phase IV). According to the National Institute for Health and Care Excellence (NICE 2013), the British Association for Cardiovascular Prevention and Rehabilitation (BACPR 2012) and European guidelines (Piepoli *et al.* 2014), the following patient groups will benefit from CR: (1) ACS patients, (2) patients with newly diagnosed chronic heart failure, (3) patients with heart transplant and ventricular assist device, (4) patients who have undergone surgery for implantation of intra-cardiac defibrillator or cardiac resynchronisation therapy, (5) patients with heart valve replacements and (6) patients with a confirmed diagnosis of exertional angina (Dalal *et al.* 2015).

Meta-analyses show that CRPs reduce the risk of overall and cardiac specific hospitalisation, facilitate physical and psychological recovery from ACS (Sagar *et al.* 2015, Lawler *et al.* 2011) and decrease overall mortality, absolute risk reduction and cardiovascular mortality (Heran *et al.* 2011). A most recent updated Cochrane review reconfirms that exercise-based CR reduces the risk of cardiovascular mortality, hospitalisation and increases health related quality of life outcomes (Anderson *et al.* 2016). In relation to psychological well-being, Yohannes *et al.* (2010) found that the benefits of a six-week CRP were still maintained at 12 months in relation to improving depression, anxiety, physical activity and quality of life. Despite overwhelming evidence supporting the need for and effectiveness of CRPs, participation rates are ranging from 20% to 50% (Dalal *et al.* 2015). This is in line with local data from Scotland indicating attendance rates for Phase III CRPs of 39% of all comers with ACS for NHS Tayside (local CR Service report 2010). Non-attendance at or non-completion of CR may result in an increased possibility of poorer health outcomes for patients with ACS (Kerins *et al.* 2011). For example, Beauchamp *et al.* (2013) found that the mortality risk for non-attenders was 58% greater than for attenders after 14 years of follow-up.

Non-attendance or non-completion of CR is influenced by socio-demographic factors such as age and gender (Credon *et al.* 2007), psychological or cognitive variables like anxiety and depression (McGrady *et al.* 2009), illness and treatment perceptions (Yohannes *et al.* 2007), infrastructure related issues such as accessibility or referral (Jackson *et al.* 2005) as well as lack of motivation (Hagan *et al.* 2007) or co-morbidities (Yohannes *et al.* 2007). Patient ambivalence, i.e. simultaneously wanting to and yet not wanting to attend CR has also been discussed in explaining poor

attendance (Everett *et al.* 2009). Whatever the reason may be, the consequences of non-attendance or non-completion of CR are far-reaching and detrimental. This justifies the rationale for researching this phenomenon in more depth (Kerins *et al.* 2011) to allow the development of future interventions to enhance CR attendance. Therefore, the aim of this study was to investigate what reasons do non-attenders and non-completers give for their patterns of participation or non-participation in CRPs?

METHODS

Design

This qualitative study was nested within a larger mixed-methods study which aimed to explore the role of patients' cardiac related beliefs, motivation and mood over time on attendance/non-attendance at CR using electronic diaries. Pragmatism was the philosophical underpinning for mixed-methods studies, i.e., researchers drew from both quantitative and qualitative assumptions and selected the methods that best met their needs (Morgan 2007). The mixed-methods sequential design consisted of two steps: in step one quantitative questionnaire and electronic diary data on motivation to change and knowledge/misconceptions was gathered and analysed. This was followed by qualitative data collection exploring patients' views in more depth to help explain the statistical results (insert author reference). More precisely, the qualitative sequential component explored the experiences of ACS patients and compared and contrasted the perspectives of those who were eligible to participate in CRPs, but then make a decision to not attend or not complete the programme. Semi-structured

interviews were analysed to explore and describe complex processes and mechanisms associated with differing patterns of attendance at Phase III of CRPs in ACS patients.

Data collection

The qualitative interviews took place between November 2012 and December 2013. Interviews were undertaken by two qualitative researchers who conducted the interviews. Both researchers were experienced in qualitative interview techniques. Training in the form of work shadowing occurred between the two researchers to ensure that interviews were executed in a similar fashion. Semi-structured face-to-face interviews were used to gain an understanding of reasons for non-attending or non-completing CR. The specific research question was: "What reasons do non-attenders and non-completers give for their pattern of non-attendance/non-completion in CR programmes?" However, the research question could not simply be posed directly to the patients as they may not have given the topic sufficient reflective thinking. Several plain English questions (stimuli) derived from the research question were included in the interview topic guide (Table 1). The questions included in the interview topic guide were based on existing literature. Interviews were conducted either in patients' homes, the hospital or a local health centre. The interviews lasted from 33 to 127 minutes; median duration was 61 minutes. All interviews were digitally audio-recorded and transcribed verbatim by a professional transcription service (TP Transcription Services, UK).

Participants

Patients diagnosed with ACS were recruited between March 2012 and July 2014 from three hospital sites in Scotland. **As shown in Figure 1**, out of 214 patients who consented to enrol in the main questionnaire and electronic diary study, a purposive sub-sample of 25 participants was recruited after completion of Phase III of the CR programme, or notional end for non-attenders, to attend qualitative interviews. Potential participants were identified by the research team using maximum sampling variation guided by relevant pre-defined characteristics including age, gender, social circumstances, diagnosis, CRP attendance/completion status and mood as reflected in the Hospital Anxiety Depression Scale (HADS) score. Potential participants were contacted over the phone to explain the goal of the interview. If patients expressed interest in taking part a convenient date and time to conduct an interview was arranged. Informed consent was obtained prior to the interview and participants were reassured that their identities would remain confidential. Of the 25 patients who agreed to participate, seven were classified by service level records as non-attenders (defined as people who do not engage at all in the outpatient CR exercise programme), eight as non-completers (defined as patients who start Phase III but did not complete all planned exercise sessions) and ten as completers (defined as patients who attended and completed all planned sessions set by the physiotherapist in conjunction with the patient). Table 2 shows the characteristics of study participants in terms of the sampling strategy. Although this article mainly focuses on factors for non-attendance/non-completion of CRPs from the perspective of non-attenders/non-completers, we were also interested in the point of view of completers for the purpose of comparing/contrasting and to learn from completers how future uptake could be enhanced.

Ethical approval

Ethical approval for the full mixed-method study including the qualitative study component was granted in June 2011 from the East of Scotland Research Ethics Committee A (11/AL/0250); R&D approval was granted by the local Medical Science Centre (TASC). All participants were informed that they could withdraw from the study at any time without giving any reason. All data collected throughout this study were treated confidentially and anonymised for publication purposes.

Analysis

The transcripts were analysed using thematic analysis (Braun & Clarke 2006). **At the outset, the lead researcher familiarised herself with the data which involved repeated reading of the transcripts and noting down initial ideas. Subsequently, initial codes were produced from the data by coding interesting features in a systematic fashion across all data sets.** Different codes were then sorted into potential themes. This involved analysing the codes and considering how these different codes could be combined to form an overarching theme **or potential sub-themes. Provisional themes and sub-themes were then presented to the entire research team to check with fresh eyes if they reflected the data. This process facilitated discussions which led to the refinement of themes and sub-themes and how these related to each other. Sub-themes are themes within a theme resulting from a process of refinement of initial themes.** Analysis was complete when all themes were well defined and it was clear

how they related to each other. Finally, vivid quotes were selected as part of the write-up process to capture the essence of the themes and to illustrate authenticity.

Rigour

Accepted standards described by Guba and Lincoln (2005) were used to enhance the credibility of the study. Firstly, to assure rigour the interview topic guide was tested during the first interview to establish if it was clear, understandable and capable of answering the research question. The topic guide underwent minor revision, e.g. additional probing on patients' experience of the initial cardiac event and what that meant to them during subsequent interviews.

The codes and categories established by an experienced qualitative health services researcher were presented to the entire research team. This collective review with colleagues (peer debriefing) stimulated consideration and exploration of additional perspectives and explanations. This open process allowed assumptions to be challenged and consensus reached (Long & Johnson 2000). Data saturation was achieved when no new relevant themes occurred. **Although there is no single method to reach data saturation, researchers agree on the general principal that if no new data is occurring, it is most likely to have reached the point of no new themes; therefore data saturation is achieved (Fusch & Ness 2015).**

An audit trail was kept in various formats; methodological issues were discussed and captured in writing during regular research team meetings while analytic notes concerning the analysis procedure were documented as the analysis progressed.

Lastly, digitally audio-recording the interviews allowed for the data to be collected objectively and comprehensively (Noble & Smith 2015).

FINDINGS

The study participants in the qualitative sample ranged in age from 44–78 years (mean age = 62.92 years). The thematic analysis revealed three major influences of participation in CRPs. These are: (1) personal factors, (2) programme factors and (3) practical factors. In addition, valuable suggestions for future programme modifications were provided (4th theme). A detailed coding tree visualising the major themes and the corresponding sub-themes is displayed in Figure 2.

Personal factors

Contrasting Illness perceptions

Illness perceptions were an important factor in respondents' decisions not to attend their CRP. For some non-attenders this was because they reported other chronic conditions and/or physical impairments which they believed rendered them incapable of performing physical exercises as required. The following quote illustrates that:

“I was able to manage it and I decided I would try it but when I went there, I only went once because some of the exercises it was not possible to do because of my knee. It was too sore.” (N136, Non-completer)

Non-attenders who already reported fairly limited physical functioning due to co-morbidities did not regard the (perceived) goal to return to 'normal functioning' as a priority; they typically believed that the CRP was intended for other types of people. Some non-completers and non-attenders cited pain and discomfort as restricting their ability to participate fully in exercise, thereby negating the effectiveness of the programme. Some of these respondents believed that getting 'breathless' was not good for them.

"I went up to the classes, and every time I went up I was told to stop and sit down because of my breathing, 'cause the least wee thing I was doing, I was either dripping with sweat, or else gasping for breath, you know." (R012, Non-completer)

In contrast, some other non-attenders and non-completers felt that exercise intensity and duration were set far lower than their current level of physical fitness and so would be of little benefit. Such respondents often believed they have had a 'mild heart attack' less serious than other cardiac patients. Both types of non-attenders and non-completers perceived themselves as outside of the 'normal' range of people that the programmes were intended for; either being too disabled to take part or far fitter than the programme could cater for.

Low health expectations

Non-attenders tended to believe that the aim of the programme was to return patients to 'normal' functioning, i.e., everyday activities they could perform before the event. In many instances such health expectations were very low in respondents whose lives

were already limited by other chronic conditions. If they felt they had already achieved this objective then there was no need in attending the programme.

"Because I was fit or back on the road within a week or back doing normal things within the week I didn't see the need for it [cardiac rehabilitation]." (N013, Non-attender)

Threatened self-identity

Respondents who had no previous chronic illness often experienced their cardiac condition as a 'biographical disruption' (Bury 1982) which threatened their prior self-identity. Patients reported that they had to get used to seeing themselves as 'weaker' or 'slower' and 'ill'. CR was a reminder that they had been seriously 'ill' and of their own mortality. In contrast, for those who already had one or more chronic conditions, the cardiac event was less of a disruption and more of a continuation of their life narrative, requiring less explanation and was more easily accommodated.

Self-reliance

Self-reliance was a strong theme running through the fitter, more active non-attenders accounts. Almost all believed they could reproduce a better exercise programme for themselves which was tailored to their personal abilities and objectives as the quote illustrates:

"I thought I could do better myself in a sense. I mean I've got an exercise bike, lots of work to do. I always looked upon physical work as exercise. That's what kept me fit all these years." (N091, Non-attender)

Acceptable exercise alternatives

Other forms of informal physical activity were often seen as an acceptable alternative to formal rehabilitation. Critically, the individual could tailor these to ability, physical health and work (if employed) for example, walking, golf, cycling or playing with grandchildren. However, what respondents considered as exercise alternatives were actually misconceptions of the benefits of such exercises.

Hierarchy of health beliefs

Although nearly all respondents recognised that physical activity and exercise were important to their recovery, some non-attenders saw other behaviours as more important such as stopping smoking, adhering to their medical regime and achieving a healthier diet.

"The consultant who's done the procedure showed me, he said "Look, that's smoking damage" it wasn't cholesterol, my cholesterol's quite good, it's smoking damage, he said "If you keep smoking, you'll be dead before you're sixty" I said "Okay, that's fine. I'd stopped smoking anyway, I stopped, I haven't smoked since." (N033, Non-attender)

Non-attenders who believed they were physically active before the event concluded that exercise would not be effective in preventing another event. On the other hand, since medical intervention had successfully treated the condition, it would also be more effective in preventing and treating future events. For this group of non-attenders – since physical activity was less important than medical intervention – it could be performed independently with less emphasis on regularity and adherence.

In contrast, completers tended to believe that success or improvement in physical functioning would only happen at the end of the programme.

Fear

Several completers expressed fear about not completing all components of their CR programme. They tended to believe that not doing one component would render the other aspects ineffective. The following quote highlights this:

“I suppose maybe there was a bit of fear in the respect that of all the different parts of the programme like stopping smoking, the healthy eating, all those, the bit, if I didn’t go through the exercise classes that would be the bit that was missing.” (N072, Completer)

Non-attenders and non-completers tended to disregard the different components in such holistic terms and sometimes prioritised certain behaviours over and above exercise.

Programme factors

The theme entitled programme factors encompasses issues such as programme and treatment beliefs, motivational and structural issues as well as familiarity and enjoyment with the programme.

Programme and treatment beliefs

Non-completers and non-attenders were just as likely as completers to be uncertain about the purpose of the programme. Several said it was not until well into the CRP

that they understood what its aims were. Most respondents believed that the purpose of a CRP was to return the person to their 'normal' functioning before the event and to 'strengthen the heart'. Several non-completers and completers believed it was also aimed at providing moral support through discussion and exchanges with peers. Some non-attenders believed the programme was to encourage and motivate people to adopt healthier lifestyles.

Non-attenders and non-completers had more firm expectations regarding the form and structure of the programme than completers. Several even said they were pleasantly surprised when they found it involved structured exercise sessions. Some completers had expected the rehabilitation programme to provide encouragement, moral and peer support. While some non-attenders anticipated that the exercise regime would be too strenuous, others felt it would not be intense enough for their perceived level of fitness or what they wanted to achieve (e.g. weight loss). They came to this conclusion because of previous experience of attending CRPs. Some non-completers also expected their cardiovascular function to be monitored while performing these activities.

Social support as motivator

Non-attenders and non-completers did not provide any detail regarding social support being perceived as a motivating factor. In contrast, many completers were motivated to continue attending because they enjoyed the company of the other participants. Some explained that the mutual moral support of their peers had encouraged them to complete the programme despite experiencing pain and discomfort while exercising. Some completers saw the CRP as an extension and

continuation of their medical care. This was strengthened if a clinician such as a cardiac rehabilitation nurse maintained contact until the person had attended the first session. The following quote illustrates this:

“As well as that I suppose in a way it was support after leaving the hospital. But I had to wait so many weeks obviously. But the cardiac nurse was brilliant, she phoned me every week.” (N062, Completer)

Structuring

The structured nature of the sessions was something most completers appreciated. It allowed them to gauge the extent to which they improved at each activity and where they were most challenged. One completer said:

“I liked it because it was planned, you knew roughly what you were going through every week, you know what you were good at and what you weren’t good at, you knew what you had to improve on and things like that.” (N024, Completer)

Many completers liked that the sessions were at fixed times and days because they provided structure to their day and week. This allowed them to get into the ‘habit’ of attending. It also provided a reason for those in busy demanding jobs to clear space for a health promoting activity. The timing of sessions acted as ‘prompts’ for mental and physical space in completers, while for one non-attender who worked shifts sessions at fixed times were the main reason that prevented participation.

Familiarity and enjoyment

Several completers had previously attended gyms and were used to and enjoyed this type of exercises. The small minority that completed home-based programmes liked that they could adapt the programme to their lifestyle and the physical activities they already enjoyed.

Practical factors

The third major theme related to practical factors consists of the following two subthemes: accessibility and work commitments.

Accessibility

Participants discussed accessibility in terms of cost, distance and socio-economic issues. Overall, accessibility of the venue was a critical factor for non-attenders, non-completers and completers. Cost of public transport was a major constraint for non-attenders and/or non-completers who were in disadvantaged economic circumstances. These respondents explained that material necessities such as heating took precedent especially in winter.

“You’ve got to say to yourself, I’ve got to put that extra £10 in the gas for to keep myself warm. I’ve got to put £20 in my electric so I can wash my clothes and keep the gas going, because that runs off the electric as well, it doesn’t just run off the gas.” (K022, Non-completer)

Many completers stressed that the sessions were easily accessible to them, and some suggested they may not have attended all the sessions had the location been

less convenient. Those who completed a home-based programme said it was unlikely they would have completed the CRP if they had to travel to the site.

Work commitments

Time taken to get to the venue together with the time taken to do their session was especially problematic for those with paid work commitments. One respondent had not been able to attend any of the sessions because of shift work while another participant took time off work to ensure attendance at the session.

Suggested programme modifications

Interview participants also provided useful suggestions for future programme modifications which are described in the theme below.

Informational needs

Prior to commencement non-attenders wanted the CRP to be explained in more detail when it was first introduced to them. In particular, they wanted to know what the sessions involved, who they were aimed at, what was expected of them and what the purpose of the programme was.

“If they’d laid out the programme, if they’d told me what was-, what to expect, it would have helped I would imagine. What types of exercises were involved. I mean I’ve never been sporty.” (N091, Non-attender)

Several interviewees stressed that if it was made clear that there was an opportunity during the sessions to talk and ask questions about medication and other health related issues they would have attended. Non-attenders who had previously led active lives and considered themselves to be fitter than most CR patients wanted a regime that had goals tailored to their level. However, the way the programme had been introduced convinced them that this could not be offered.

Non-completers wanted a clearer explanation of why they were doing specific 'exercises' and more written instruction on the sequencing of the exercise stations. They also wanted reassurance that the exercise they were doing or considering would not damage their heart. Some non-completers would also have liked more information on healthy diets, especially advice on meals that were simple, inexpensive and easy to prepare.

Many non-completers said they would have benefitted from on-going feedback both during and after their sessions. Some wanted recognition of their progress, while others wanted information on what levels of pain/discomfort (such as breathlessness) were appropriate. This would have been reassuring and may have encouraged them to complete the programme.

"Feedback is very motivational and you know I've run a lot of businesses and that was the kind of thing that motivated people who were working for me was feedback on the results" (N136, Non-completer)

Content and frequency

Some non-completers who had found the initial sessions too intense or the duration too long, suggested a series of phased sessions which gradually built up to one hour sessions.

“I know it was only an hour but it was an hour, to me, hard going...but me, I would have found that this is enough for me today, 20 minutes, then the next session I’ll have maybe done half an hour. I would find that helpful.” (K022, Non-completer)

Some respondents believed that one session per week would be ineffective at improving health and fitness and wanted some way of increasing the frequency of similar types of exercise beyond the sessions. They thus wanted discussion and suggestions about how they supplement the weekly session.

Location

Most non-attenders and some non-completers felt that a more local venue would have helped them attend sessions. This was either because the cost of public transport was prohibitive or because of the time taken (especially for those working) to get to the venue.

Social and psychological support

Some non-completers wanted the programme to include more psychological support where they could discuss fears about their condition or any problems and concerns about treatment and medication. Some non-attenders also felt that more encouragement and ‘badgering’ by health professionals prior to the programme would have galvanised them into attending.

“Probably somebody badgering me more and saying, [], you really need to go to this and get off your butt and go to it.’ I think that I would probably have ended up going if somebody had forced me more to go, I would have went.” (R006, Non-attender)

DISCUSSION

This study sought to investigate what reasons do non-attenders and non-completers give for their patterns of participation or non-participation in CRPs. The findings reflect the complex interplay of reasons and factors described in the literature. However, an important finding extracted from the theme “personal factors” is the notion that the CRP has been perceived by both non-attenders and non-completers as being not suitable for them. This key idea is captured in the phrase that CR is “just not for me”, a theme that kept re-occurring in different contexts throughout the interviews. The analysis suggests that a combination of illness perceptions, health expectations as well as health, programme and treatment beliefs led non-attenders and non-completers to conclude that the CRP had not been designed for people like them. Non-attenders and non-completers perceived themselves as ‘outliers’; either being too disabled or too fit for the exercise component.

The data suggests that there are two major “just not for me” groups: (1) the fit and active who perceive their level of fitness to be above the ‘normal’ range of what they assume is required to participate in a CRP and (2) those with comorbidities, disabilities and pain who perceive their level of fitness to be below the ‘normal’ range. Both perceptions seem to have influenced patients’ decision to refrain from attending

the recommended CRP or to discontinue their participation. Dissatisfaction with the exercise regime being either too easy or too hard is associated with non-attendance or non-completion. Kerins *et al.* (2011) found that further “just not for me” variations occurred in relation to lifestyle changes, the severity of the cardiac event, dietary habits, the level of physical functioning and participants’ age. While interviewees perceived participation in CRPs as appropriate for others, it was not seen as beneficial for them.

Low levels of knowledge and misconceptions about the CRP were particularly prominent among non-attenders and non-completers. Erroneous beliefs about CR may prevent active engagement with the programme. For example, some non-attenders with other chronic conditions believed their conditions rendered them incapable of performing physical exercise or that getting ‘breathless’ was not good for them and should be avoided. Cooper *et al.* (2005) suggest that the experience of being breathless might be erroneously confused with the experience of ischaemia prior to the occurrence of the myocardial infarction. However, Simonj̄ *et al.* (2015) revealed in their recently conducted phenomenological-hermeneutical study that CR patients experience existential anxiety when they begin to exercise which can help us to better understand adherence problems.

Other misconceptions related to an underestimate of the intensity of exercise required. Participants stated to engage in low-intensity (40%-60% of maximum capacity) exercise alternatives such as mowing the lawn or gardening that are not sufficient to replicate moderate intensity for 20-60 minutes as recommended during the conditioning phase of a structured CR exercise programme (Association of

Chartered Physiotherapists in Cardiac Rehabilitation 2009). Other misconceptions or lack of knowledge identified include the notion that physical activity is considered less important than medical intervention and thus could be performed with less emphasis on regularity and adherence.

Perceived objectives of a CRP influenced decisions to attend CR. There was widespread uncertainty about the purpose of CR. Many non-attenders and non-completers believed they could achieve independently return to normal functioning, adopt a healthier diet, exercise appropriate to their fitness or disability as well as strengthen their heart. Family support may reinforce this belief in non-attenders (Pullen *et al.* 2009). Completers are more likely to cite the importance of social and psychological support in motivating CR attendance despite their doubts and uncertainties about the programme's purpose and effectiveness. The notion that taking part in CRPs is a social experience that fosters continuous participation has been verified in several studies (Gregory *et al.* 2006, Jones *et al.* 2007, De Angelis *et al.* 2008). CRPs were seen as the best place in which to attain recovery. For example, a particular feature observed within the participants of a hospital-based CRP was the good group dynamics maintained among patients and the sense of camaraderie (Jones *et al.* 2009) that could sustain motivation to attend over time (Rolfe *et al.* 2010).

Limitations and strengths

Since patients of female gender were under-recruited for the qualitative study component (only 7 out of 25 participants were female) their views and experiences might not have been captured fully. Furthermore, the findings are to be interpreted

against the backdrop of the specific mode of CR delivery in this NHS health board. This might have consequences in relation to the transferability of the findings to settings that differ from the particular service model found in this particular setting. The use of a pre-prepared interview topic guide containing a clear set of questions mitigates the risk of potential bias (Kvale & Brinkmann 2009). The findings are credible due to a robust analytical approach and the fact that the interpretation of the data included practitioners working in the field.

CONCLUSION

A significant barrier to attending CRPs is that participants perceived themselves to be not suitable for the programme. In particular, the responses of non-attenders and non-completers clearly revealed numerous misconceptions that are still persisting among this population. As long as these misconceptions continue to persist in coronary syndrome patients they will impact upon attendance. The lack of perceived need for CR stems from a poor understanding of the programme especially among non-attenders and non-completers and subsequently an inability to comprehend possible benefits. Overall, these findings provide a deeper understanding of the complex factors and processes that influence CR attendance in order to develop future interventions to enhance service utilisation.

RELEVANCE TO CLINICAL PRACTICE

This study revealed a number of inaccurate beliefs that frequently occur among CR patients. With this knowledge, clinical nurses may be better equipped to rectify

incorrect knowledge and beliefs prior to patients commencing their CRP. This study has also highlighted that despite information and education about CR being provided at various time points along the patient's journey through face-to-face consultation and written information patients are still not understanding and/or retaining this information nor obtaining the correct message about CR. This situation may be exacerbated by the shortened hospital stay of 48-72 hours associated with percutaneous coronary interventions (PCI) which has been reported to lead to patients underestimating the severity of their condition and thus the need for CR participation (Astin *et al.* 2008). The current study suggests reconsidering the content, timing and mode of how and when to deliver the message about what CR actually is, taking into consideration their specific concerns about CR and providing interventions within the CRP which are tailored to suit patients' bespoke requirements (McKee *et al.* 2014).

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CONTRIBUTIONS

ORH made a substantial contribution to the conception and design of the study, was involved in the acquisition of data and contributed partially to the analysis. He also drafted the article and took responsibility for its submission.

KS made a substantial contribution to the conception and design of the study, was involved in the initial recruitment and data collection, completion of qualitative interviews and contributed to the analysis.

MW actively recruited and completed follow-up interviews with participants, collecting and inputting data and was involved in data analysis.

MCJ made a substantial contribution to the conception and design of the study and contributed to the data analysis and interpretation. All authors have agreed on the final version of the draft.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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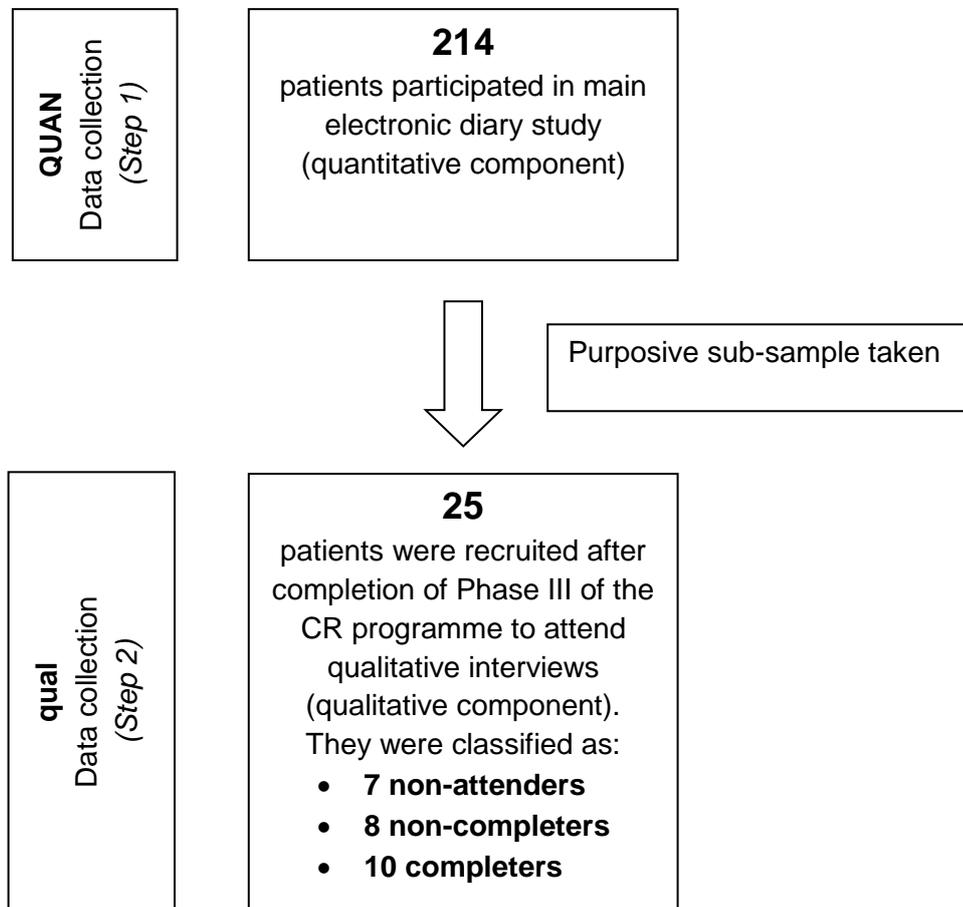
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Figure 1: Flow of participants within the mixed-methods study (sequential explanatory design)



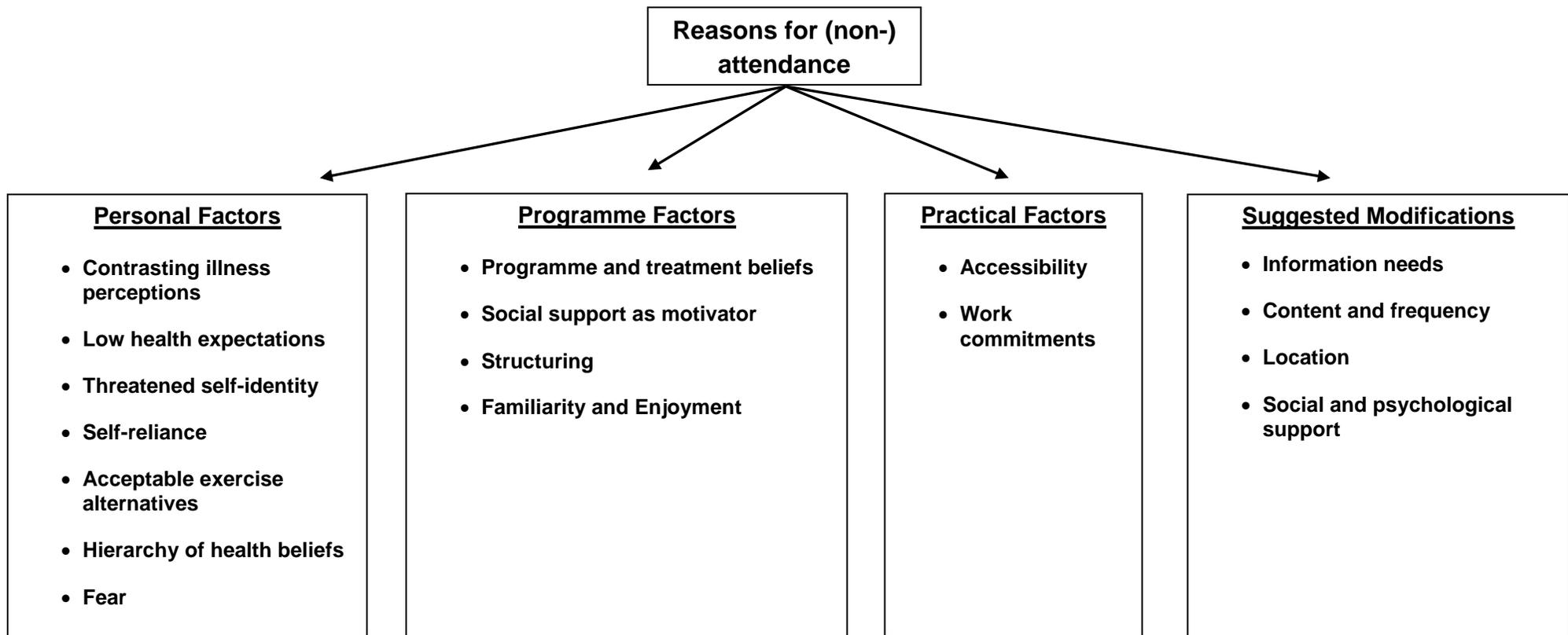


Figure 2: Coding tree depicting the four major themes and its corresponding sub-themes

Table 1: Interview topic guide for participants

Stimuli	Possible content	Prompts
<p>1st Stimulus <u>For all participants (opening question)</u></p> <ul style="list-style-type: none"> • You've recently experienced a cardiac event. Could you tell me about that, please? • While you were in hospital do you remember that it has been suggested that you should take part in Phase III (physical exercise) of a CR programme. Can you tell me a bit more about that please? 	<ul style="list-style-type: none"> • short-term problem, long-term problem, cured 	<ul style="list-style-type: none"> • Why do you think this happened to you? • What did you think how long your cardiac problem would last? (e.g. short-term, long-term, cured) • How soon after the event did you start your cardiac rehabilitation programme and if delayed, why? • What were your expectations of the cardiac rehab programme? • What do you think is the purpose of a CRP?
<p>2nd Stimulus</p> <ul style="list-style-type: none"> • In your opinion, which of these statements best describe your participation at CR: (1) I completed <i>all</i> sessions (2) I completed <i>some</i> of the sessions, (3) I <i>never</i> completed <i>any</i> sessions? <p><u>For completers only</u></p> <ul style="list-style-type: none"> • I'm interested to know why you continued coming to the CRP? • What elements of the CRP did you enjoy the most/least? 	<ul style="list-style-type: none"> • Follow-up procedures • Staff / professional disciplines • Venue / distance to venue • Frequency of sessions • Costs • Incentives (intrinsic / extrinsic) • Educational material • Composition of groups / 1 to 1 • Stigmatisation / labelling • Ethnicity • Support mechanisms • Content / timeframe of CRP • Environment (family, significant) 	<p><u>For completers & non-completers</u></p> <ul style="list-style-type: none"> • If you had a chance to make <i>changes</i> to the current CRP, what would these be? • What would have encouraged you to stay in the programme? • What did you like <i>best</i> / dislike <i>most</i> about the CRP? • What do you think are some of the benefits of a CRP? • What disadvantages did you face? <p><u>For non-attenders only</u></p>

<ul style="list-style-type: none"> • What thoughts / feelings did you have when participating in the exercise part of the CRP? <p><u>For non-completers only</u></p> <ul style="list-style-type: none"> • Can you tell me about what made you stop coming to CRP? • In your opinion, what should an 'ideal' CRP look like? • What elements of the CRP did you enjoy the most/least? • What thoughts / feelings did you have when participating in the exercise part of the CRP? <p><u>For non-attenders only</u></p> <ul style="list-style-type: none"> • Since you told us that you did not attend the CRP, what would have encouraged you to do so? • What kept you away from attending the CRP? • In your opinion what should a good CRP look like? <p><u>General question for all</u></p> <ul style="list-style-type: none"> • Do you think CR is important in helping you to recover from your heart condition? • Did you feel confident in your ability to take part in the exercise programme of the CRP? • As health care staff we believe it's important to participate in the 	<p>others, work, etc)</p> <ul style="list-style-type: none"> • Change agents (nurse, GP, physiotherapist, etc) • Attitude to life / towards exercise • Consistent information 	<ul style="list-style-type: none"> • What have you heard or what do you know from other people about the CRP? • What's your perception towards CR? • Do you think you can influence the progression of your heart disease?
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<p>CRP. However, not all people who are eligible for the CRP attend or complete the recommended exercise classes. How do you think participation rates could be increased?</p>		
<p>3rd Stimulus <u>For all participants</u></p> <ul style="list-style-type: none"> • What kind of things did you do to help yourself in your recovery (e.g. diet, lifestyle, etc.)? 		
<p>4th Stimulus <u>For all participants</u></p> <ul style="list-style-type: none"> • Have you ever had contact with the NHS? If so, do you think this experience has influenced your decision to participate the CRP? 	<ul style="list-style-type: none"> • Previous experience with health care system 	
<p>Finally: Coming to a close</p> <ul style="list-style-type: none"> • Is there anything that you would like to add? 	<ul style="list-style-type: none"> • 	

Table 2: Study Participants' Characteristics (n=25)

Characteristics	Non-attenders	Non-completers	Completers
GENDER (Male / female)	5/2	5/3	8/2
AGE RANGE	49-78	44-78	51-76
FAMILY STATUS (Living alone / living with spouse/partner, etc.)	2/5	3/5	4/6
PLACE OF RESIDENCE (Urban / rural)	6/4	5/3	4/6
TYPE OF CARDIAC EVENT STEMI vs. NSTEMI	3/5	3/5	6/4
HADS QUESTIONNAIRE SCORING (Up to 10 / above 10)	4/3	4/4	7/3
TYPE OF CARDIAC REHAB PROGRAMME (Hospital based / community based / home-based)	n/a	4/4/0	3/5/2