

‘Knocking at St Peter’s door’. A qualitative study of recovery after a heart attack and the experience of cardiac rehabilitation

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This paper presents the findings of a study designed to explore myocardial infarction (MI) survivors’ experiences of their heart attack, to obtain their views on existing services and to gather ideas for a new, community-based cardiac rehabilitation initiative. Despite the increasing emphasis on the consumer ‘voice’ in health service delivery, little research has been published exploring the experience of MI from the patient’s perspective. This is of particular significance given the study’s location in a disadvantaged urban area where the uptake of conventional hospital-based cardiac rehabilitation is poor. The study is based on qualitative, semi-structured interviews with 20 myocardial infarction survivors in southeast Nottingham. Participants were identified from the list of those invited to participate in a local hospital’s cardiac rehabilitation programme. The interviews were carried out in patient’s home between one and 12 months after the MI, were tape recorded and subsequently transcribed. Thematic analysis reflected both the issues identified in the interview schedule but also some unexpected findings elucidating the survivors’ own perspectives. The paper is structured around four key themes: the story of the heart attack; the way survivors’ lives have changed; experiences of existing services and ideas for service development. The paper concludes that MI should be understood as a long-term rather than an acute condition and discusses the implications for service delivery.

Key words: cardiac rehabilitation; community nursing; primary health care; qualitative research

Introduction

The health care climate in the UK is changing, with an ever increasing emphasis on finding out what people who use services really value and need. This can be challenging to professional service providers, who may feel their expertise and experience is being undermined. However, the increased emphasis on listening to service users can also bring opportunities for professional growth and maturity.

This paper describes the growth in knowledge and understanding experienced by its three authors

in undertaking research with survivors of myocardial infarction (MI). We are all members of the recently formed East Nottingham Collaborative Research Enterprise (ENCoRE), a primary care based research group. The ENCoRE team includes general practitioners (GPs), nurses, social workers and others who either live or work within the boundaries of the former Nottingham City South-east Primary Care Group (PCG), now the south locality of the Nottingham City Primary Care Trust (PCT). ENCoRE aims to carry out research relevant to the needs of the local population, while developing our own abilities as practitioner-researchers.

The locality has a resident population of approximately 81 000, many of whom live in impoverished inner city neighbourhoods. The Townsend score of the three most deprived wards

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within the area ranks them the third, fourth and seventh most deprived of the 104 wards comprising Nottingham Health Authority (Nottingham City Council, 1999). The entire locality forms part of Nottingham's Health Action Zone (HAZ), with a remit for health service providers to focus on the reduction of health inequalities. There is higher premature mortality for all chronic diseases compared to the Nottingham Health Authority average. Reflecting national and local priorities, the former Nottingham Southeast Primary Care Group board decided in 1999 to make coronary heart disease (CHD) a priority for health improvement using HAZ money. ENCoRE was charged with the responsibility for planning and evaluating a new, nurse-led, community-based cardiac rehabilitation service.

The three authors of this paper are a lecturer in nursing who is also a resident of one of the poorer neighbourhoods in the area; a GP and the 'community heart nurse' (CHN) appointed to set up and deliver the new cardiac rehabilitation service. The authors were aware that the hospital-based cardiac rehabilitation service was not well attended by local residents, and that the new community-based service need to offer better access. However, it was clear that we also needed to explore why the hospital-based service was not always used and what residents might want from the proposed community-based service. It is generally acknowledged that 'why' questions are best addressed through a qualitative research strategy, thus a naturalistic study using semi-structured interviews was designed and implemented. This paper presents the findings of the study and evaluates the research process as part of the research team's learning.

Rehabilitation and recovery

Cardiac rehabilitation is an important element of the UK's National Service Framework (NSF) for Coronary Heart Disease (Department of Health, 2000). The NSF cites evidence that structured cardiac rehabilitation can reduce mortality by as much as 20 to 25% over three years. However, the NSF also recognizes not all those who might benefit from cardiac rehabilitation receive it. It has been noted that patients living in deprived areas are less likely to take up hospital-based cardiac rehabilitation programmes following myocardial infarction

(Pell *et al.*, 1996). However, it appears that no studies have been published exploring the experiences and perceptions of cardiac rehabilitation among residents of deprived areas from a qualitative perspective. Qualitative studies, exploring access to general hospital-based coronary care services among disadvantaged populations, suggest barriers including: fear of the hospital; cultural and language issues; low expectations; poor previous experiences and a fatalistic attitude (Gardner and Chapple, 1999; Tod *et al.*, 2001). Bowman *et al.* (1998) make a case for community-based cardiac rehabilitation but suggest that little research – quantitative or qualitative – has explored the outcomes for patients.

More generally, several pieces of work have been published describing qualitative research with MI survivors. One of the earliest papers describes the process whereby people reconstruct the experience of the heart attack in order to make it 'intelligible' in the context of their own biography and the experiences of others (Cowie, 1976). Building on this thesis, Wiles (1998) notes that MI survivors are still encouraged to search for lifestyle explanations for their heart attack by health professionals and information leaflets. However, survivors may be given an over-optimistic picture of the recovery process based on epidemiological evidence that relates to populations rather than individuals. Wiles (1998) suggests that early in the recovery process people accept the 'official' view but that 'lay epidemiology' takes over after several months, making it less likely that people will sustain changes in their lifestyle. This is an important issue in the provision of structured cardiac rehabilitation where the emphasis of the programme is on health education and lifestyle change. Murray *et al.* (2000) confirm that nurses caring for MI survivors construct the patients' profile of risk according to epidemiological evidence (diet, smoking, etc). However, patients and their families often construct risk differently, drawing on concepts such as 'stress' or 'fate'. The patients in the study by Murray *et al.* (2000) still intended to make changes to their lifestyle such as taking more exercise, but these intentions were not always congruent with the perceived reason for their heart attack.

Radley *et al.* (1998) highlight gender differences in the experience of recovery following MI. Their study of 60 women and 60 men six months post-MI suggests that the women were less likely to

have attended or completed a cardiac rehabilitation programme and were experiencing a greater number of problems in relation to caring and domestic responsibilities. Jackson *et al.* (2000) also focus on gender, specifically the experience of women recovering from a first time MI. They found that the 10 women in their study followed a trajectory of internal disorder in the first week following discharge to a more confident outlook after three weeks. Although their social and emotional needs were generally met within their own social networks, they expressed an unmet need for reliable information throughout the recovery period. The women in the study were reluctant to participate in a structured cardiac rehabilitation programme, although the authors of the study do not explore any possible reasons for this reluctance.

As far as it is possible to ascertain, none of these studies were carried out by practitioner-researchers with a view to service development. Although they contain interesting and thought provoking accounts of patients' experiences, the studies are not necessarily generalizable, especially given the wide variation in coronary care and cardiac rehabilitation services. Although attention is given to issues of gender, the social science literature does not focus on deprivation or social class.

Method

The population of southeast Nottingham is served by two hospitals offering acute services for people with CHD. This study focuses on patients treated in the coronary care unit (CCU) of one of the hospitals, which accepts around two thirds of local people who experience MI. The British Heart Foundation liaison nurse supporting the cardiac rehabilitation programme at the hospital identified all patients resident in the Nottingham City South-east PCG area who had been discharged with a diagnosis of MI in the 12 months prior to the study. Twenty patients were randomly selected from this list and received a letter from their GP inviting them to participate in semi-structured interviews concerning their experiences following their MI and their views on the proposed new service. Eleven of the 20 patients thus contacted agreed to participate and a further nine were recruited directly from the British Heart Foundation liaison nurse's caseload.

Of the 20 participants, 14 were men and six women. The women were all Caucasian. Eleven of the men were Caucasian, including one Italian; two men were of South Asian origin and one was African Caribbean. The average age for men was 65 years (range 48–88) and for women 66 years (range 55–73). The average length of residence in southeast Nottingham was 26 years (range 2–69 years). Sixteen of the participants were homeowners (including several who had bought their houses from the council under the 'right to buy' scheme). The others lived in accommodation rented privately or from the council. Although home ownership is higher among participants than the locality average, participants were broadly representative of the local population in terms of social class and occupation. Only two were in, or had retired from, professional occupations (as a GP and a civil servant).

All 20 patients were interviewed in their own homes using a semi-structured interview schedule. The interviews, each lasting between 20 and 90 minutes, were tape recorded and transcribed in full, then explored and analysed for common themes. The initial coding and data interpretation was shared between the three authors, promoting inter-observer reliability (Arksey and Knight, 1999). Ezzy (2002) notes that thematic analysis is a form of inductive analysis in which 'the categories into which the themes will be sorted are not decided prior to coding the data' (p. 88). The semi-structured interview schedule used in the study did, inevitably, shape the content of the themes. However, it is important that qualitative researchers leave space for research participants' own voices to emerge, paying particular attention to any unexpected insights that challenge previous assumptions (Boyatzis, 1998).

Findings

In this study, the length and fluency with which participants narrated the 'story' of their heart attack was particularly striking. This theme is therefore presented first, followed by an account of the ways in which survivors' lives have changed, their experiences of existing services and their ideas for future service development. The gender and age of the participants is noted after each quote to give the reader a sense of the diversity of the respondents.

The story of the heart attack

The narratives suggest the experience of the heart attack is etched on survivors' memories, and is probably a story that has been rehearsed many times. Some participants lost consciousness, so have limited memories of the event. Even so, they recount the events leading to their collapse in considerable detail:

It was a total surprise, it happened on the day we came back from south of France. We got back in the morning and we started unpacking our clothes and bits and pieces. I was in the bedroom and I started getting very hot and I started sweating and I had problems breathing. And the next thing I knew – well, I didn't know anything until I was in hospital, that's when I woke up. (Male, 56)

The detail and length of the narratives, which cannot be done justice to here, confirm Clandinin and Connelly's (1994) assertion that 'people live stories, and in the telling of them reaffirm them' (p. 415). The narratives surrounding the cardiac event(s) illustrate the huge significance they had in each individual's life. Thoughts of the future were often infused with a sense of vulnerability and fear:

I worry if I'm going to have another one or not . . . You know, anybody have heart attack they're liable to have another one, so when you feel a bit funny you wonder if it's going to come on. It makes you feel nervous. (Male 1, 63)

None of the participants specifically raised the impact of the MI on their religious or spiritual beliefs, but some did express a sense of coming face to face with their own mortality:

I think it's the most – the hardest thing that's hit me. I've had a lot of illnesses but I think this is the hardest thing. A heart attack is the worst thing that could ever happen because you feel with your heart attack you're knocking at St Peter's door, you honestly do. Whilst you're in your heart attack you don't think you're ever going to ever come out. It's the worst experience any person can have. (Male 2, 63)

Changed lives

All participants identified changes in their lives as a result of the MI, including both restrictions in daily life and chosen alterations in lifestyle. In terms of restrictions, 'not being able to do the things I used to' was a common theme:

It has restricted my activities a lot, my physical activities like cutting the grass and dashing upstairs and so on. I have a gardener and that sort of thing. But I like to do it myself, you see? It has certainly restricted me – or I restrict myself. (Male, 80)

Physical limitations caused by symptoms such as angina or shortness of breath placed major restrictions on the lives of some participants, although not all, and several people also noted changes in outlook and mood:

It's made me more snappier and that sort of thing . . . I get terribly depressed, some days I cry for nothing at all. I think the heart attack brought that on. (Male, 57)

The unpredictability of symptoms was problematic for some participants:

I go downstairs, I go upstairs and I feel chest pain. I cannot organize my life, there is always something stopping me. Everything I have to do I have to plan it – I cannot say 'I'm doing that'. Sometimes I say 'Tomorrow I'll do that', but in the morning I can't because I'm lying in bed and having chest pains. (Male, 48)

Changing lifestyles

Perhaps somewhat contrary to common assumptions about residents in disadvantaged populations, all participants claimed that they had made lifestyle changes in order to promote their health. At the time of the study, only one participant was a smoker – six reported they had stopped when they had their heart attack, and two more were former smokers who had given up prior to the MI. The person who was still smoking had tried to quit but had found abstinence too difficult, although she had succeeded in shedding several stones in weight with the help of regular review by her GP:

I had to fight a hard battle because I smoke and I love sweets. I put one cigarette on the

ashtray where I sit and watch my telly. And I did that for about six weeks. But I don't know what happened. I had a fall and I cut my leg – I think that's what started me up again. I thought, 'Everything is happening to me, I might as well have a fag.'

(Female, 64)

Twelve participants reported that they had cut down on fats in their diet, for example, cutting out red meat and eating more fish. Awareness of the principles of 'healthy eating' seemed generally high, particularly as several people had already made changes to their diet as a result of pre-existing conditions such as high cholesterol.

Exercise was an interesting area in participants' accounts of lifestyle changes. The advice people had received with regard to stopping smoking and following a healthy diet seemed fairly unambiguous and, for some people, increasing exercise also seemed straightforward. However, it seemed that exercise was a difficult area for some people because knowledge of the benefits of exercise was tempered by the fear of 'overdoing things':

I don't think I will now (have another heart attack), all the tablets I'm on, unless I do something stupid like go outside and start doing too much. Because I think that's what can bring it on.

(Male, 73)

For many participants, following the health advice given seemed to offer a form of insurance against experiencing another MI. As the following quote makes clear, advice can be phrased in such a way as to greatly increase motivation:

I don't want this to happen to me again, it's quite simple. The doctor said in the hospital, 'If you change your ways, do some exercise, change your eating habits, you'll stand more of a chance of it not happening to you.' So that's just made me change the best I can.

(Male, 56)

Experiences of existing services

The study invited participants to comment on the services they received following their heart attack, commenting on the strengths and limitations. It seemed that people were generally satisfied with the emergency response, their care and treatment in the coronary care unit and the rehabilitation ser-

vice. However, feelings about the general hospital wards were less positive and views on primary care follow-up mixed.

It was notable that all participants had good things to say about the care they received on the high dependency coronary ward. However, two people were distressed by the lengths of time they had to wait for cardiac surgery following angiography at the time of their heart attack. One woman was told she would have to wait a minimum of nine months for surgery, and ended up spending her life savings on private surgery. Another respondent was told to 'write to the prime minister' when he queried the length of the waiting list. He suggested that his fears were not taken seriously, which led to his readmission with a second emergency.

Several patients expressed surprise at the lack of a routine outpatient appointment following their MI. Given the seriousness of the health problems, they felt they should receive more individualized follow-up than that afforded by the group rehabilitation sessions:

I thought that there would be an outpatients, but there isn't, you know – to keep an eye on you. There's only that British Heart Foundation class, which they just give you a lecture and all that, but they don't really – it's not individual, like.

(Male, 88)

Participants' views on the primary care response to their experiences of heart attack were mixed. Some GPs take a highly structured approach to follow-up, calling patients in to the surgery or visiting them at home on a regular basis. Participants seemed to find this very reassuring and responded positively to their GP's interest in their medical condition and general wellbeing.

However, other patients had experienced no particular interest from their GP, and felt that the ball was firmly in their own court. This was problematic for some people, who reported having to wait up to two weeks for an appointment with their GP:

You have to wait such a long while for an appointment, perhaps a fortnight and he don't make – he don't say 'Well, come back in . . .' I'm not saying they don't bother, but they don't go to – you've got to go to them all the time.

(Male, 88)

Twelve of the participants had attended three or more of the six cardiac rehabilitation classes held weekly at the hospital soon after discharge. Only one participant stated explicitly that she did not attend any classes because she did not want to. Three participants did not go because they felt they already understood the issues to be explored in the classes, and two people still felt too ill:

I was invited but I didn't go because at the time I felt still poorly – you know what I mean? It made me feel as if I didn't want to be involved with people at that particular time because I felt that ill. (Male, 57)

Of those who did attend, most found the sessions useful. One participant particularly appreciated the opportunity to meet others in similar situations:

I went for the six weeks and they did say 'You can carry on coming as long as you want.' Really, I would have liked to have gone every week because I met people there and I felt that I could ask people things. (Female, 55)

Some people mentioned that they had been given a number to phone with any worries, which was experienced as an important source of support whether or not the number was used.

Transport to and from the rehabilitation sessions did not seem to be a major difficulty for most people. Some used their own cars, while others were able to catch a direct bus to the hospital. Some participants said that the hospital arranged a taxi for them if needed, although the basis on which the hospital organized transport was unclear.

Expectations of the new service

The final questions during the interviews with participants sought to explore their expectations of the proposed new community-based rehabilitation service. Participants were generally positive about the idea of a new service based in primary care, although few could articulate what the new service should look like without prompting.

The appointment of a community heart nurse (CHN) was seen as an excellent idea. Participants thought her role should include offering advice on worrying aspects of their condition, suggesting that they had 'niggly' problems that had been worrying them for some time:

Some doctors say 'Oh, I can't check you every week, I check you once a month.' That's no help at all for the heart attack because if something is a little trouble – say I got something, a burning here – it could be wind or something, but in mind it will still come straight in my heart. (Male, 68)

Another role mentioned for the CHN was that of providing health education within the wider community:

I didn't know what a heart attack was and what was going to happen. Nobody told you what these things are going to be like or what's going to happen to you. Especially at schools, I know it's a young time to start, but I think heart attacks and cancers are the two things that should be taught in schools, so everybody is prepared ready. (Male 2, 63)

A social model?

Participants generally gave a positive response when asked for their views on the value of a support group for MI survivors. One participant, in particular, explained at length the benefit she derived from meeting with others with similar experience during the cardiac rehabilitation classes. Despite a large and caring family, this individual felt she could share things with other heart attack survivors that her family did not want to hear, or could not cope with hearing:

It don't matter how long ago it was. Mine was a year ago but I would still like somebody to talk to. If I said to any of my children 'I sometimes feel frightened,' that would upset them. They say to me 'Are you alright, Mum?' I say 'Yeah, I'm fine.' You know, you're back on your feet and that's it now, it's sort of forgotten – but it's not forgotten for yourself. So I think sometimes it would be nice to say 'I'll nip down to the group meeting tomorrow night and have a natter with people there.' (Female, 55)

A number of participants would also welcome opportunities for exercise in a safe environment as part of the community rehabilitation service:

I think it would be marvellous. We've got a leisure centre but when I rang up to make enquiries – they do one for the over 55s or

50s or something – I told her I'd just had a bypass and she says 'Oh no, no, no, I would need a letter for you to come and do exercise with us.' (Female, 69)

Four participants stated that they would welcome advice on welfare rights, including benefits and debt management. Two had used existing services such as the Citizens' Advice Bureau or a local advice centre. However, it was clear from the interviews that not all patients knew about such services or how to access them:

I've never been on social security all my life, I haven't got a clue what you could claim for or anything. I think someone coming round to visit you and explain these things to you, especially not being able to get about, would have been a very great help. I've worked for the firm for 30 years, and never been sick, hardly at all – and all of a sudden this has happened. (Male, 57)

Discussion

This project represents the first experience of qualitative research for two of the three researchers involved in this project. As part of the data analysis process, we met regularly to discuss the study and the emerging findings. At a final meeting reflecting on the findings of the project, we tape recorded our conversation and noted the impact it had had on our own understanding of surviving and recovering from an MI.

The GP observed that the project had changed his view of MI. Previously, he had tended to think of MI as an acute event that patients should – through following the correct advice – 'get over' reasonably quickly. Following the study, he said:

The biggest thing that struck me was that it had a massive impact on people's lives and how frightened it made them – how vulnerable they felt. It continued to have a big effect, even interviewing people several months after their heart attack. They were still frightened to exercise in any kind of way. Their feelings were against the healthy living advice I was giving them. As a GP I would say 'Look! You've just had a heart attack, you're still overweight, you're not doing any activity, you need to get on and

start doing it!' Not grasping that the block was 'But if I walk down the street I might get more chest pain, another heart attack – I'm not going to do it'. I never gave anybody the opportunity to express those kind of feelings because I never really picked it up. You don't really think of it as being a near-death experience, you think 'Get on and get healthy!' Because that's what I would do – I think.

The studies of Cowie (1976), Wiles (1998) and Murray *et al.* (2000) support the suggestion of a gap between professional and lay constructions of risk. This research highlights the value of patients' narratives in helping practising professionals to understand the difference between perceptions of risk based on epidemiology and the perceptions born of personal experience. The survivors' narratives reinforced to all three researchers the significance of the MI in their lives and the lives of their families. The emotional impact of an MI and subsequent mood changes have been documented in other studies (Bennett and Mayfield, 1998), but it took the voices of the patients themselves to really bring this home to the research team. Many participants seemed to be experiencing a sense of loss related to their inability to return to what they thought of as their 'normal' life, suggesting that MI should be viewed as a chronic illness with long-term consequences rather than an acute problem from which people quickly recover.

For the community heart nurse, the project generated insight into the way that the new service should develop. She noted that the 'one size fits all' approach to cardiac rehabilitation did not meet the needs of many of the participants in the study. For example, one man used a wheelchair and found that his wife, also disabled, could not accompany him to the rehabilitation sessions as the ambulance transport could only accommodate one wheelchair. Other participants found the early start of the rehabilitation classes too much to face when they still felt quite ill. This study echoes the findings of Worth *et al.* (2000) that 'most patients' information needs, apart from those which are routine and basic, tend to be highly individual in nature' (p. 404). Worth *et al.* (2000) conclude that primary care staff must assume greater responsibility for information provision as the lengths of hospital

stay diminish, supporting the rationale for more individualized, community-based approaches.

The findings of this study also confirm that approaches to rehabilitation based on a social/structural model of health will be taken up by at least some MI survivors. Several participants identified a need for advice on welfare benefits, recognized as an increasingly important dimension of a community nurse's advice by Hoskins and Carter (2000). Others were keen to participate in a self-help support group, again recognized to be an effective contribution to cardiac rehabilitation (Department of Health, 2000).

The limitations of this study are acknowledged. First, there is likely to have been a degree of response bias due to the way in which interview participants were selected. Data protection rules made it impossible for the research team to access patients directly, so consent to participate was first sought through a clinician with direct and legitimate access to the patient's name and address. It was easy for potential participants to say 'no' or simply to ignore the invitation to participate in the project. While we have no information on non-responders, we can speculate that these may be people who were less successful or motivated in changing their lifestyles, less literate, less articulate or simply less organized. Given the rationale for the study (i.e. to explore recovery from MI in a disadvantaged population), the bias produced by nonresponders could be significant.

It is also the case that some respondents became aware of the researchers' clinical experience, although we took care to introduce ourselves simply as 'researchers'. Where our clinical background did emerge, the participants took the opportunity to ask 'clinical' questions, particularly of the GP (although this reinforced the finding of the study that many participants had unmet information needs). It may be that participants gave the responses they thought the research team would like to hear, although the fact that the interviews were carried out in participants' homes engendered a sense of informality. The findings of the study should be read with these limitations in mind.

However, there is also great value in research of this kind where two of the researchers are also practitioners. Rolfe (1998) argues for the importance of research 'that is of direct use to the practitioner for the simple reason that it is generated by the practitioner from her work with her

own patients' (p. 200). The experience of being involved in this project will, it appears, have an impact on the day-to-day practice of the GP. The findings have also shaped the development of the community-based rehabilitation service led by the community heart nurse (CHN). She has been able to build on contacts made during the research process, for example inviting participants who expressed an interest to get involved in setting up a support group. The findings of this study can be directly integrated into practice in southeast Nottingham, and will contribute to further evaluation of the CHN role.

Conclusion

This study set out to explore the experiences of MI survivors in the deprived localities of southeast Nottingham and to establish their views on the proposed new community-based cardiac rehabilitation service. Semi-structured interviews with 20 patients produced a wealth of data leading to a rich, qualitative description of participants' experiences and opinions.

One of the most striking findings is the way in which the MI is experienced as both an acute and chronic illness. As an acute illness, it is a life-threatening episode that gives survivors a lasting sense of their own mortality. However, the extent to which the MI becomes a chronic condition for many survivors is equally significant but less often acknowledged by health care professionals. Several months on, most of the participants in this study were still experiencing fatigue, mood swings and a constant need to 'pace themselves'.

All participants described changes in their lifestyle to reduce the risk of another heart attack. Their understanding of the principles of healthy living seemed sound, based particularly on the recommendations of the leaflets issued by the British Heart Foundation. The participants thus confounded the stereotypes of people who live in poorer urban neighbourhoods, who are generally considered less likely to respond to the messages of health education. However, the inherent bias produced by the 'volunteer' status of participants may mean that those who were sufficiently motivated to take lifestyle advice on board were more likely to engage with the research.

Satisfaction with existing services was generally

high, with the exception of the general wards at the hospital and the waiting time for angiography. Nearly all patients who attended cardiac rehabilitation sessions at the hospital found them useful and informative. However, it is notable that patients were expected to fit into an existing service with little consideration of their individual needs, as the experience of the participant who uses a wheelchair demonstrates. It seems that the flexibility and personalized care plan offered by the community heart nurse will be a valuable additional – and in many cases, alternative – service to traditional, hospital-based cardiac rehabilitation.

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