

# The experiences of patients undergoing percutaneous transluminal coronary angioplasty: a qualitative exploration



**Michael Page RN; MRes, DipHE**, Clinical Nurse Specialist and Research Co-ordinator, Mater Private Hospital, Brisbane, Australia  
**Katherine Jackman BN, GradDip (Occ. Health), GradDip (Critical Care Nursing)**, Nurse Educator, Mater Private Hospital, Brisbane, Australia

**Patricia Snowden RN**, Associate Professor, Director of Nursing, Mater Private Hospital, Brisbane, Australia

**E-mail:** michael.page@mater.org.au

**Key Words:** acute coronary syndrome ❖ angioplasty ❖ Grounded Theory ❖ percutaneous transluminal coronary angioplasty ❖ qualitative research

## SUMMARY

- This paper presents the findings of a qualitative research study to explore potential unmet needs of patients undergoing percutaneous transluminal coronary angioplasty. The study sought in-depth data from the patients' perspectives, and in particular the psychosocial data, absent from the current literature. This study addressed the paucity of information on patients' perceptions of the experience of undergoing percutaneous transluminal coronary angioplasty and looked for fresh insights regarding the journey from diagnosis of acute coronary syndrome, intervention, recovery and the post-discharge needs of this patient group.
- The study used a Grounded Theory approach and data were collected by face-to-face interviews, conducted at the participants' homes.
- The setting for recruitment of participants to this study was a large tertiary, acute private hospital in Brisbane, Australia. Participants were recruited from the coronary care unit, which comprised four beds for the first three months of data collection and increased capacity to eight beds for the final three months.
- Five key themes emerged from the interview analysis: misconceptions regarding causes; the overall percutaneous transluminal coronary angioplasty experience was not stressful; two procedures could double concerns; pain and anxiety as a result of manual digital pressure; and lack of post discharge advice and support.
- It was concluded that the overall experience of undergoing percutaneous transluminal coronary angioplasty and insertion of stents was a very positive one. However, while patients undergoing percutaneous transluminal coronary angioplasty need support and education, both before and after percutaneous transluminal coronary angioplasty, and cardiac rehabilitation may be important to their well-being post-discharge, in reality there is a danger this patient group could receive scant support before the procedure, hurried and

potentially ineffective education from nurses without specific health promotion credentials afterwards, and often no follow-up at all once they leave hospital.

- Further research into the effectiveness of current in-house education is needed. Novel service approaches may be necessary to tailor education to individual patient needs.

## INTRODUCTION

Coronary heart disease is a major health problem in Europe and North America. In the United Kingdom, 150 000 people survive an acute myocardial infarction every year (Dalal & Evans, 2003). Coronary heart disease also kills more Australians than any other single disease. In 2006 there were 22,983 deaths, totalling 17% of all recorded deaths (Australian Institute of Health and Welfare, 2009).

Percutaneous transluminal coronary angioplasty (PTCA) and insertion of stents in patients with narrowed coronary arteries, due to coronary heart disease, is a common procedure and one of the fastest growing specialties in cardiology (Higgins et al., 2000). Many studies have addressed outcomes of patients after undergoing PTCA, including re-admission rates; re-occlusion; arrhythmias; myocardial infarction; bleeding; haematoma and pseudo aneurysm (Dendale et al., 2005). The incidence of adverse events is extremely low and most quantitative studies demonstrate a positive patient experience after undergoing PTCA, as reported by the patients themselves. The era of drug-eluting stents has resulted in even better long-term outcomes and fewer complications for this patient group (Yang et al., 2007). However, very little has been reported on the preparation and after-care for those undergoing PTCA, or on their holistic experience of undergoing this procedure.

As with many interventional procedures there is evidence that pre-procedure education alleviates anxiety and leads to better outcomes for this patient group (Tooth et al., 1998; Jowett & Thompson 2003). Post-procedure cardiac education and/or rehabilitation - once only available for patients after cardiac surgery - may also be helpful in addressing risk factors in such patients and may decrease re-admission rates and improve post-discharge quality of life (Taira et al., 2000; Jowett & Thompson, 2003; Dendale et al., 2005).

However, the length of time patients remain in contact with health professionals before and after interventions is becoming increasingly short and nurses have very little time to address the huge topic of cardiac rehabilitation. As a result, patients often find it difficult to assimilate the information they are given (Higgins et al., 2000).

### **Cardiac rehabilitation**

Cardiac rehabilitation after myocardial infarction is an effective evidence-based intervention (Scottish Intercollegiate Guidelines Network, 2002) the benefits of which have been confirmed in systematic reviews (Jolliffe et al., 2002). Outcomes have been seen to be improved by referring patients to a dedicated cardiac rehabilitation group after discharge, supported by suitably qualified health professionals, though take-up of this type of service has been disappointingly low (Scott et al., 2003).

Cardiac rehabilitation is a term referring to the coordination of multifaceted interventions promoting physical, psychosocial and social well-being in addition to stabilising the progression of the underlying atherosclerotic processes, in turn improving morbidity and mortality in patients (Leon et al., 2005). Cardiac rehabilitation or secondary prevention programs currently include baseline patient assessments, counselling regarding nutrition, risk factor management (that is, lipids, hypertension, weight including body mass index and waist measurement, diabetes, and smoking), psychosocial and vocational counselling, physical activity and exercise training, in addition to the appropriate use of cardio-protective medications that have evidence-based efficacy for secondary prevention (Leon et al., 2005). However, research suggests there is an under-utilisation of cardiac rehabilitation programs (Bunker & Goble, 2003; Scott, 2003), highlighting the need for alternative more flexible cardiac rehabilitation models that overcome access and adherence barriers.

Higgins et al. (2001) suggested that an individualised, comprehensive, home-based cardiac rehabilitation program improves risk factor profiles and work resumption patterns for patients following percutaneous coronary intervention (PCI), and also offers a cost effective alternative to mainstream hospital based CR (Department of Health, 2000). Scott et al. (2003) also support alternative cardiac rehabilitation models including supervised home based exercise programs, personalised health education by specialist nurses and individualised coaching programs. Similarly, Warrington et al. (2003) claim an important aspect in enhancing participation is the need to provide user friendly rehabilitation that minimises barriers and is tailored to individual patient needs. Calls have been made for different ways to provide cardiac rehabilitation, which traditionally has been hospital based (De Bono, 1998) with an emphasis on the development of novel systems, for example home based (Dalal et al., 2007) or tailored telephone follow-up services (Australian Cardiovascular Health and Rehabilitation Association, 2008). Indeed, the Australian Cardiovascular Health and Rehabilitation Association has revised UK manuals to reflect Australian culture and values as well as healthcare needs, and will report in 2009 on its pilot study of a telephone coaching program at two sites in New South Wales and Tasmania.

While evidence exists that cardiac rehabilitation is beneficial for all patients with coronary heart disease – including those who have undergone PTCA and insertion of stents - further research is necessary to establish the effectiveness of non-hospital based approaches to cardiac rehabilitation and secondary prevention and to determine how to deliver these services optimally (Leon et al., 2005).

### **National standards for cardiac rehabilitation**

In the UK, the National Service Framework (NSF) for coronary heart

disease established clear standards for the prevention and treatment of coronary heart disease, which have led to improvements in quality and access (Department of Health, 2000). Standard twelve of the National Service Framework relates to cardiac rehabilitation and recognises the need to assess individuals' risk and need for cardiac rehabilitation services and develop individualised plans to meet those needs. It recommends that, before discharge from hospital, patients' needs for rehabilitation should be assessed by appropriately trained staff. It also claims that as a minimum this assessment should include (Department of Health, 2000):

- physical needs, including desirable lifestyle changes
- educational needs
- psychological needs
- family and carer needs.

Also, in the UK, best clinical practice guidelines recommend that cardiac rehabilitation should not be regarded as an isolated form or stage of therapy, but should be integrated within secondary prevention services (National Institute for Clinical Excellence, 2009). Cardiac rehabilitation services are, they state, no longer exclusively hospital based and emphasis is placed on helping patients become active self-managers of their condition. This can involve hospital, home and community based cardiac rehabilitation programs, all of which are effective (National Institute for Clinical Excellence, 2009).

Cardiac rehabilitation is recommended in National Institute for Clinical Excellence clinical guideline CG48 on myocardial infarction: secondary prevention, as an appropriate intervention for people following a hospital admission for myocardial infarction (National Institute for Clinical Excellence, 2007). This supports the National Service Framework for coronary heart disease (Department of Health, 2000 p. 59), which states that "every hospital in England should ensure that more than 85% of people discharged from hospital with acute myocardial infarction or after coronary revascularisation (PTCA) are offered cardiac rehabilitation." Furthermore, both The World Health Organization and the National Heart Foundation of Australia recommend that outpatient cardiac rehabilitation programs are made available to all patients with cardiovascular disease (Scott, 2003).

### **LITERATURE REVIEW**

In-depth data from the patient's own perspective and, in particular, psychosocial data is lacking. Very few studies have provided qualitative data on what the experience was like from patients' perspectives. As a consequence, uncertainty and anxiety appear to follow many patients home post-PTCA and this may have a potentially detrimental effect on both recovery and long-term quality of life (White & Frasure-Smith, 1995).

A detailed literature review highlighted the need for continuity of educational support from the hospital to the community setting, for both the patient who has had a PTCA and their partner or significant others (Genz, 2000). Yet, very few studies have explored the issues surrounding social support mechanisms and family dynamics in outcomes for patients after PTCA, and this is also an area which may merit further future research as this aspect is a key recommendation of standards for cardiac rehabilitation (Department of Health, 2000).

The few qualitative studies that have been published offer interesting perspectives. For example, in Gulanick et al.'s (1997) study, patients' PTCA experiences were examined. The findings from focus group interviews, comprising 26 males and nineteen females, revealed that while most patients' experiences were largely positive, many expressed bitter dissatisfaction regarding several aspects of their care. Gulanick et al. (1998) followed their earlier study up with more

focus group data and showed that post-PTCA patients were making lifestyle changes, but with some difficulty. Themes of note were that patients acknowledged both acceptance and uncertainty about the future. Some participants had adopted a philosophical approach to coping with uncertainty whilst others were fearful of an early death. Amongst those who had attempted lifestyle changes both satisfaction and frustration with their modifications were highlighted.

In a Swedish study, Lunden et al. (2006) interviewed fourteen patients after PTCA and concluded that even minor nursing interventions may be of extreme importance to patients and that overall the PTCA experience had not changed for ten years. The only Australian qualitative study reported in the literature used Grounded Theory, with in-depth interviews, involving eight males and three females. The data suggested that patients had many concerns after PTCA and many had unmet psychosocial needs (Higgins et al., 2000). These findings were somewhat disappointing in light of national standards and recommendations for the care of this patient group.

Much work has suggested the merits of cardiac rehabilitation and national policy standards have encouraged the use of best practice guidelines. However, on the basis of the little qualitative research that has been carried out from the perspective of the person undergoing the intervention, it seems that the healthcare system may be letting down this patient group in terms of post-procedure support and education, and that unmet needs remain. Some qualitative research has gone some way to describing the PTCA experience from the patient perspective but there is still much that is not known or understood. It is also apparent that original qualitative research has been lacking, especially in Australia, and no studies have focused specifically on the unmet needs of post-PTCA patients.

### **Study aim**

The overall aim of this study was to determine whether patients who had recently undergone angioplasty and insertion of stent perceived any gaps in their support and care from health professionals. It also aimed to explore whether they benefited from the education/cardiac rehabilitation they received or whether unmet needs existed when judged against established national standards intended to support the care of this patient group.

### **METHODOLOGY**

This exploratory study intended to go some way towards addressing the paucity of information on this topic from the patients' own perspectives. To do this a Grounded Theory approach was considered optimal in that the authors sought the opinions, feelings and attitudes regarding the PTCA experience directly from the participants themselves, rather than biasing the interviews by imposing pre-conceived theories, questions or ideas into the participants' frame of reference. The interviewers, as experienced cardiac nurses, may well have held individual ideas and theories about what constitutes the PTCA experience, but it was exactly these notions that were intended to be avoided. Originality is offered both by the Grounded Theory approach, which adds to understanding by potentially generating knowledge the recipients of this medical intervention have previously not been invited to impart, and by this methodology's insistence on ensuring theory emanates from the data, rather than seeking data to explain a pre-conceived question relating to the PTCA experience.

A qualitative approach was taken, using Grounded Theory to elicit key themes of pertinence to the patient group under scrutiny. Eleven patients – eight male and three female - were interviewed in their own homes on all aspects of their care. The aim was to identify unmet needs in this group to inform potential new approaches to the

care of these patients at the authors' hospital. It was also intended as a precursor to further research into the needs of this specific group.

### **Study design**

The authors carried out informal interviews with participants, which were audio-taped. This approach was ideal for a number of reasons. First, informal interviews provide minimal guidance and allow considerable latitude for interviewees. The participant is given a much freer rein than in the survey interview (Bryman, 1988). The participant is not the recipient of the researcher's prompts, allowing the revelation of something important to the participant that would remain hidden in the survey method (Bryman, 1988). Second, the informal interview is open-ended and allows the interviewee to challenge the preconceptions of the researcher and to answer questions within their own frame of reference (May, 1997). While still possible for the researcher to have an aim in mind while conducting the interview, the interviewee is freer to talk about the topic. This may lead to an alteration in the focus of the interview and the collected data, both during and after it is conducted (Pahl, 1995).

While informal interview suggests a casual approach, a topic guide allowed the interviewer to have some control over its direction. This sets out general areas for discussion, generated from the published theory, and chronologically listed to allow a full exploration of a patient's journey from admission to discharge, and after.

While not strictly in accordance with conventional grounded theory approaches, it was considered that this chronological style allowed the interviewer to steer an interview whilst retaining the desired freedom for the interviewee to convey issues of importance to them. It was believed it allowed the study to retain the same aim of grounded theory of minimising potential bias from consulting the known literature, but with the benefit of providing a skeleton or template to the discussion to keep it broadly within the intended topic area under scrutiny. In any case, in essence the topic guide was less a product of generated pre-existing theory and more a chronological guide to mirror the treatment path of the majority of patients undergoing PTCA.

The interviews lasted about one hour. Tapes were transcribed as soon as possible after the interview (for confidentiality and while it was still fresh in the interviewer's mind) then erased. Data were coded so that comments presented in the final report would be anonymous to protect patient confidentiality. Each participant was attributed a code, and each comment transcribed given a sub-code, so it could be linked back to a participant, though not to a named individual.

### **Sample**

The sample chosen was a purposive one in that the research searched for insights into a group of people who had undergone a particular procedure: PTCA. The overriding principle of this study and this type of research was to understand social processes rather than obtain a representative sample (Gilbert, 1993).

Validity, in the sense of trustworthiness of the data, was considered vital. Validity refers to the need for the research techniques to be appropriate to their purpose and therefore produce data which are not an artifact of the research design itself but are: "a valid index of social processes occurring in the field" (Halford et al., 1997, p. 56). The purposive sample in this study was chosen in order to seek such an index of social processes surrounding the topic, and were therefore appropriate for the purpose of the study.

Eight men and three women were recruited from the coronary care unit between October 2007 and May 2008. Coronary care unit staff



## ❖ The experiences of patients undergoing percutaneous transluminal coronary angioplasty: a qualitative exploration ❖

notified the researchers of suitable candidates for inclusion in the study and one of the authors then visited them on day one after their procedure to briefly discuss the study and their interest in taking part. A patient information sheet and consent form was then left with the patient for 24 hours after which the researcher returned to confirm participation and to obtain contact details. Participants were free to withdraw at any stage.

All respondents spent at least one day in the coronary care unit, with usual discharge planned for the day after their PTCA. Some developed complications and had a longer duration of stay. The only exclusion criterion was an inability to discuss the experience in English, in their home, in the weeks following hospital discharge.

### Data collection

Two interviewers were used: one male and one female. One had prior experience in undertaking audio-taped social research interviews and the other was a novice. Both were cardiac nurses with extensive experience regarding the topic. It was also a stipulated condition of the hospital research ethics committee approval that consideration should be given to the safety of interviewers visiting patients in their own homes and this provided one aspect which satisfied that condition. (Another was that the interviewer would telephone a colleague on arrival and departure from the interview.) However, it was also considered a benefit was that women could be interviewed by a female nurse, and men by a male nurse. Although strong claims cannot be made to this effect, this possibly elicited more valuable data than if this was not made available.

Informal interviews were used to collect data. Participants were all interviewed in their own homes four to six weeks after discharge. This allowed sufficient time for them to have recovered from any treatment, but was close enough to their admission to be able to accurately recall their experiences.

### Data analysis

The constant comparative method was used during the concurrent data collection and analysis to identify and develop recurrent themes and ideas. Key themes were developed from the perspective of the informant and were described and contextualised, with illustrative (anonymised) quotations used to highlight themes in the discussion. Data emerged using a Grounded Theory approach (Glaser & Strauss, 1967) and a 'Framework' approach aided analysis of large amounts of qualitative data. The Framework was developed by what is now the National Centre for Social Research in the UK and has been adapted and described by Spencer and Ritchie (1994) to allow readers of social research to see how themes emerged and findings were arrived at in way not previously available in qualitative research. The Framework follows established processes for coding and sorting transcripts and permits simultaneous data collection and analysis to take place in accordance with the Grounded Theory approach. This transparency enhances the rigour of qualitative research, which has been criticised (Mays & Pope, 1995).

Transcription of audio tapes took around three hours for each one-hour interview, and was carried as soon as possible after interviews. Data analysis was concurrent with data collection, involving immersion within the data and generation of key themes using the Grounded Theory approach and aided by the Framework (Spencer & Ritchie, 1994).

### Ethical issues

The study was approved by the Scientific Sub-Committee and subsequently the Human Research Ethics Committee of Mater Hospitals.

Consent to approach the patient after discharge was obtained during their hospital stay. Patients were given a patient information

sheet and consent form after their procedure, whilst in the coronary care unit. They were then revisited close to discharge and their participation was discussed. If they were willing to take part they were asked to consent and provide a contact telephone number. This consent allowed further contact to be made four to six weeks after discharge, at which time the participant could consent to a home visit, or decline.

### FINDINGS

Five key themes emerged from the data analysis:

- Misconceptions about causes of their condition
- The overall PTCA experience was not stressful
- Two procedures may double concerns
- Pain and anxiety as a result of manual digital pressure
- Lack of post discharge advice and support

#### Misconceptions about causes of their condition

Despite spending time in hospital and undergoing a cardiac procedure, and (apparently) being exposed to an array of information sources, few respondents had a clear perception of what had caused their condition. Even some weeks post-discharge, responses to what they had been told about their event were vague, varying from no information to fairly generalised descriptions. This lack of effective information caused some confusion. One respondent voiced his surprise that he had experienced a cardiac event:

- No-one said why it happened. I still can't understand why I got it. It was the last thing I expected (Male, age 66)

Others were equally unsatisfied with explanations given for his myocardial infarction:

- Couldn't give me [Cardiologist] any answer except the fact that they don't know from person to person. (Male, 62)
- If you're gonna have a heart attack you're gonna have a heart attack. It's in your genes. No matter how fit you are, you may not have heart disease, it's in your genes. That's what I was told! (Male, 71)

One respondent had a specific perception of the reason for his heart attack:

- Well, about the only thing I can put my mind to, is too much salt! (Male, 58)

#### The overall PTCA experience was not stressful

Satisfaction with nursing and particularly medical care was extremely high in almost all cases. Participants voiced that the health professionals looking after them were professional, caring, informed, and efficient. The overall experience of undergoing PTCA was not arduous or stressful. Several participants expressed that it was a routine procedure so they were unconcerned, as illustrated by the following:

- It's a commonplace thing... to me nowadays, having a heart attack is not much different to having a common cold (Male, 58)

One of the participants had undergone the procedure in a different hospital some years before, and this reassured him:

- I went with the flow knowing full well it was going to be similar

to the previous set of circumstances when I had the previous lot of stents. I had no worries or concerns. (Male, 66)

### **Two procedures may double concerns**

In many cases, patients presenting with symptoms of a coronary event undergo a diagnostic angiogram undertaken by one cardiologist on one day, followed by a therapeutic PTCA and stent insertion undertaken by a cardiologist with additional experience and training on another day. This was the case for eight of the eleven participants. For most of these, this was not an issue, indeed the participants would not have known a single procedure was an option if the researchers had not raised the question. However, two participants had clear views on the subject, one insisting on being referred to a 'single procedure' cardiologist for the following reason:

- One of my wife's friends who had the same thing said to me don't have two procedures, make sure they only do one procedure. Her husband had it and they sent him home after the angiogram to come back for the stents. He dropped down dead the next morning. (Male, 48)

Apart from potential safety issues, and additional length of stay in hospital, other participants highlighted the additional pain and discomfort of having to have two separate procedures.

It had recently been announced in the hospital that a cardiac computerised axial tomography scanner was now available, which could perform the same diagnostic function of invasive angiograms, without the attendant problems of safety and patient discomfort.

One participant hoped he would be able to avoid angiography 'next time' he needed it:

- They have this procedure now that costs \$500 to have a photograph, so apparently you don't have to go through the angiogram. I think it shows up the arteries, so when I go back I may have that hopefully. (Male, 62)

While another voiced satisfaction with the current procedure, though suggested the scanner would be a preferable option:

- I'd recommend it (angiography). And now they've got this super-duper new machine – it said on the TV they've got this \$2million machine so you don't have to have the thing through the groin. (Male, 66)

Having two procedures was particularly concerning for one female respondent, who had voiced concerns about pain during the first procedure, which she felt was not taken seriously by the cardiologist or the nurses when she returned for her PTCA and stent insertion a few days later. The experience was still emotionally upsetting for this respondent some weeks later:

- The nurse was the same as the day before and she said – you know what you're in for? And I said yep – and that's when I started to get upset, that's why I wanted to get knocked out. He (the cardiologist) didn't listen. He didn't care. That's the way it seemed to me. Why did they have to do it after the pain? Why didn't they listen to me and do it prior? When I think about it I get upset. (Female, 58)

### **Pain and anxiety as a result of manual digital pressure**

Once the investigative procedure is completed, the artery that

was accessed needs to be closed. This can be achieved through the insertion of closure devices or via application of pressure. The most common closure device used at this hospital is the angioseal. The angioseal is a collagen plug that is inserted on the outside of the arterial lumen and is held in place by its connection with an intravascular anchor (Kern, 2004). The anchor will be absorbed over ten days whilst the collagen plug will be absorbed over 60-90 days (Kern, 2004).

Manual or digital compression is the alternative approach to close the artery after sheath removal. The sheath provides support at the arterial puncture site and decreases potential trauma to allow many different catheter exchanges (Bitar et al., 2003). Immediately after sheath removal, direct pressure is held over the femoral artery at a point about two centimetres proximal to the sheath entry site (Koo & Brouwer, 2001) for ten to twenty minutes.

Patients should commonly remain supine for three hours after haemostasis is achieved. The use of a commercial femoral compression system may also be necessary as an adjunct to digital pressure to prevent further bleeding at the arterial puncture site. Such manual compression devices consist of a plastic compression arch with a transparent dome attached (Kern, 2004).

Most respondents had the sheath removed and manual digital pressure applied rather than the angioseal. On the whole, respondents found the entire PTCA procedure painless and were not distressed by it. However, most stated that removal of femoral sheaths afterwards was either painful or anxiety-provoking or both. This ranged from mild discomfort, which the respondents were happy to endure, such as a respondent whose bleeding after sheath removal had to be controlled by using a femoral compression system:

- When they had to put that ball thing in and puff it up to stop the bleeding. That was the biggest discomfort I had. That hurt, that was quite sore, but that's alright. (Male, 71)

to extreme pain in one case, with a respondent explaining the pain of sheath removal was worse than his actual heart attack:

- My heart attack would've been maybe 7 out of 10, and that (sheath removal) would've been 9 out of 10. (Male, 58)

This respondent suffered complications after sheath removal as well:

- I got a big black bruise down there, up here, across my stomach. It was huge. It just went away, but it was shocking.

It was not only the process of sheath removal that was unpopular with respondents, but the associated need to remain flat for some period before and after it was removed. In some cases respondents had been forced to lay flat for up to six hours. This comment was typical:

- The pressing down was quite um, painful, because of the sheer pressure that had to be applied, and we had to keep that up for about twenty minutes. Then I wasn't allowed to move very much at all for four hours, which in itself is pretty hard on your back, and then for a further period of time – I think it was about another two hours – my movements were restricted. It was a bit distressing, and I had to have a bed bottle. (Male, 66)

### **Lack of post discharge advice and support**

Respondents almost unanimously reported satisfaction with the care they received in hospital and stressed their appreciation regarding the

## ❖ The experiences of patients undergoing percutaneous transluminal coronary angioplasty: a qualitative exploration ❖

professionalism of the medical and nursing staff. Most believed they had been given sufficient information, both verbally and in writing, about the procedure and its effect on their lifestyle post-discharge. However, almost all respondents appeared vague at best about the reasons for their condition, and what they could do to improve their lifestyle post discharge. Many had not been offered follow-up cardiac rehabilitation, and those that did were generally unwilling or unable to attend the sessions offered to them. Consequently many respondents either had unanswered questions or were following spurious advice about what they should do. Even information regarding immediate post PTCA activity did not appear to be comprehensive. One respondent was given some advice guidelines:

- I was told not to do anything heavy for about a week, and then after that to use my own judgement. (Male, 71)

While another had no useful advice at all:

- Just behave myself mate. That's what I was told. Take it easy. (Male, 66)

In terms of referral to a cardiac rehabilitation group after discharge, many respondents were not particularly encouraged by nursing or medical staff to attend. One respondent's wife was keen for him to attend a group but was felt discouraged by the cardiologist when she broached the subject on her husband's behalf:

- I went back to Dr X and he more or less said that what he was doing was fine and he didn't really need to go. (Male, 58)

When asked how he would get the information his wife felt he needed, he replied:

- Ah, when I next see the cardiologist. I just thought I'd just coast along until then. (Male, 71)

Most respondents were ambivalent about need for rehabilitation, and cited practical reasons for not attending:

- It would be beneficial to go, but I don't really feel like getting up early in the morning and driving through the peak hour traffic and driving back. (Male, 66)

Another said he would be interested, but living in the country it was totally impracticable:

- Education's a great thing. I don't profess to know the whole box of dice. Yes, it would be a good thing, but living where I am, the nearest cardiac unit, would be Ipswich, and that's a long drive. (Male, 71)

His relative geographic isolation left him with concerns:

- I guess the worst thing is the not knowing if you are doing the right things, if you will, and whether it will last again this time. It would be good to know more about the mechanics and what is the best course of action, but I suppose it differs from person to person? (Male, 71)

When asked if he felt a telephone follow-up service or home-visit service might be beneficial he enthusiastically agreed it would:

- Oh yes. If there's anything at all to, hey, maybe put me on the right track. Diet-wise, exercise-wise, a monitored program if you will. (Male, 71)

Two respondents were disappointed they were not able to attend rehabilitation groups, one feeling he needed the support immediately after discharge and was unhappy he had to wait six weeks to start – by which time he would have returned to work:

- The only thing that didn't work out was the rehab course. We wanted to go to [hospital named] as it was closest, but when we rang they could only give us an appointment in March, after I'd be going back to work. And that would be daytimes and its difficult to get time off work. (Male, 48)

This caused him some anxiety:

- If I'm working, I would want to be back at work after 6 weeks. And what am I gonna do in the six weeks? I don't know what my limitations are, I don't know if I can take a walk, I don't know how much I can lift. So I went to my GP [general practitioner], and he said don't do this, don't do that. So I'm not at rehab 'til next Monday. To me, six weeks? If you come out of hospital and you've had heart surgery you want to know if you wanna lift a chair and put it over there, its OK. You can't just sit like a veggie waiting for six weeks. It doesn't make sense, its much too long.

Confusion regarding the 'right' things to do was common in our sample. Another respondent felt he could have benefited from a rehabilitation group:

- Unless there's somebody there to tell you you can walk twenty minutes, or you can only lift ten kilos, you just don't know what to do and you might do the wrong thing. My GP helped me as much as he could, but its not the same as going somewhere and they put you on the treadmill and they say walk for ten minutes and they check your 'obs' and say ah yeah you can do that. (Male, 62)

However, just as many respondents who were not offered rehabilitation were entirely happy and believed they were in control of their own information needs.

- Well what else can they tell me to do? Like, I'm doing my diet and exercise. It could be reinforcing if there are other people there, what they've been through. But it could be for people far worse off than myself. (Male, 66)

The attitude that others were probably worse off was a recurring one. This was particularly evident when it came to questions regarding psychosocial support. Several respondents suggested they were 'okay' in this regard and that psychological issues concerned other people, not them:

- I suppose it could affect people psychologically and emotionally. I've had no problem there. (Male, 71)

Another concurred:

- Maybe that stuff is geared towards people who are older and not so active. (Male, 62)

While another saw the need for psychological support, but believed his family could provide for his needs:

- I've got people around me, my wife and brother and my doctor, and maybe it's for people who don't have people supporting them, and that's a good idea. (Male, 58)

## DISCUSSION

Our small sample of patients who had undergone PTCA and insertion of stents at one Brisbane hospital generally reported that they were extremely satisfied with the care they received, and felt comfortable and reassured about the procedure, and follow-up care and advice. They communicated that they received a lot of information in various forms from both doctors and nurses, both in the cardiovascular unit and the coronary care unit where they were looked after. This information included verbal information from their cardiologist and from nurses, but also pamphlets, advice sheets, videos and DVDs.

The majority suggested they had all their fears and concerns allayed, and all their information needs met. However, it was clear many participants did not actually want to know much about the procedure or even the reasons for their condition, and most were more than happy to consent to whatever was needed to 'fix' them. In a sense, the participants had adopted a position of 'consensual paternalism' – the cardiologist knew what needed to be done and the participant was happy for him to get on and do it without interruption. The problem was fixed, involving relatively little discomfort or stress for the patient, and the respondents were more than confident they had been well managed and cared for.

It was however, surprising that many respondents had little idea of what had caused their chest pain, despite spending at least two days in hospital and being exposed to so much well-intentioned information and education.

In terms of the procedure itself, few respondents had any major issues. The procedure was explained thoroughly, and was relatively painless in all but one case. A concern was apparent for two respondents who were unhappy that their PTCA and stent could not be carried out concurrently with their diagnostic angiogram. This led to anxiety and potential problems associated with having two invasive procedures rather than one. Most however, were unaware that it was possible to have one procedure, and therefore did not voice strong views on the topic. Two respondents voiced the fact that they were aware the hospital now had an advanced technology computerised axial tomography scanner, which could make the initial invasive angiogram superfluous. As some of our respondents also voiced distress during the sheath removal process, including pain, bleeding, bruising, and other problems associated with being forced to lay flat for several hours, increased use of such non-invasive technology should be encouraged, where appropriate, for all patients and two invasive procedures might therefore become unnecessary in many cases.

Similarly, most respondents found the process of manual digital pressure as a means of removing the catheter sheath painful and/or distressing. One even equated the pain as greater than his chest pain during his heart attack. Most respondents stated they would have preferred to have haemostasis achieved by alternative methods, such as an angioseal, and would have selected this method if given the choice (which they generally were not). It would seem beneficial to discuss options available on an individual patient basis and obtain

patient preference regarding method employed during the informed consent process. However, more complications with angioseal post PTCA have been noted by cardiologists than digital pressure, including more prolonged bleeding, and consequently use of this device has actually decreased post PTCA (Cameron, 2008). Furthermore, while use of the angioseal varies from unit to unit, there appears to have been a broad decline in its use (Cameron, 2008).

While these in-hospital issues were important to the respondents it was post-discharge advice and information that presented the greatest unmet need in this study.

Few of our respondents went to formal cardiac rehabilitation groups post-discharge, reflecting the claim that uptake of this service is poor; particularly in Queensland, Australia (Scott et al., 2003). Those that did go to these groups did not report any great benefit from doing so and did not appear happier or more confident than those that did not go. This is at odds with the literature claiming the overall benefits of cardiac rehabilitation groups (Department of Health, 2000). Reasons respondents gave for not attending included difficulties in attending a fixed appointment, geographical barriers, lack of time, difficulty in taking time off work (especially after a six week absence due to their heart attack), financial barriers and lack of motivation. These are all well-known barriers to attendance (Bunker & Goble, 2003), yet it appears difficulty still exists in overcoming them.

Psychological support after a diagnosis of myocardial infarction is a key recommendation of standards for cardiac rehabilitation eg the UK National Service Framework for Coronary Heart Disease (Department of Health, 2000) as anxiety and depression have been identified as independent risk factor for heart disease (Amin et al., 2006). Yet many informants felt cardiac rehabilitation was 'not for them' and was intended for older and sicker patients. While many acknowledged some (other) patients could need psychological support after a heart attack, none felt they personally needed this type of support.

The informants in this study may genuinely have believed they did not need psychological support, yet evidence exists that over 45% of patients admitted to coronary care units are clinically anxious and/or depressed (Cheek et al., 2003) and that failure to address these issues could have serious consequences for their long-term outcomes. For example, older patients with depression have a four times greater risk of dying in the first four months after myocardial infarction than patients who are not depressed (Romanelli et al., 2002).

However, some informants stated they definitely did need the structured support of a group, but that the setting or the timing of the program offered to them was inconvenient and unhelpful. Consequently, many of our respondents were trying to make lifestyle changes but had difficulty in doing so as they were not sure they were 'doing the right thing.' This was also a finding by Gulanick et al., (1998) and it appears little has changed in this respect in the ten years since that study. Indeed, as reported several years ago by White and Frasure-Smith (1995), uncertainty and anxiety still appear to follow many patients home post-PTCA and could have a potentially detrimental effect of both recovery and long-term quality of life. Most of our informants were attempting to make lifestyle changes, but most had little idea of the cause of their condition, what their individual risk factors were, or specifically what they should be doing in the weeks and months after their PTCA.

Although strongly asserting that they received a lot of information in various forms in hospital, few had been able to assimilate this information and most had some confusion regarding what they should and should not be doing after discharge. This was also seen by Higgins et al. (2000) in a similar qualitative study.



### **Do we need to try smarter rather than harder?**

It would appear that much is being done to meet guidelines and standards and that health professionals are well aware of the issues surrounding this topic, and making efforts to address them. However, there would still appear to be a mismatch between what health professionals are telling (even highly motivated) patients, and achieving the desired changes in behaviours.

This study strongly reflects the previous qualitative literature on the topic. Whilst in-hospital support appears adequate there seems to be ad hoc support once the patient leaves the hospital. The amount of time the patient spends with nurses and doctors during their stay does not seem sufficient to impart the information they need to understand their diagnosis, prognosis, and possible need to make lifestyle changes. The effectiveness of 'standard' in-hospital education must be questioned. It is likely that resources need to target this patient group after leaving hospital, yet traditional cardiac rehabilitation groups, while useful, may not be the best opportunity for achieving this result.

Perhaps this is best summed up by one respondent, who was very happy with the care he received and the outcome it produced, yet despite exposure to the health promotion messages of doctors and nurses during his stay in hospital could only answer when asked what support he had received to change his lifestyle:

'I'm just following my own routine, which may be good, may be bad.'

From a nursing viewpoint the efficacy of in-hospital health promotion messages must be strongly questioned. Further, larger scale qualitative and quantitative research is necessary to measure the extent to which patients are able to assimilate what they are being told in hospital, and novel approaches to cardiac rehabilitation appear necessary. The value of tailored cardiac rehabilitation for patients who cannot, or do not feel they want to, attend programs, which are generally held during the day and in cities, should be explored. It is possible that structured telephone follow-up and/or high technology support such as email or internet resources warrant investigation as well. Routine follow-up of patients by a trained and experienced health promotion professional in the weeks and months after discharge, with an emphasis on individual needs relating to risk factors might merit further evaluation for effectiveness.

### **Limitations of the study**

Two limitations to this study are noted. Firstly, the interviews took place around four weeks post-discharge and insights into later issues surrounding the topic were not explored. Secondly, transcripts were not shown to informants. This method of checking is often used in qualitative research to enhance trustworthiness of the data.

### **CONCLUSIONS**

This small-scale exploratory study presents a snapshot of the issues of concern to patients undergoing PTCA and insertion of stents from their own perspective. The design was not intended to elicit an all-encompassing view, but offered a snapshot of potential issues surrounding the topic in an exploratory way. This snapshot will allow us to tailor our care to the patients we serve and will lead to further targeted research.

Overall, the experience for this patient group was a satisfactory one, and in-hospital care was universally considered excellent. However, this study agreed with existing theory that health promotion messages in-hospital may not be assimilated by patients after they go home. It was found that while patients undergoing PTCA need support and education both before and after PTCA, and cardiac rehabilitation may be important to their well-being post-discharge, in reality it could be argued this patient group receives scant support before the procedure, hurried and potentially ineffective education from nurses

without specific health promotion credentials afterwards, and often no follow-up at all once they leave hospital.

Nurses must, therefore, question the value of their in-hospital health promotion strategies and hospital administrators should investigate novel methods, which specifically address the needs of their individual patients.

### **RECOMMENDATIONS**

Based on the findings from this study, the following recommendations are made:

- One invasive procedure should be used wherever possible.
- The decision on which method of removing sheaths is appropriate should be discussed in advance with each patient as part of the informed consent process.
- All patients should be followed up to ascertain their need for support post-discharge, though value of existing cardiac rehabilitation groups could not be evaluated.
- Further research should target need for social support for this patient group post-discharge, with services developed to meet patients' needs (for example, use of telephone follow-up, internet/email support et cetera).

### **ACKNOWLEDGEMENTS**

The study was part-funded by a grant from the John P Kelly Foundation. The authors also wish to thank Mrs Louise Scott, Nurse Manager of the coronary care unit, Mater Private Hospital, and the cardiologists whose patients took part in this study.

### **REFERENCES**

- Amin AA, Jones AM, Nugent K, Rumsfeld JS, Spertus JA (2006). The prevalence of unrecognized depression in patients with acute coronary syndrome. *American Heart Journal* 152 (5), 928-934.
- Australian Institute for Health and Welfare (2009). Statistics for coronary heart disease. [Online]. Available at: [http://www.aihw.gov.au/cvd/coronary\\_disease.cfm](http://www.aihw.gov.au/cvd/coronary_disease.cfm) [Accessed December 2008].
- Australian Cardiovascular Health and Rehabilitation Association. (2008). The Aussie Heart Guide. [Online]. Available at: [www.acra.net.au](http://www.acra.net.au) [Accessed December 2008].
- Bitar S, Kern MJ, Bleyer F (2003). Arterial and Venous Access. In: MJ Kern (ed.), *The Cardiac Catheterization Handbook*. Philadelphia: Mosby.
- Bryman A (1988). *Quantity and Quality in Social Research*. London: Unwin.
- Bunker SJ, Goble AJ (2003). Cardiac rehabilitation: under referral and under-utilisation. *The Medical Journal of Australia* 179 (7), 332-323.
- Cameron J (2008). Consultant cardiologist, Queensland Cardiovascular Group, Brisbane, Australia. Personal communication, 24 July 2008.
- Cheek F, Schrader G, Banham D, Marker J, Hordacre A (2003). Identification, course, and treatment of depression after admission for a cardiac condition: rationale and patient characteristics for the Identifying Depression as a Co-morbid Condition (IDACC) Project. *American Heart Journal* 146 (6), 978-984.
- Dalal HM, Evans PH (2003). Achieving national service framework standards for cardiac rehabilitation and secondary prevention. *BMJ* 326 (7387), 481-484.



- De Bono, DP (1998). Models of cardiac rehabilitation. Multidisciplinary rehabilitation is worthwhile, but how is it best delivered? *BMJ* 316 (7141), 1329–1330.
- Dendale P, Berger J, Hansen D, Vaes J, Benit E, Weymans M (2005). Cardiac rehabilitation reduces the rate of major adverse cardiac events after percutaneous coronary intervention. *European Journal of Cardiovascular Nursing* 42 (2), 113–116.
- Department of Health (2000). Coronary heart disease: National service framework for coronary heart disease - modern standards and service models. Chapter 7: Cardiac rehabilitation. [Online]. Available at: [http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH\\_4094275](http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4094275) Accessed 30 December 2008.
- Genz C. (2000). Perceived learning needs of the patient undergoing coronary angioplasty: an integrative review of the literature. *Heart and Lung* 29 (3), 161–172.
- Gilbert N (1993). *Researching Social Life*. London: Sage.
- Glaser BG, Strauss AL (1967). *The Discovery of Grounded Theory*. Chicago: Aldine.
- Gulanick M, Bliley A, Perino B, Keough V (1997). Patients' responses to the angioplasty experience: a qualitative study. *American Journal of Critical Care* 6 (1), 25–32.
- Gulanick M, Bliley A, Perino B, Keough V (1998). Recovery patterns and lifestyle changes after coronary angioplasty: the patients' perspective. *Heart and Lung* 27 (4), 253–262.
- Halford S, Savage M, Witz A (1997). *Gender, Careers and Organisations: Current Developments in Banking, Nursing and Local Government*. Basingstoke: MacMillan.
- Higgins M, Dunn S, Theobald K (2000). The patients' perception of recovery after coronary angioplasty. *Australian Critical Care* 13(3), 83–88.
- Higgins H, Hayes R, McKenna T (2001). Rehabilitation outcomes following percutaneous coronary interventions (PCI). *Patient Education and Counseling* 43 (3), 219–230.
- Jolliffe JA, Rees K, Taylor RS, Thompson D, Oldridge N, Ebrahim S (2002). Exercise-based rehabilitation for coronary heart disease. *Cochrane Library*.
- Jowett NI, Thompson DR (eds) (2003). *Comprehensive Coronary Care, 3rd Edition*. New York: Balliere Tindall.
- Leon AS, Franklin BA, Costa F, Balady GJ, Berra KA, Stewart KJ, Thompson PD, Williams MA, Lauer MS; American Heart Association; Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention); Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity); American association of Cardiovascular and Pulmonary Rehabilitation (2005). Cardiac rehabilitation and secondary prevention of coronary heart disease: an American Heart Association scientific statement from the Council on Clinical Cardiology (Subcommittee on Exercise, Cardiac Rehabilitation, and Prevention) and the Council on Nutrition, Physical Activity, and Metabolism (Subcommittee on Physical Activity), in collaboration with the American association of Cardiovascular and Pulmonary Rehabilitation. *Circulation* 111 (3), 369–376.
- Kern MJ (2004). *The Interventional Cardiac Catheterization Handbook, 2nd edition*. Philadelphia: Mosby.
- Koo KL, Brouwer S (2001). Nursing care of the cardiac catheterisation patient. In: Boland J, Muller D (eds.), *Cardiology and Cardiac Catheterisation: The Essential Guide*. Amsterdam: Harwood Academic Publishers.
- Lunden MH, Bengtson A, Lundgren SM (2006). Hours after coronary intervention and angiography. *Clinical Nursing Research* 15 (4), 274–289.
- May T (1997). *Social Research: Issues, Methods and Process*. Buckingham: Open University Press.
- Mays N, Pope C (1995). Rigour and qualitative research. *BMJ* 311 (6997), 109–112.
- National Institute for Clinical Excellence (2007). MI: Secondary prevention. Secondary prevention in primary and secondary care for patients following a myocardial infarction. NICE clinical guideline 48, May 2007. [Online]. Available at: <http://www.nice.org.uk/nicemedia/pdf/CG48NICEGuidance.pdf> [Accessed December 2008].
- National Institute for Clinical Excellence (2009). Commissioning a cardiac rehabilitation service. [Online]. Available at: <http://www.nice.org.uk/usingguidance/commissioningguides/cardiacrehabilitation/service/CommissioningCardiacRehabilitationService.jsp> [Accessed December 2008].
- Pahl R (1995). After success: fin de siècle anxiety and identity, Cambridge, Polity. In: May T, *Social Research: Issues, Methods and Process*. Buckingham: Open University Press.
- Romanelli J, Fauerbach JA, Bush DE, Ziegelstein RC (2002). The significance of depression in older patients after myocardial infarction. *Journal of the American Geriatric Society* 50 (5), 969–970.
- Scott IA, Lindsay KA, Harden HA (2003). Utilisation of cardiac rehabilitation in Queensland. *Medical Journal of Australia* 179 (7), 341–345.
- Scottish Intercollegiate Guidelines Network (2002). *Cardiac rehabilitation. A national clinical guideline*. Edinburgh: SIGN. [Online]. Available at: <http://www.sign.ac.uk> [Accessed December 2008].
- Spencer J, Ritchie L (1994). Qualitative analysis for applied policy research. In: Bryman A, Burgess RG (eds.), *Analyzing Qualitative Data*. London: Routledge.
- Taira DA, Seto TB, Ho KK, Krumholz HM, Cutlip DE, Berezin R, Kuntz RE, Cohen DJ (2000). Impact of smoking on health-related quality of life after percutaneous coronary revascularization. *Circulation* 102 (12), 1369–1374.
- Tooth LR, McKenna KT, Maas F (1998). Preadmission education/counselling for patients undergoing coronary angioplasty: impact on knowledge and risk factors. *Australian and New Zealand Journal of Public Health* 22 (5), 583–588.
- Warrington D, Cholowski K, Peters D (2003). Issues and innovations in nursing practice: effectiveness of home-based cardiac rehabilitation for special needs patients. *Journal of Advanced Nursing* 41 (2), 121–129.
- White RE, Frasure-Smith N (1995). Uncertainty and psychologic stress after coronary angioplasty and coronary bypass surgery. *Heart and Lung* 24 (1), 19–27.
- Yang ZK, Shen WF, Zhang RY, Kong Y, Zhang JS, Hu J, Zhang Q, Ding FH (2007). Coronary artery bypass surgery versus percutaneous coronary intervention with drug-eluting stent implantation in patients with multivessel coronary disease. *Journal of Interventional Cardiology* 20 (1), 10–16.