Research paper

Exploring misconceptions or potentially maladaptive beliefs about coronary heart disease and their relationship with coping behaviours among Taiwanese cardiac patients

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What is known on this subject
- The holding of misconceptions about heart disease has deleterious effects on a patient's quality of life, and identifying and dispelling erroneous beliefs can reduce disability in this population.
- Stress and lifestyle factors are the most frequently cited causes of coronary heart disease, irrespective of the patient's ethnic origin.
- Cultural differences shape people's illness perceptions, coping styles and emotional responses, and influence health outcomes.

What this paper adds
- Patients in this study had a poor understanding of the symptoms of heart disease. Older people were more likely to have fatalistic attitudes, and female patients blamed others for their illness. They believed that there was nothing that they could have done to prevent their heart disease.
- Patients believed in short-term compliance with Western medication and tried to combine this with Chinese herbal medicine. They also held the erroneous belief that drinking green tea will eliminate drug toxins.
- Healthcare professionals may require additional training to improve their knowledge of common misconceptions and cultural variations in beliefs about heart disease, and they also need to develop a cultural repertoire in order to engage with diversity and difference and to promote culturally sensitive care.

ABSTRACT

Coronary heart disease (CHD) is the leading cause of morbidity and mortality in developed countries. When people are diagnosed with any illness, the coping behaviours that they adopt are partly determined by their health beliefs. These beliefs are shaped both by the individual and by societal and cultural influences. Studies of patients diagnosed with CHD in Western countries indicate that, if patients hold misconceived or maladaptive beliefs, their self-management behaviours and quality of life may be adversely affected. In CHD, these erroneous beliefs include negative illness representations,

inappropriate appraisals of the condition, and misconceptions about the heart disease processes, which may lead to unhelpful ways of coping with their condition. This paper is the first to explore the erroneous or potentially maladaptive beliefs of Taiwanese people who have been diagnosed with CHD. Leventhal's self-regulatory model provided a theoretical framework for exploring the processes of self-regulation by the study participants, and the ways in which their beliefs influenced their coping strategies. The findings, based on in-depth interviews with 16 people recruited from inpatient and outpatient settings, revealed that cardiac patients' explanations of, perceptions of and strategies for coping with illness are interrelated and may have a negative influence on coping and recovery. The implications of these findings for clinical practice and policy are discussed.

Keywords: chronic disease management, coping strategies, coronary heart disease, culturally specific misconceptions, illness beliefs, self-regulatory model

Introduction

Coronary heart disease (CHD) is the leading cause of morbidity and mortality in developed countries. Although a reduction in CHD mortality has been achieved in recent years, the prevalence of the condition is still rising, and this trend is also evident in other parts of the world, including Taiwan (Department of Health, 2006). Primary and secondary prevention of CHD, aimed at encouraging the adoption of a healthy lifestyle, is advocated in order to reduce the risk of future coronary events (British Cardiac Society, British Hypertension Society, Diabetes UK, Heart UK, Primary Care Cardiovascular Society and Stroke Association, 2005).

It has been suggested that when people are diagnosed with heart disease they develop beliefs about their condition, and these beliefs are one of the determinants of behaviours directed at coping with their illness (Petrie and Weinman, 1997; Hirani and Newman, 2005). Some of these beliefs are misconceptions and can result in maladaptive coping behaviours that can adversely affect health outcomes (Petrie *et al*, 2002; Horowitz *et al*, 2004; Furze *et al*, 2005). It has been suggested that erroneous beliefs are a cause of poor compliance with medical advice (Horne, 1997; Byrne *et al*, 2005). Healthcare professionals rarely elicit patients' health beliefs, and therefore miss the opportunity to correct them (Petrie and Weinman, 1997). There is some evidence that nurses working in cardiac care can hold similar erroneous beliefs about heart disease, and may therefore reinforce patients' misconceptions (Thompson *et al*, 1976; Bassan, 1986; Newens *et al*, 1996; Lin *et al*, 2008a).

There has been very little research directly examining the relationship between beliefs about CHD and patient outcomes. In the 1960s, Wynn (1967) observed that people who held erroneous beliefs about their heart disease adopted an unduly cautious lifestyle, were more anxious and were less likely to return to work. Between 1978 and 1981, Maeland and Havik carried out a number of studies involving 383 post-myocardial infarction patients to examine the medical, social and psychological consequences of myocardial infarction (MI). Patients who had more erroneous beliefs about living with MI had a poorer rate of recovery and were less likely to return to work (Maeland and Havik, 1987), had reduced autonomy (Havik and Maeland, 1987), were more likely to be admitted to hospital (Maeland and Havik, 1989), and had a lower level of perceived global health (Maeland and Havik, 1988) than patients who had fewer misconceptions. Other studies suggest that patients who have erroneous beliefs about heart disease display overprotective behaviours (Petrie and Weinman, 1997), poor attendance at cardiac rehabilitation programmes (Broadbent *et al*, 2006; Cooper *et al*, 2007), and avoidance of physical activity (Furze *et al*, 2005).

More recent international studies have investigated the impact of cultural differences on treatment-seeking behaviour for acute myocardial infarction (AMI) and factors associated with delay in treatment for AMI (McKinley *et al*, 2000; Dracup *et al*, 2003; McKinley *et al*, 2004). Other studies have compared cultural differences in social support among American and Japanese cancer patients (Wellisch *et al*, 1999) and adherence to treatment and medication in Tongan and European patients with diabetes (Barnes *et al*, 2004). These studies conclude that cultural contexts influence individual illness representations and responses to illness.

Culturally specific misconceptions, and in particular erroneous beliefs about the medical treatment of CHD, have not been reported. Most Chinese people believe that Western medicine involves the use of artificial chemical compounds that are toxic to the body. Renal injury is commonly thought to be a major side-effect of taking Western medication (Ots, 1990). This misconception may be strengthened by the metaphor of the kidney in Chinese culture, where the kidney is viewed as a vital essence (like sperm), so kidney injury (shen xu) is regarded as serious because it involves loss of vital essence, leading to a shortened life (Ots, 1990; Lai *et al*, 2005).

Until recently, there was only limited understanding of cardiac misconceptions among Taiwanese people (Lin *et al*, 2008a,b). Few studies have looked at cultural differences in cause, coping strategies and appraisal in individuals with established CHD. Lin *et al* (2008b) compared misconceptions about CHD in Taiwanese and British people with heart disease. Both Taiwanese and UK participants most commonly cited stress as the cause of their CHD, and believed that they should avoid anything that might bring on angina. These beliefs were more common among Taiwanese participants. However, the questionnaire that was used was derived from belief statements held by English people with heart disease, so it may not have captured misconceptions specifically influenced by Taiwanese culture or social factors. Furthermore, a structured questionnaire approach tends to lead to subjective interpretations of cultural responses. There may be important but different misconceptions that are more commonly held by Taiwanese people.

This paper presents the findings of an exploration of the beliefs and experiences of Taiwanese patients with regard to CHD. Specifically, this study aimed to explore:

1 Taiwanese people's beliefs about and views and experiences of heart disease
2 possible misconceptions or potentially maladaptive beliefs about heart disease
3 maladaptive coping behaviours that may lead to adoption of maladaptive means of appraisal.

Method

Definitions

For the purposes of this study, the conditions that were included within our definition of CHD were MI, angina, coronary artery disease and congestive heart failure. A misconception occurs when a person believes in a concept that is false. Cardiac misconceptions are incorrect beliefs about heart problems, which can lead people to adopt maladaptive ways of coping. For example, the belief that exercise should be avoided after a heart attack is more likely to result in an increased risk of further cardiac events, as sedentary behaviour is a risk factor for CHD (Leon *et al*, 1991).

Theoretical framework

Leventhal's self-regulatory model (SRM; Leventhal and Cameron, 1987; Leventhal *et al*, 1992, 2003) was used to frame the study. The SRM proposes that when a threat to health is perceived, two parallel processes occur:

1 a cognitive process which involves the development of illness representations about the health threat
2 emotional responses to the perceived health threat.

Illness representations are believed to have five components, namely identity of the illness, the cause(s), consequences, time-line (whether the illness is considered to be acute, episodic or chronic), and the degree to which the illness can be cured or controlled. The formation of illness representations and their corresponding emotional responses triggers a second stage of coping responses, including avoidance coping or approach coping. The third and final stage involves appraisal or reappraisal, where the person evaluates the effectiveness of the coping strategies that have been adopted. A change to the illness representations and/or the coping strategies may ensue from the appraisal stage. The recursive nature of the model leads the person to constantly reassess and evaluate the health threat until either a stable state is reached or the health threat subsides (see Figure 1).

Leventhal and colleagues have articulated multiple levels of social context which affect illness behaviour, namely culture, community and neighbourhood (Leventhal and Cameron, 1987, Leventhal *et al*, 2003). In addition, Leventhal's SRM differs from other models
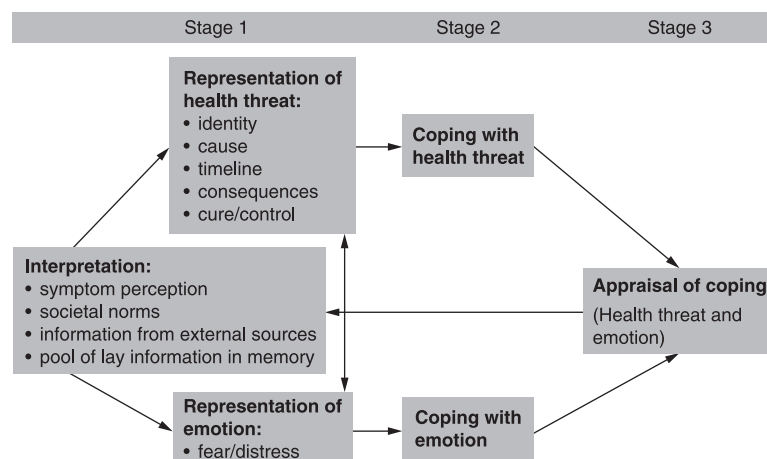

Figure 1 Leventhal's self-regulatory model of illness behaviour (Leventhal and Cameron, 1987)

of health cognitions in its emphasis on the emotional elements. Few studies have tested the extent to which illness representations of health threat can serve to regulate emotional outcomes directly or indirectly, through the use of coping strategies (Benyamini *et al*, 2004). In addition, the SRM incorporates parallel processing of separate although closely interrelated illness representations and emotions in three stages. In practice, however, most studies have considered this path without separating it into representations and emotions (Benyamini *et al*, 2004). Possible reasons for this may be that emotional responses to illness threat are more difficult to study, and it is not clear how one could separate them at the coping stage, and the same strategy could be used to cope with the illness representation and with emotions (Jayne and Rankin, 2001; Benyamini *et al*, 2004).

Data collection and participants

In order to address these aims, an in-depth qualitative interview study was conducted. A sample of 16 participants was recruited from a cardiovascular ward and from five outpatient clinics in a hospital in Taipei City (Taiwan). The sample was diverse in order to represent participants who varied with regard to age, gender, level of education and employment status (Aalto *et al*, 2005; Scottish Intercollegiate Guidelines Network, 2007), manifestations of coronary artery disease (CAD), including myocardial infarction (MI), congestive heart failure (CHF), and treatments, including catheterisation, percutaneous transluminal coronary angioplasty (PTCA) and coronary artery bypass graft (CABG) surgery (see Tables 1 and 2). Patients who were in the acute stages of heart disease or who had unstable conditions were not approached. The study was approved by the Department of Health Sciences Research Governance Committee at the University of York. The study protocol was reviewed and approved by the study sites in Taiwan. Potential participants were initially identified and approached by the nurse responsible for the patient's care, and were then provided with study information (both written and verbal) by the principal researcher (YPL), who obtained informed consent.

Table 1 Demographic data for interviewed participants

Participant identity [a]	Age (years)	Marital status	Employment status	Educational level	Religion	Province
M1	75	Married	Retired	High school	Buddhism	Mainland
M2	46	Married	Working	High school	Buddhism	Hakka
M3	45	Married	Working	University	Buddhism	Taiwan
F4	56	Married	Part-time	High school	Buddhism	Taiwan
M5	72	Married	Retired	College	None	Taiwan
M6	68	Married	Working	High school	Daoism	Taiwan
M7	53	Married	Working	PS	Buddhism	Taiwan
F8	54	Married	Housewife	SS	Buddhism	Taiwan
F9	65	Married	Housewife	PS	Daoism	Taiwan
M10	42	Single	Working	University	Tradition	Taiwan
M11	52	Divorced	Off sick	High school	Buddhism	Taiwan
M12	70	Married	Retired	University	None	Taiwan
M13	65	Married	Retired	University	None	Mainland
M14	73	Married	Retired	University	Tradition	Taiwan
M15	71	Married	Retired	PS	Buddhism	Taiwan
F16	81	Widowed	Housewife	SS	None	Mainland

[a] M, male; F, female.
[b] PS, primary school; SS, secondary school.

Table 2 Treatment data for interviewed participants

Particpant identity[a]	Diagnosis	Treatment	Duration of illness	Number of times hospitalised due to heart condition	Other chronic illness
M1	MI	PTCA x 2	6 years	2	HT
M2	CAD	PTCA	1 year 6 months	1	No
M3	MI	PTCA	6 months	2	No
F4	CAD	Catheterisation	5 months	1	No
M5	MI	CABG	2 years 7 months	1	HT
M6	MI	None	6 years 9 months	1	HT
M7	CAD	PTCA	2 years 9 months	1	HT
F8	Angina	None	8 years	1	No
F9	CHF	None	2 years	2	HT
M10	MI	PTCA	8 years	2	HT
M11	MI	PTCA + CABG	8 years	3	HT
M12	CAD	PTCA	2 years	1	DM + HT
M13	CAD	PTCA + stent	5 months	1	HT
M14	MI	PTCA	8 years 6 months	1	HT
M15	MI	PTCA x 2 + stent	14 years	6	HT
F16	CAD	PTCA	5 years 7months	2	HT

[a] M, male; F, female.
MI, myocardial infarction; CAD, coronary artery disease; CHF, congestive heart failure; PTCA, percutaneous transluminal coronary angioplasty; CABG, coronary artery bypass graft surgery; HT, hypertension; DM, diabetes mellitus.

Interviews were conducted in each participant's language of choice (Mandarin or Taiwanese) by the main researcher (YPL). The semi-structured interview guide was informed by a literature review on the misconceptions, maladaptive beliefs and/or coping strategies of people with heart disease, in relation to Chinese culture. Patients were asked a range of questions about their illness experiences and beliefs, including their perceptions of heart disease, their understanding of their condition, their coping strategies, appraisal and disease process. All of the interviews were audio-recorded with the participants' permission, and each participant's words and tone of voice were preserved for the data analysis process. The interviews were transcribed verbatim by the interviewer (YPL) in the participant's native language, and were later translated into English. Translations were based on conceptual equivalence rather than literal meaning (Atkin and Chattoo, 2006).

Data analysis and rigour

Data analysis was performed at the same time as data collection, allowing further exploration of emerging key issues (Murphy *et al*, 1998). Thematic content analysis was used, involving a process of familiarisation with the data, coding and pattern recognition (Miles and Huberman, 1994). As data analysis progressed, participants were compared with each other in a process of cross-case comparison (Miles and Huberman, 1994). Charts were devised with headings and subheadings which were drawn from research questions. The ordering and grouping of the individual participants were linked to characteristics or dimensions that are known or believed to have a significant effect on patterns of illness perceptions or behaviours (Ritchie and Spencer, 1994). When all of the data had been sifted and charted according to core themes, the data were mapped and interpreted as a whole (Pope *et al*, 2000).

The quality of the study was maximised through strategies to address credibility, transferability, dependability and confirmability (Lincoln and Guba, 1985; Ritchie and Lewin, 2003). Strategies included providing participants with the opportunity to check interview transcripts (credibility), detailed descriptions of the research process and participants' characteristics (transferability; Lincoln and Guba, 1985), coding of the data by more than one researcher to minimise any analysis bias (dependability; Hammersley and Atkinson, 1995), and researcher reflexivity throughout the study period (confirmability; Mays and Pope, 1995).

Findings

This section presents data that illustrate participants' beliefs about CHD and their coping behaviours in relation to misconceptions and/or potentially mal-adaptive beliefs.

Symptom discrepancy: making sense of the 'expected' and 'experienced' symptoms of CHD

Participants discussed the initial signs and symptoms of their heart condition. They described experiencing one or more of a diverse range of symptoms that they did not always initially interpret as a heart problem. The most commonly experienced symptoms included a sensation of tightness in the chest and chest pain. Other symptoms included shortness of breath, lack of strength, palpitations, a feeling of numbness in the left arm, back pain, sweating, nausea, vomiting and indigestion. It was clear that the participants did not always have a clear understanding of the symptoms related to CHD. Importantly, they indicated that the symptoms they experienced were different to their expectations, for example, 'severe heart pain', 'dramatic and sudden events' and 'falling down somewhere.' This mismatch sometimes led participants to delay seeking help, a potentially fatal mistake. For example:

> 'One day, early morning, I felt my left arm numb and chest tightness with little pain. I was continuing to work till next day. I waited to see if they had gone or not but they didn't. The next afternoon, I went to see a doctor ... and he told me I had myocardial infarction and must immediately go to hospital. ... Doctors and nurses immediately gave me treatment, but I continuously felt I was OK, not so serious, only just tightness and arm numb, I didn't lose consciousness, still so clear! ... [They] sent me to intensive care and informed my family I was in critical condition. Critical means very serious, but I felt I was really fine!'

(M6)

The participants attributed their symptoms to something other than heart disease. For example, participant M15 related the symptoms to indigestion and the side-effects of other medication, whereas M13 blamed back pain relating to an old injury:

> 'I had back pain and then went to Chinese therapy, such as massage, hot packing or acupuncture, but it didn't work at all. I didn't know the back pain was a symptom of heart disease, I always thought it was my old injury.'

(M13)

Individual beliefs about causal attributions

The majority of the participants cited multiple causes for their heart disease, including unhealthy lifestyle choices, such as poor diet, smoking, lack of exercise, being overweight, or physical and/or emotional stress, as well as family history, other chronic illnesses (e.g. diabetes or hypertension), the ageing process or blamed their husband and family for the development of their heart disease. A small number of participants were unable to identify any cause of their own illness, but reported lifestyle, stress and heredity as risk factors for other people.

Although an unhealthy lifestyle was the most common causal attribution, stress was cited by over 50% of the participants as being the main cause, or at least a contributory cause, of their illness. Stress was perceived as contributing more than unhealthy lifestyle, and included both physical and emotional components:

> 'It certainly is nerves. Nerves! Nerves is my main cause because my family members whose cholesterol is higher than me, hypertension is also higher than me, but they do not have this [heart] problem.'

(M10)

Blaming others for their heart disease was reported only by female participants (F9 and F16), who blamed their husbands or families, for example, family members who did not help with household chores, and quarrelsome husbands:

> 'My husband was always fighting or quarrelling with me, stirred the whole family into a tempest, my heartbeat run so fast and [my] heart like jumped out, he gave me my heart attack [disease]. You see, when I was young, nothing happen to my heart. Right now, he died four or five years ago, I felt my heart so calm.'

(F16)

Older participants, aged over 65 years, attributed their heart disease to slightly different causes. Participants aged over 70 years believed that 'old age' was the primary cause of their illness, rather than unhealthy lifestyles, genetic factors or stress. All of the older participants believed that their illness could be controlled through their own coping behaviour (both

avoidance and active coping). Older male participants demonstrated a combination of a fatalistic attitude (believing that having any chronic illness is part of ageing, and so is a normal phenomenon) and the belief that the timing of death is determined by God or by fate:

> '... being this age [aged 70 years], it's enough! I'm not desiring anything, when will we leave [die] is by God.'

> (M12)

When asked what heart disease means in terms of causes and physiology, only one participant, who was a hospital care assistant, had knowledge of the physiology of CHD. The majority of male participants had superficial or inaccurate beliefs, usually that a blood vessel was blocked, rather than understanding that there was a problem with the oxygen supply to the heart muscle. Other erroneous beliefs included the idea that the heart muscle was necrotic, that a major artery rather than a coronary artery was blocked and would cause a cerebrovascular accident (or stroke), or that the heart was not working and this would cause death:

> 'Vessel block, heart is like motor that entire working, the blood blockage then it cannot send to brain and four limbs ... heart vessel is blocked and it became so small, the blood cannot be passed. That's why being angry or lifting stuff [can] cause stroke or myocardial infarction, because it 'hits' the blocked vessel and blood can't go to heart, and then you fall down.'

> (M6)

'How can I control it?': fears and anxieties associated with CHD

All of the participants perceived their illness as a chronic, long-term disease; no one described it as non-chronic or episodic. All of the patients believed that their illness could not be cured, and viewed it as a chronic disease that could be managed by medication. Participants described being left with physical symptoms, such as chest tightness. This illness representation mainly consisted of beliefs about control versus cure. Patients believed that the symptoms and illness could recur at any time, and described symptoms arriving without warning. Female participants (F8, F9 and F16) reported having little confidence in their ability to control their illness, even though they were compliant with medication. This added to the perceived seriousness of heart disease:

> 'You know, the heart disease is such a serious condition. It [chest tightness] comes as it comes, even when I was sleeping. I can't affect it; I can't do anything about it.'

> (F8)

The perceived seriousness of heart disease and the degree of worry, anxiety or fear about illness appeared

to be interrelated. Participants feared that a heart attack (MI) could strike again, causing sudden death, and they felt that the illness was very serious and uncontrollable. Female participants described experiencing fear or worry about the symptoms and avoiding anything that might provoke them (e.g. physical activity) in order to reduce further risk. Participant M2 described how he was frightened of the image of sudden death and the seriousness of his heart disease:

> 'Of course, I always thought about [how] I'll have sudden death one day and my life definitely will be shortened. You know, the heart disease is so terrible situation ... I take medicine, change diet, to be not in overnight, but re-stenosis [of a coronary vessel] will happen again. How can I control it? I am really frightened about it, so scared.'

> (M2)

Protecting the heart: strategies for coping with CHD

This section describes how the actions that participants took, or believed they should take, appeared to be related to their illness perceptions. Taking medication and regular follow-up were the commonest coping mechanisms, and both of these are appropriate coping strategies. However, misconceived coping by avoidance was described by all but one of the participants. Less than 50% of these reported adaptive coping methods, such as taking regular exercise or eating healthily. The commonest manifestation of 'avoidance coping' was a cautious approach – for example, avoiding any stress and taking early retirement:

> 'I tell you that my own philosophy is 'You can lie down, I do not have to sit; can sit, I do not have to stand; can walk, I do not have to run; the whole body certainly can rest.' As far as relax, continuous relax, the body certainly all can rest. The bodily rest is the advantage. This certainly could protect my heart.'

> (M1)

Avoidance responses were mostly reported by participants who attributed their heart disease to external factors, such as stress or heredity, or who blamed others for their condition, rather than attributing it to their personal lifestyle. In addition, if the heart disease was believed to be less controllable and to have serious consequences, avoidance was the first choice of response. Three female participants adopted avoidance mechanisms to cope with their illness, as they perceived heart disease as having serious consequences, and they were no longer confident that they could control it. Their coping methods involved complete rest and physical inactivity. They regarded exercise as harmful:

> 'The heart disease is a really very serious condition; you tell me how I can control it? This is impossible! Only one

thing what I can do is stay at home all day, I try to rest as much as possible.'

(F8)

'I don't do anything, I just stay at home all day and watch TV ... I don't dare to do any exercise that causes my heart beat to go up; I just want to have a 'smooth' life.'

(F16)

Suppressing the emotions, including avoiding any situation which could cause upset, excitement, or potential conflict with another person, was a strategy used by participants. They believed that any kind of emotional response would trigger chest pain, chest tightness or a further heart attack, as well as damaging their heart. In particular, they suggested that avoiding going out is the best way to avoid experiencing any anger or excitement. This meant that they often gave up enjoyable activities:

'I seldom attend any social activities with friends, like karaoke, [as] this is too exciting. You always have exciting things if you stay with friends, all things would not be good for me.'

(M12)

In addition, reducing one's workload was cited as the best way to prevent further heart problems or a heart attack. Among male participants there was a perception that work increased both physical and emotional risk, and they had reduced their workload in order to protect themselves against heart problems or a heart attack. For example, one male participant had decided to retire at the age of 57 years:

'I immediately retired after I had a myocardial infarction [at the age of 57 years], my physical condition didn't allow me to go out, I didn't have any energy. ... Anyway, I didn't have any energy to allow me to work at all. If I continue to work and have another heart attack, who'll look after me? I retired!'

(M15)

Feeling better: changing behaviours and trying out treatments

The participants reported that they would like to maintain their present status and to live as normally as possible, that is, to have regular clinical follow-up, take their medication and have an easy life. Appraisal of the illness representation pathway (identity, timeline, causal, controllability and consequences) was assessed by measurable outcomes (self-symptoms):

'I didn't have chest pain and tightness and didn't use NTG [nitroglycerin spray for chest pain relief] at all. I felt quite normal.'

(F6)

Appraisal of the emotional pathway involved avoiding emotional excitement and remaining in a peaceful mood in order to prevent further heart disease. Some participants expressed a sense of resignation:

'Whether I eat [high fat/cholesterol], I will eventually die, so why not just eat whatever I like and be better than to die of hunger.'

(M1)

'Now I'm old and have this disease, I'm not afraid of dying, it will be come.'

(M6)

It is important to note that the participants often used the existence of symptoms to define their health, which led to them adopting inappropriate coping behaviours, such as short-term lifestyle changes and inappropriate self-treatment. They reported changing their diet, but regarded this as only necessary until they felt better, had no symptoms or believed that they had recovered:

'I like to eat salty food. I like pickle and fatty meat. From the beginning of my illness, I didn't dare to touch it at all. I felt all right after 6 months. I asked my friends who have the same heart disease as me, they also started eating what they ate before, and nothing happed. I felt OK, nothing [symptoms] happened to me so I ate what I like. I feel OK now.'

(M6)

Some participants adopted other behaviours that could make them feel better or healthier, rather than obtaining any accurate information about or treatment for their condition. This behaviour ranged from taking vast quantities of vitamin supplements, Chinese herbs, or other Western pills that had been recommended to them by friends, to drinking green tea instead of taking medication:

'I don't have high blood pressure, but [the] doctor prescribed medicine for me. I take 'Q-10' one tablet per day. Oh, I bought it from America, it is for heart and vessel.'

(M1)

Discussion

The above findings appear to support the view that cardiac patients' beliefs and coping mechanisms are interrelated in the manner predicted by the SRM (Leventhal and Cameron, 1987; Leventhal *et al*, 1992, 2003), and we found evidence of misconceptions that appeared to lead directly to specific maladaptive coping behaviours. It can be seen that people with heart disease have their own illness beliefs about how they should modify their behaviour to cope with illness. Some of these beliefs are misconceptions which may

develop from their cultural milieu. Combined with erroneous beliefs about causal attributions and perceived serious consequences and lack of control over heart disease, avoidance was the commonest coping strategy. The results of such actions are then appraised and incorporated into the illness beliefs, which also contain misconceptions. For example, patients who did not experience symptoms adopted another form of maladaptive coping behaviour, namely stopping compliance with medication or lifestyle advice.

An important finding was that a poor understanding of the symptoms of a heart attack or heart disease may lead to a delay in seeking appropriate help. Very similar findings have been reported in Western studies (Dracup *et al*, 2003; McKinley *et al*, 2004). Patients' beliefs may be created and reinforced by the media and healthcare staff. Public health education campaigns in Taiwan may not be adequately preparing people to identify symptoms.

As in Western countries, although the most commonly held belief about the cause of CHD, namely that it is due to an unhealthy lifestyle, was accurate, the study participants also blamed stress. Although it has been reported that acute life event stressors could trigger CHD events in patients with underlying disease, there is no strong or consistent evidence of a causal association between chronic life stress and CHD (Brunner, 2002; Bunker *et al*, 2003). This may be a particularly unhelpful belief, as patients who attributed their heart disease to stress were also less likely to address their behavioural risk factors – for example, by blood pressure control, smoking cessation, and dietary changes. Other studies have reported similar findings (Petrie and Weinman, 1997; Weinman *et al*, 2000). In addition, stress is commonly perceived as making heart disease impossible to control by oneself, and a perceived lack of control means that patients are less likely to engage in dietary changes or exercise programmes (French *et al*, 2001). This study suggests that stress management (Scottish Intercollegiate Guidelines Network, 2007) and relaxation programmes (Lewin *et al*, 2002a,b) may be usefully introduced to patients during the recovery process (in cardiac rehabilitation programmes) in Taiwan, to promote the perception that this risk factor can be controlled, leading to a less fatalistic attitude to other behaviour changes.

Age played a significant part in shaping people's beliefs. Older participants cited age as a cause of their CHD. Gump *et al* (2001) also found that older participants (awaiting coronary artery bypass graft surgery) were more likely to believe that old age was the cause of their CHD, and less likely to think that lifestyle factors were the cause. Older participants expressed more fatalism, described a sense of resignation, and regarded being old as a major factor. Female patients blamed others for their illness, and this finding has been reported previously in other studies (Low *et al*, 1993; Martin *et al*, 2005). Attributing blame to others can also lead to a perceived lack of control, reduce positive coping strategies and lead to poorer psychological adjustment (Roesch and Weiner, 2001; Hagger and Orbell, 2003; MacInnes, 2005). These participants felt that there was nothing they could have done to prevent their CHD.

In common with other studies, the majority of the participants demonstrated a lack of knowledge about the physiology of heart disease, or had unhelpful misconceptions about the disease processes. When patients do not understand the anatomy of heart disease and the underlying disease process of CHD, they may believe that the heart is permanently damaged and therefore become inactive, leading to an increased risk of further illness (Thompson *et al*, 1976; Maeland and Havik, 1987; Broadbent *et al*, 2004). This study suggests that following a diagnosis of heart disease, patients should be educated about the basic disease processes of the heart to ensure that they do not develop these misconceptions.

The participants described adopting a cautious lifestyle, taking it easy, avoiding overexertion, and avoiding emotion in order to prevent angina or another MI. At the extreme, such avoidance leads to cardiac invalidism, in which patients are passive, dependent and overprotected by their family (Petrie and Weinman, 1997). Erroneous beliefs also appeared to lead some participants to take early retirement or to give up work in order to prevent further heart problems or pain. This was particularly likely to happen if they believed that job stress, or too high a workload, was one of the causes of their heart disease. A related maladaptive coping strategy is to reduce social activities in order to avoid experiencing excitement or other strong emotions. Isolating oneself from social networks could influence mood, quality of life and mortality, as social support has been shown to be a factor associated with cardiac patients' health outcomes (Stewart *et al*, 2000; Stansfeld and Fuhrer, 2002).

The participants in our study tried to reduce their medication, only believed in short-term compliance with medication, or combined Western medication with Chinese herbal medicine (which is perceived as being derived from natural sources). One participant also emphasised that drinking green tea could dilute or eliminate toxins from body the body and thereby reduce their harmful effects on the kidney and liver. This erroneous belief about toxin elimination may have the opposite effect – for example, causing retention of body fluid and so increasing the workload of the heart. These findings are consistent with the results reported by Lai *et al* (2005), who investigated Taiwanese diabetic patients' perceptions about their illness and treatment strategies through qualitative interviews. The patients believed that they could reduce their medication if they did not experience any cardiac symptoms, not realising

that it is only long-term compliance that reduces the risk of cardiovascular complications. This is consistent with the findings of previous studies which found that patients with hypertension and diabetes regarded symptoms as the criteria for taking medicine (Baumann and Leventhal, 1985; Hampson, 1997; Lai *et al*, 2005). These misconceptions may impact on health outcomes, including further complications of heart disease and premature death.

Study limitations

A total of 16 patients were interviewed, representing a diverse group of patients with CHD. It is not possible to sample all possible permutations of age, gender, social class, medical condition and treatment in qualitative studies. This may limit generalisation of the findings. However, strategies have been deployed to enhance transferability. For example, details of the participants are made transparent so that readers are able to assess the relevance of the findings to their own situation or clinical workload. In addition, the findings, although not generalisable, offer important insights which have implications for healthcare professionals who care for Taiwanese patients with CHD.

When comparing the results of this study with those from studies in Western cultures, it is important to highlight culturally determined differences in emotional expression. Verbal expressions of emotional distress are not sanctioned in Chinese cultures (Parker *et al*, 2001). In Chinese culture, people in general, and particularly those who are ill, exhibit minimal and often indirect expression of emotions such as depression, anxiety or fear, perhaps due to suppression or denial (Chiou *et al*, 1997), or to the stigma attached to mental problems, or because of shame or fear of loss of face (Parker *et al*, 2001). Therefore the emotional reactions to illness may not be entirely comparable. For example, when the researcher in this study asked participants directly about their emotional responses to their heart disease, many reported having 'no emotions' or 'nothing', or shook their heads or smiled. This is not comparable to most Western patients, many of whom will admit to being anxious. The relationship between illness beliefs and overall emotional adjustment in Taiwanese people may benefit from further investigation.

Finally, although we have shown that specific beliefs are associated with particular coping actions, it is possible that negative perceptions and adopted maladaptive coping behaviours may simply be used to justify to the patient, or to others, why they are not taking a more active role in the self-management of their illness. In other words, they may be used to account for the patient's behaviour in a post hoc manner rather than,

as the model of Leventhal and Cameron (1987) asserts, being a direct cause of that behaviour.

Conclusions

This study drew on the model of Leventhal and Cameron (1987) to explore, for the first time, the types of beliefs that are held by Taiwanese patients about their heart condition and how those beliefs are related to coping behaviours and mood. The findings are similar to those reported in studies of Western patients, which suggests that some cardiac misconceptions are commonly held by patients across countries and cultures, but there was also evidence of some culturally specific beliefs about health and illness. In particular, Chinese patients may have erroneous beliefs about the mode of action and appropriate use of Western medications. Therefore in the development of practice guidelines there is a need to recognise and understand cultural beliefs.

Cultural representations of illness influence compliance with treatment and lifestyle advice from healthcare professionals, and should be taken into account when developing care plans and interventions. Healthcare professionals may require additional training to improve their knowledge of common misconceptions and cultural variations in beliefs. This might include training in how to respond to beliefs and misconceptions in an appropriate way – that is, by valuing patients as individuals with their own set of beliefs that are embedded in those commonly held within their ethnic group (Darr *et al*, 2008).

The SRM of illness behaviour (Leventhal and Cameron, 1987; Leventhal *et al*, 1992, 2003) provided a useful framework for eliciting misconceptions about heart disease, although the separation of cognitions from emotion was not attempted. Furthermore, the first stage of illness representations has been applied to a variety of illness conditions, but few previous studies have examined how these result in changing perceptions of illness and the coping strategies that are adopted by patients. Further research is needed to explore the delineation of these components and to confirm the validity of the findings described in this study.

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CONFLICTS OF INTEREST

None.

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