PSYCHOLOGICAL ASPECTS OF RECOVERY FROM CORONARY HEART DISEASE AMONG PATIENTS IN MALAYSIA

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ABSTRACT

The aim of this research was to identify psychological factors associated with outcomes of coronary heart disease (CHD) among patients in Malaysia. The research tested whether a model of psychological factors found to predict recovery from CHD in the West would be applicable in a collectivistic society such as Malaysia. Among the research questions posed were whether self-referent beliefs, coping styles and locus of control constructs would predict affective status for patients at the time of hospitalisation, and whether these psychological constructs would predict patients' affective status, functional status and quality of life up to nine months post-hospitalisation. The research also looked at whether behavioural intentions assessed at the time of hospitalisation predict attendance at cardiac rehabilitation programmes (CRP) and the use of complementary medicine after hospital discharge.

A series of studies were conducted to answer the research questions formulated based on the model developed for each study. Study 1 assessed the reliability and validity of measures developed in the West when used on a healthy Malaysian sample (N = 97). Study 2 examined the concurrent relationships among psychological variables assessed at the time of hospitalisation for 97 cardiac patients. Study 3 examined the longitudinal relationships among variables assessed in patients at the hospital and outcome variables assessed up to six months post-hospitalisation (n = 26). Study 4 (N = 77) determined the concurrent relationships among psychological variables assessed in post-hospitalisation patients, and compared the psychological characteristics between post-hospitalisation patients and the in-hospital patients in Study 2. A notable feature of the findings obtained from Studies 2, 3 and 4 was that whilst some psychological variables were predictive of outcome variables, others failed to support findings obtained in the West. Self-referent beliefs, for example, significantly predicted intention to attend CRP but did not significantly predict actual attendance. In addition, negative affect was relatively low for patients at in- and post-hospital assessments. Accordingly, Study 5 (N = 300) was conducted to explore possible origins of the lack of consistent findings of the studies on Malaysian cardiac samples. It assessed perceptions of illness constructs.
in healthy individuals. The findings of this study revealed that perceptions of illness constructs were predictive of healthful behaviors. The findings also revealed the importance of looking at specific cultural factors such as spiritual beliefs in explaining treatment-seeking behaviours in non-Western societies such as Malaysia.

In conclusion, the findings of this research project highlighted the importance of studying health and illness-related behaviors within the socio-cultural contexts in which the illness occurs. Although models developed in the West may be applicable in these non-Western, collectivistic societies, the constructs assessed may not be sufficient in accounting for the variance in explaining psychological and behavioral outcomes of illness. Thus, in addition to the constructs found to be predictive of these outcomes on Western patients, psychological studies done in Malaysia should also assess mental representations of illness that are specific to Malaysians.
IN THE NAME OF ALLAH, THE BENEFICENT, THE MERCIFUL

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Dedication

This thesis is specially dedicated to my parents, Abdul Majid and Bibi Sahariah whose respect of and commitment to education is an inspiration to me.
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AIMS AND OVERVIEW OF STUDIES

The aim of this research was to study psychological factors in the recovery from coronary heart disease (CHD) among Malaysians using a combination of cross-sectional and longitudinal studies. The main model (see Figure 5.1) addresses the longitudinal relationships between psychological constructs and psychological outcomes. It also assesses the relationships between intentions and actual behaviors. Two other models were derived from the main model assessing concurrent relationships among variables assessed in the hospital (see Figure 4.1) and concurrent relationships among variables nine months after discharge from hospital (see Figure 6.1). Research questions specific to each study were formulated based on each model developed.

Chapter 1 presents an overview of the types, aetiology and management of CHD. Epidemiological data from Western and non-Western countries are also presented. The chapter concludes with a brief overview of Malaysia and its dualistic medical systems.

Chapter 2 reviews the literature on psychological factors that have been found to predict recovery from CHD among patients in the West. The focus of this review is on three domains of illness outcomes: emotional well-being, functional status and quality of life. The review begins with self-referent constructs (e.g. self-efficacy) followed by intentions and affective status (e.g. anxiety, depression and pessimism) before presenting work on interpersonal constructs (e.g. coping and locus of control). The section on coping incorporates literature on seeking social support and turning to religion. This chapter also covers psychosocial aspects of cardiac rehabilitation, critically discussing the findings of studies conducted to date. Lastly, a model hypothesising the relationships between these psychological variables and cardiac outcomes within the Malaysian context is presented and discussed.

Chapter 3 reports the findings of Study 1. Study 1 (N = 97) was conducted to establish the reliability and validity of measures developed in the West on Malaysians. Based on the
literature review, several measures of known reliability and validity for both normal and patient populations in the West were selected as potential psychological measures for this research. Among the measures selected were the General Self-Efficacy scale (Sherer, Maddux, Mercandante, Prentice-Dunn et al., 1982), the Global Self-Esteem scale (Rosenberg, 1965), the Hospital Anxiety and Depression scale (HAD; Zigmond and Snaith, 1983), the Multidimensional Health Locus of Control scale (MHLC; Wallstone, Wallstone and DeVellis, 1978), the Helplessness scale (Beck, Weissman, Lester and Trexler, 1974), the Recovery Locus of Control scale (RLC; Partridge and Johnstone, 1989) and the COPE (Carver, Scheier and Weintraub, 1989). Two bilingual Malaysian linguists back translated all the measures used in this research. Measures were modified to ensure sensitivity and applicability to Malaysian and patient samples. In general, the findings of the study provided support for the reliability and validity of the selected measures when applied in Malaysia. Most psychological constructs had Cronbach alpha coefficients of .60 or more, and were related in the expected directions.

Chapter 4 reports the findings of Study 2. Study 2 (N = 97) assessed the concurrent relationships among variables assessed in the hospital. The cross-sectional model developed for this study suggested that self-referent beliefs were direct predictors of intentions to attend CRP and to seek complementary treatment. Coping styles, loci of control and pessimistic views were thought to mediate the relationship between self-referent beliefs and emotional outcomes. The findings of this study partially supported the relationships hypothesised in the cross-sectional model developed for Study 2 (Figure 4.1).

Chapter 5 reports the findings of Study 3 which assessed the longitudinal relationships between psychological constructs assessed at the hospital and psychological and behavioral outcomes six months following discharge from hospital. Of the 97 patients who participated in Study 2, 67 were included in this longitudinal study. Patients were recruited from the third hospital, two of whom were interviewed at Wave 1 while the remaining 65 were interviewed at Wave 2 (see Chapter 4 for details). Among the reasons for only including patients recruited from the third hospital were convenience and
accessibility. For example, patients' addresses were made available by the ward sister, enabling Time 2 questionnaires to be posted to the respective patients. Twenty-six patients responded to the follow-up questionnaires.

The model developed for this study (Figure 5.1) suggested self-referent beliefs to be stronger determinants of attendance at CRP than sociodemographic characteristics. Coping styles and loci of control were thought to mediate the relationship between self-referent beliefs and psychological outcomes such as emotional well-being, quality of life and impact of illness on functioning. The findings provided some support for the relationships between predictor variables and psychological outcomes hypothesised in the model developed for Study 3.

Chapter 6 reports the findings of Study 4. Study 4 (N = 77) assessed concurrent relationships among psychological and behavioral variables nine months post hospitalisation. The model derived for this study (Figure 6.1) suggested that behavioral variables mediate the relationship between sociodemographic characteristics and psychological outcomes. The study also attempted to compare the psychological characteristics of two cohorts of patients: in-patients studied when hospitalised for their cardiac illness and out-patients studied up to nine months after hospitalisation. Additionally, the study compared the psychological outcomes between patients who attended the CRP and those who did not, and between patients who used alternative treatment and those who did not. The findings revealed a somewhat different pattern of relationships among variables for post-hospital patients from in-hospital patients in Study 2.

Chapter 7 reports the findings of Study 5. Study 5 (N = 300) was conducted due to the lack of consistent findings of the studies on Malaysian cardiac samples. The aim of this study was identify Malaysians' representations of illness, particularly of CHD (i.e. causes, severity, consequences, treatment effectiveness). Knowledge of Malaysians' representations of illness would provide helpful hints of other possible factors that may need to be included in the assessment of psychological recovery of and outcomes from
CHD among future Malaysian cardiac patients. The findings of this study provide support for the need to take into account patients' perceptions of causes, severity, duration and treatability of illness in predicting psychological adjustment following the illness in question. The findings also revealed the importance of looking at specific cultural factors in explaining treatment-seeking behaviours in non-Western societies such as Malaysia.

Chapter 8 draws together the implications across the series of studies conducted for this research. The findings from this research project are discussed in terms of 1) the psychometric issues of using constructs developed in the West to assess psychological constructs in Malaysia, 2) the similarities and differences in the psychological model of recovery derived in the West and as applied to Malaysians, 3) the differences between results obtained in cross-sectional studies versus the longitudinal study, 4) the implications for developing cardiac rehabilitation in Malaysia and finally, 5) the overall limitations and strengths of this research.
CHAPTER 1

CORONARY HEART DISEASE: AN OVERVIEW

Aim

Chapter 1 will present an overview of coronary heart disease (CHD). It will first provide the definition of CHD, followed by its diagnostic tools, types of CHD and their respective etiologic factors. The chapter will then present an overview of its epidemiology. It will then provide current forms of management, which include medical treatments as well as psychological interventions. Lastly, it will provide a brief background on alternative treatment or therapies, an important feature of medically pluralistic societies such as Malaysia. Knowledge of the factors associated with the use of complementary treatment is deemed useful for understanding the management of illness, particularly CHD, among Malaysian cardiac patients.

1.0 Definition

Coronary heart disease (CHD) or coronary artery disease (CAD), as it is often referred to in medical settings, is a disease of the arteries that supply blood to the heart muscle. It occurs when there is damage to or malfunction of the heart caused by narrowing or blockage of the coronary arteries. CHD encompasses a range of conditions with differing severity, ranging from angina to myocardial infarction (MI) and sudden cardiac death, accounting for 25% of total deaths in industrialised countries (Marmot, 1995).

1.1 Diagnosis

Diagnosis of CHD has improved in the past two decades; in 1975, as high as one fourth of cases of CHD, particularly MI, went undetected and untreated (Marmot, 1995). However, this is no longer the case as modern technology has developed improved and more sophisticated tools of diagnosis aimed at establishing the severity and extent of disease in patients with suspected CHD. Different methods are used to diagnose CHD;
among which include the electrocardiogram (ECG), exercise test, angiography and catheterisation. Some of these diagnostic tools are specific to certain types of CHD. The following is a brief introductory description of each of these diagnostic tools (see Timmins, Nathans and Sullivan 1997 for more detailed discussion of specific diagnostic assessments).

The ECG is an essential investigation in the assessment of the cardiac patient. It is a representation of the electrical changes that occur within the heart during the cardiac cycle. The resting ECG is frequently normal, characterised by the initiation of atrial depolarisation (P wave), followed by ventricular depolarisation (QRS complex) and ventricular repolarisation (T wave). In analysing the ECG, the rate, rhythm and frontal plane QRS is first noted. The ST segment is used for diagnosis of CHD; the presence of pathological Q waves within the ST segment suggests infarction (see Appendix 1 for an illustration of a resting ECG; c.f. Timmins et al., 1997; p. 32).

A widely used non-evasive investigation is the exercise ECG test. It is used in several contexts and diagnostic information is interpreted in the light of the clinical setting. The test begins with light exercise, gradually made more difficult. The test stops when patients become tired, experience a shortness of breath, if the ECG changes, when the chest pain worsens or when the heart rate reaches a set target. If the ECG changes simultaneously with the chest pain at a low level of exercise, then the heart disease is considered serious. In middle aged or elderly patients, a typical history of angina is almost certainly due to coronary disease and in these patients, the exercise test serves to give an idea of the extent of the disease. Young patients with an atypical history are less likely to have significant CHD and a positive exercise test in these patients may not represent underlying ischaemia – a condition when there is an insufficient blood supply to the heart. Between these two extremes, lie patients with a moderate probability of significant CHD. In these patients, the exercise test is a valuable method of acquiring evidence to confirm or refute the diagnosis and plan management (Timmins et al., 1997).

In cases where the ST segment changes at a low workload (see Appendix 1), or if there is a fall in blood pressure with exercise test, severe disease is indicated and angiography
is then considered. Angiography is a diagnostic procedure that entails the injection of a radiopaque substance into the arteries, followed by X-ray. Individuals who are recommended for an angiography are young patients who have had a MI or who have a typical history of angina, those with recurrent angina following MI, angina that cannot be controlled medically and patients with unstable angina.

Another tool of diagnosis is catheterisation. The diagnosis process involves the insertion of tubes (catheter) into the chambers and vessels of the heart. It is carried out to measure the blood pressure in the heart as well as to look at the coronary arteries to check where the blockages are within them. During the procedure, the blood pressure is taken at the tip of the catheter tube and an ECG is monitored continuously.

1.2 Types

The symptoms of CHD result from a reduction in the blood flow to the heart muscle. The coronary arteries are first narrowed and may eventually be blocked by plaques of atheroma (cholesterol-rich fatty deposits) which can cause atherosclerosis (a disease of the arterial wall in which the inner layer thickens, causing narrowing of the channel, impairing blood flow). Further narrowing or blockage may be caused by thrombi (blood clots) formed on the roughened surface of the plaques. Each type of CHD manifest certain shared symptoms such as palpitations and shortness of breath; however, each form of CHD manifests its own specific symptoms. The following sections describe in further details the symptoms of each type of CHD: angina (stable and unstable) and MI (for more detailed information, see Drake, Broadhurst and Dymond, 1997; Timmins et. al., 1997).

1.2.1 Angina

Angina is the clinical manifestation of myocardial ischaemia and is the term used to describe the pain or discomfort that occurs when the oxygen demand of the heart exceeds its supply. It is caused by partial blockage of the coronary arteries with fatty and fibrous deposits in the artery wall (or the plaque), causing the lining of the arteries to harden. Ischaemic pain results when there is insufficient blood flow and nutrients to muscle tissue due to the enlarged plaque. In most patients, angina is due to obstruction
of coronary arteries as a consequence of atherosclerosis; it may also occur in patients with normal coronary arteries.

Angina is often described as chest 'pain' or 'pressure' and may be associated with a sensation of fullness; many patients dismiss their symptoms as being due to 'indigestion'. Classically, the pain is experienced retro-sternally but may also radiate to the arms, back, neck or jaw and may at times be felt in one of these sites only. Generally, the pain is precipitated by physical, emotional or mental stress and dies away when the original trigger is removed.

Exercise is the most frequent triggering factor of angina which increases oxygen consumption. Other important precipitants include emotional excitement and eating which increase sympathetic stimulation of the heart. Another common precipitant is cold weather which may cause coronary vasoconstriction, reducing blood flow.

Whilst patients who experience the symptoms of angina after a predictable and reproducible level of activity are described as having chronic stable angina or angina of effort, patients who experience angina at rest or who have rapidly worsening angina are said to have unstable angina (UA). UA may occur without provocation and can present with symptoms as severe as those of MI, but does not result in permanent damage to the myocardium. There is, however, an increased risk of acute events. Nevertheless, this is a serious condition, for it may be the preface to death (or infarction) of myocardial tissue – occasionally referred to as 'pre-infarction' or 'crescendo angina'. The symptoms of unstable angina are similar to those of angina of effort but, typically, the pain is more severe, lasts longer and is less well relieved by sublingual nitrates.

The diagnosis of UA is based chiefly on the history and typical electrocardiogram (ECG) findings; the presence of minor, usually reversible, changes in the ECG that indicate underlying ischaemic. These include lowering of the ST segments and T wave inversion in the leads that examine the area of ischaemic myocardium. The absence of ECG changes does not exclude the diagnosis of unstable angina, however. Chest pain initially thought to be UA may, in fact, originate from evolving MI. Serial cardiac
enzyme levels provide the best evidence for myocardial infarction and should always be assessed in patients with unstable angina.

1.2.2 Myocardial Infarction (MI)

Myocardial infarction (MI) or a heart attack results when the blood flow is completely cut off following the formation of a blood clot (coronary thrombosis or occlusion) on the plaque's surface or when the plaque ruptures. It refers to the death of heart muscle, usually as a result of prolonged ischaemia. The resultant pain is continuous and generally more severe than that of angina effort.

The characteristic feature of MI is sudden pain. Typical symptoms of MI include uncomfortable pressure, squeezing or pain in the center of the chest that lasts for more than a few minutes, or goes away and comes back. The pain also spreads to the shoulders, neck and arms; it also includes chest discomfort as well as the feeling of lightheadedness, fainting, sweating, nausea, or shortness of breath. This is similar to the pain of angina but is characteristically more severe, lasts longer and is not relieved by rest or medication (i.e. sublingual nitrates). However, a significant minority of patients with MI does not experience pain and in such cases, the diagnosis is more difficult. The elderly, particularly, may have 'silent' infarcts. These patients tend to present with one or more of the complications of MI, such as heart failure (reduced pumping efficiency of the heart). In the elderly the only presenting feature may be confusion. Most people who die of MI do so within the first few hours due to a type of arrhythmia called ventricular fibrillation.

The history is of extreme importance in the diagnosis of MI and usually provides sufficient information on which to base early management decisions. There are two other means of investigation that are used for diagnosis of MI: ECG changes and serum enzyme levels. In most cases of MI, a characteristic set of progressive ECG changes is produced which are the result of the abnormal electrical properties of dead/dying and ischaemic tissue.

The next tool of diagnosis of MI is serum enzyme levels, characterised by a rise in blood levels of the cellular enzymes released by dying myocardium. The three most
commonly measured enzymes are creatinine kinase (CK), aspartate aminotransferase (AST) and lactate dehydrogenase (LDH). The levels of these enzymes rise and fall at different and characteristic rates after infarction. CK levels rise to exceed the normal range less than six hours after the onset of infarction, reach a peak within 24 hours and return to normal by 48 hours. It is the enzyme of most diagnostic use in the early stages of MI but is of less value with increasing time after the onset of chest pain. However, raised enzyme levels are compatible with but not diagnostic of MI. False positives (raised CK but no infarction) may be caused by injury to non-cardiac muscle which occurs following falls or intramuscular injections (see Timmins et. al., 1997 for more information).

1.2.3 Heart Failure
Heart failure occurs in MI because damage to a portion of myocardium reduces the amount of muscle available for contraction. There are two types of infarction associated with heart failure: anterior infarct and inferior infarct. In the former, the anterior wall of the left ventricle bears most of the damage, potentially leading to pulmonary oedema. In inferior infarct cases, the inferior wall of the left ventricle is damaged (see Timmins et. al., 1997 for more information).

1.3 Aetiology

There are several established causes or risk factors for CHD, which vary from individual to individual. These risk factors are categorised into three: medical, lifestyle and psychosocial. Some of these risk factors are modifiable and others are not. Epidemiologists have considered three of these as major: high blood cholesterol and other fats (hyperlipidaemia), high blood pressure and smoking. The extent to which each risk factor contributes to the onset of CHD varies; the more risk factors involved, the higher is the risk. Table 1.1 summarises the risk factors associated with CHD.
Table 1.1 Risk factors for CHD

<table>
<thead>
<tr>
<th>Reversible Risk Factors</th>
<th>Irreversible Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>High blood cholesterol</td>
<td>Age</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>Being male</td>
</tr>
<tr>
<td>Smoking</td>
<td>Being post-menopausal</td>
</tr>
<tr>
<td>Obesity</td>
<td>Family history</td>
</tr>
<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>Physical inactivity</td>
<td></td>
</tr>
<tr>
<td>Stress/Hostility</td>
<td></td>
</tr>
</tbody>
</table>

1.3.1 Hyperlipidaemia

There is substantial evidence in recent years that raised blood cholesterol is a prerequisite for CHD, the higher the total cholesterol, the higher is the risk of CHD. The target value of total blood cholesterol is ≤ 5.2 mmol/l. At the upper end of the spectrum, above 7.8 mmol/l, risk of CHD increases rapidly. In Britain, the average total blood cholesterol is 5.8 mmol/l; however, nearly 30% of the population have blood cholesterol of 6.5 mmol/l or more. In Malaysia, the average cholesterol level is moderate; it is slightly higher for women than men: 5.3 mmol/l and 5.0 mmol/l, respectively (Khor, 1997).

Some individuals have genetic defects that affect blood cholesterol; familial hypercholesterolaemia (FH) and familial combined hyperlipidaemia (FCH). In the West, 0.2 percent of the population carries FH genes defects and up to 1 percent carries FCH gene defects. Individuals who inherit high cholesterol are at a more serious risk of getting CHD earlier than the rest. Less than 10% of people with FH or FCH have been identified, diagnosed and treated (Drake et al., 1997).

Cholesterol and fats in the blood; among which include low density lipoprotein (LDL), high density lipoprotein (HDL) and triglyceride (TG). The first, LDL carries cholesterol from the liver, around the body to the tissues. LDL is detrimental to the heart; the risk of CHD is increased as LDL increases. On the other hand, HDL, which carries surplus cholesterol not used by the tissues back to the liver for disposal is protective. It is thus, useful to have a low LDL (less than 3.4 mmol/l) and a high HDL (more than 1 mmol/l).
Table 1.2 shows the reduction in risk of having a CHD by a 10% reduction in total blood cholesterol at different ages.

Table 1.2 Risk reduction in total blood cholesterol by age 1

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Reduction in risk of CHD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>70</td>
<td>20</td>
</tr>
</tbody>
</table>

1 British Heart Foundation (BHF), 1994

Triglyceride (TG) is another form of fat that can lead to atherosclerosis, especially when associated with high LDL or low HDL. This form of fat is found on meats, dairy products, vegetable oils and the like. TG, when circulating freely in the blood, would come together and clog the smaller blood vessels, leading to a potential heart attack. TG is at its highest after a fatty meal and can make the blood plasma clot (thrombosis).

Finally, the most important dietary component leading to hypercholesterolaemia is saturated fat, which is converted into cholesterol after absorption. Monounsaturated fats, such as olive oil, and polyunsaturated fats, such as margarine, help lower cholesterol levels. Fish oils have also been found to have protective effects on the heart. There is evidence that the higher the ratio of saturated fat to polyunsaturated fat, the larger the correlation between CHD and consumption of saturated fat.

1.3.2 High blood pressure

Another major risk factor is high blood pressure. Risk of CHD relates separately to systolic blood pressure and diastolic blood pressure. The former refers to the surge in pressure of each heartbeat. The latter is the minimal blood pressure as the heart relaxes and refills between heartbeats. A typical blood pressure reading is 120/70; that is, systolic blood pressure of 120mm of mercury (Hg) and a diastolic blood pressure of 70mm. Blood pressure increases with age and is related to obesity, a sedentary lifestyle, a high fat diet and excessive alcohol intake.
1.3.3 Smoking and other lifestyle factors
Smoking is regarded as the second major risk factor after blood cholesterol. Smoking increases the likelihood of atherosclerosis as well as the clotting of blood or thrombosis. Although the precise effects of smoking on the precipitation of CHD are not entirely established, the relationship is significant; the more cigarettes smoked, the higher is the likelihood of developing CHD, especially so for those who smoked at an earlier age. Stopping smoking reduces the risk of CHD, although it remains higher than in individuals who never smoked.

Another modifiable lifestyle risk factor is physical inactivity; there is considerable body of evidence linking lack of physical activity to an increased risk of CHD. Until recently, however, this was regarded as a rather minor risk factor, operating indirectly through plasma lipid profiles and systemic blood pressure. It is now recognised that physical activity can reduce the likelihood of contracting heart disease. For instance, studies by Paffenberger et al. (c.f. Jones and West, 1995, p.6) showed that lifelong exercise protects against coronary events, independently of smoking, obesity, hypertension and family history among Harvard graduates. However, in a study of Finnish lumberjacks, CHD was relatively high, despite the amount of physical activities performed. The high CHD incidence was attributed to smoking and high cholesterol levels (c.f. Fardy, Yanowitz and Wilson, 1988).

1.3.4 Irreversible risk factors
The risk factors cited above which relate to diet and lifestyles are modifiable or reversible. There are several other risk factors associated with CHD that are not; namely age, male sex, family history. The risk of CHD rises progressively with increasing age. Furthermore, the risk is higher in young men than in women of the same age group, although with advancing years, the difference disappears. In general, there seems to be a 10-year delay in cardiac mortality in women compared with men, with one-third of men and one-fourth of women dying from the illness (Khaw, 1997; Wenger, Speroff and Packard, 1993). Finally, individuals with a genetic predisposition to hypertension, hypercholesterolaemia and diabetes are at higher risk of developing CHD. Some believe that familial history itself acts as an independent predictor of increased risk of CHD.
1.3.5 Psychological characteristics

There is an increasing body of evidence linking psychological characteristics as risk factors for CHD (see Steptoe, 1998; Steptoe, Doherty, Rink et al., 1999), although the causal relationships are not conclusive. Stress is one factor; it can precipitate and/or aggravate angina in patients and at times, can trigger a heart attack. For example, a study by Gullette and colleagues (c.f. Steptoe, 1998) illustrated that the risk of ischaemia, as monitored by ECG, was found to substantially increase during periods of self-reported stress in 132 patients with a history of CHD. Another psychological factor often linked with the onset of CHD is hostility (or anger); lower thresholds for anger was found to best predict CHD in a sample of hospitalised male cardiac patients (Atchison and Condon, 1993). Hostility has also been shown to predict reinfarction (Everson, Goldberg, Kaplan, Julkunen and Salonen, 1998). Negative affects, such as depression and anxiety have also been linked to the onset of CHD. A systematic review conducted by Kubzansky and colleagues (1997) showed that anxiety increased the risk of CHD by influencing health behaviours, promoting atherogenesis and triggering fatal coronary events (through arrhythmias, plaque ruptures or thrombosis). Anxiety also appeared to be associated with abnormal cardiac autonomic control (e.g. via increased risk of fatal ventricular arrhythmias). Finally, social support has been shown to predict CHD morbidity as well as mortality (Eriksen, 1994; Orth-Gomer, Rosengren and Wilhelmsen, 1993). Orth-Gomer and colleagues' (1993) study found that when controlling for other risk factors, lack of social support remained a significant risk factor for CHD among middle-aged Swedish men. Eriksen's (1994) review of prospective studies show a negative correlation between the level of social support and CHD morbidity and mortality, providing evidence of the protective effect of social support. Although not conclusive, these findings indicate the potential role of psychological characteristics as risk factors in the morbidity and mortality of CHD.

1.4 Epidemiology

CHD is the single most important cause of mortality in the industrialised countries; out of 10.9 million deaths in 1990, CHD accounted for 2.7 million or 25% of total deaths in these countries (Khor, 1997). The epidemic started in the 1940’s in the US and reached
its peak at the end of 1960’s in most industrialised countries (Kringlen, 1986; Marmot, 1995). According to current estimates from the American Heart Association (1996; c.f. Morbidity and Mortality Weekly, 1999), more than one in four Americans have some form of CHD for every year except in 1900. In general, nearly twice as many people die from CHD as from cancer, the second leading cause of death. Four times as many heart attacks occur to men compared to women under 65 and 40 times as many in men than women under age 45 (primarily because of the protective effect of women’s reproductive hormones). Overall, however, slightly more women than men die of all forms of heart disease.

In the UK, CHD was the underlying cause of nearly 170 000 deaths in 1992, accounting for 26% of all deaths. Approximately 240 000 people are admitted every year for MI in England alone. Moreover, there was a significant difference in the number of deaths related to CHD among males and females. In 1990, 448 men per 100 000 population, compared to 167 women died of CHD in England and Wales whilst 562 men and 241 women died in Scotland (BHF, 1994).

Large scale epidemiological studies (e.g. Framingham, International Atherosclerosis Project and the WHO MONICA project) have provided important information on the patterns of CHD morbidity and mortality world-wide. The WHO-sponsored MONICA project, studying 170 000 individuals in 37 countries over a 10-year period (from mid 1980’s to mid 1990’s), has reported that men living in North Karelia (Finland), Glasgow (UK), Kuopia (Finland) and Belfast (UK) have the highest morbidity rate. As for women, the highest morbidity was found among those living in Glasgow, Belfast, Newcastle (Australia) and Warsaw (Poland). Meanwhile, the lowest average CHD rates in men occurred in Beijing (China), Catalonia (Spain), Vaud-Fribourg (Switzerland) and Toulouse (France); the lowest rate for women were found in Catalonia, Beijing, Toulouse and Brianza (Italy). It was found that the rate of morbidity was eight times higher for women in Glasgow than in Catalonia (WHO, 1999).
Table 1.3 Incidence of MI per 100 000 of the population in 1990 in Western countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czechoslovakia</td>
<td>609</td>
<td>218</td>
<td>827</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>566</td>
<td>213</td>
<td>779</td>
</tr>
<tr>
<td>Scotland</td>
<td>562</td>
<td>241</td>
<td>803</td>
</tr>
<tr>
<td>Ireland</td>
<td>514</td>
<td>171</td>
<td>685</td>
</tr>
<tr>
<td>Finland</td>
<td>508</td>
<td>154</td>
<td>662</td>
</tr>
<tr>
<td>England and Wales</td>
<td>448</td>
<td>167</td>
<td>615</td>
</tr>
<tr>
<td>New Zealand</td>
<td>439</td>
<td>162</td>
<td>601</td>
</tr>
<tr>
<td>Denmark</td>
<td>418</td>
<td>152</td>
<td>570</td>
</tr>
<tr>
<td>USA</td>
<td>322</td>
<td>132</td>
<td>454</td>
</tr>
<tr>
<td>Germany</td>
<td>289</td>
<td>92</td>
<td>381</td>
</tr>
<tr>
<td>Greece</td>
<td>218</td>
<td>69</td>
<td>287</td>
</tr>
<tr>
<td>Switzerland</td>
<td>214</td>
<td>58</td>
<td>272</td>
</tr>
<tr>
<td>Portugal</td>
<td>176</td>
<td>65</td>
<td>241</td>
</tr>
<tr>
<td>Japan</td>
<td>57</td>
<td>23</td>
<td>80</td>
</tr>
</tbody>
</table>

CHD-mortality rates are also high in Asia-Pacific region with New Zealand and Australia leading the tables with mortality rates exceeding 100 per 100 000 population for all ages (e.g. New Zealand with a mortality rate of 228 for men and 173 for women). Other countries in the Asia-Pacific region that have similar proportions of mortality with those in the Western world are Singapore and Hong Kong; this is not surprising as they are affluent industrialised nations in the Asia-Pacific region, where standards of living are high. The cardiac mortality rates per 100 000 population of all ages for Singapore are 104 for men and 77 for women, with professional workers having a higher standardised mortality rates than do manual labourers (Khor, 1997).

However, the notion that CHD is a disease of industrialised nations (or affluence) is not entirely true, as the statistics obtained from the MONICA project showed. Japan is one clear example of a developed industrialised nation with relatively low morbidity and mortality rates. When compared on the basis of age-standardised to world standard population, the CHD mortality of Japan (at 28 per 100 000) is about one seventh that of
the UK, one sixth that of the New Zealand and one fifth that of Australia for both men and women (Khor, 1997).

Whilst CHD continues to be the leading cause of mortality in the US and the UK, as in the rest of the Western world, the number of deaths from heart disease has declined by as much as 60% since 1950. Using age-adjusted statistics, the US Centers for Disease Control and Prevention (CDC) reported that 621,000 fewer people died from CHD in 1996 than would have been expected to die had the peak rate from 1963 remained constant (c.f. Morbidity and Mortality Weekly Report, 1999). The same pattern of decline in rate of mortality is also observed in Australia and New Zealand, where between 1969 to 1978, Australia showed a decline of 24% for men aged 45-64 years of age and New Zealand by 22%. Further declines were shown between 1978 to 1985 for men of the same age group, with decreases of 25% and 20% for Australia and New Zealand, respectively (Khor, 1997). The same pattern of decline also holds true for other Western countries, especially in populations where the highest rate of incidence was found in the first place. For example, the MONICA project showed that the greatest decline in morbidity rates in men were in North Karelia and Kuopio (WHO, 1999).

However, the same pattern of decline in the morbidity and mortality cannot be said for many developing countries. It has been estimated that approximately two-thirds of the estimated 14.3 million annual deaths related to CHD occur in the developing world (c.f. Tatsanavivat et. al., 1998). According to the MONICA statistics, the most notable increase in CHD rates among both men and women are found in Eastern Europe and Asia. For instance, CHD has become an increasingly important mortality factor in China, more so in urban provinces. CHD mortality has increased from 86.2 per 100,000 in 1957 to 214.3 per 100,000 in 1990 (Khor, 1997). Similarly, mortality due to CHD has emerged as a major cause of death in many other Asian Pacific countries; namely Philippines, Indonesia and Malaysia.

In the last three decades, CHD has replaced infectious diseases as the leading mortality factor among Malaysians (Ministry of Health, 1996). In 1995, CHD was the second most common hospital death among people in the 45 to 65 years age group after hypertensive diseases. CHD mortality in Malaysia was 8.0 per 100,000 population for all ages in 1965 and this rate has been on the increase to 23.0 per 100,000 population in
1991. In 1985, 58,961 people were admitted for heart related diseases into government hospitals with 6205 number of deaths. A decade later, in 1994, hospital admissions increased more than 10%, to 89,824; 6688 of whom died in hospitals. In 1992, CVD accounted for 28.3% of all medically certified deaths in Malaysia; MI and angina accounted for approximately 37% of CVD-related deaths (Ministry of Health, 1996).

It was also reported that more males were diagnosed with either MI or angina than females with a ratio of 3:1 (Khor, 1997). In 1990, the number of males hospitalised in government hospitals was 15 178; in 1995, the number increased to 20 793. Meanwhile, the number of females diagnosed with CHD in 1995 was 9489, an increase of 30% from 1990. However, the rise of mortality has been more rapid for women, whose CHD mortality more than doubled between 1975 to 1990; from 6.1 per 100 000 population to 13.6, compared to about 30% increase for men during the same period (Khor, 1997). The rate is 1.5 to 1.8 times higher in Indians (10% of the population) than in Malays and Chinese. Table 1.4 illustrates a comparison in CHD mortality per 100 000 of the population for all ages in Malaysia and other Asia Pacific countries.

Table 1.4 CHD mortality rates for all ages, per 100 000 population in Asia Pacific countries

<table>
<thead>
<tr>
<th>Country (Year)</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Zealand (1991)</td>
<td>228</td>
<td>173</td>
</tr>
<tr>
<td>Australia (1992)</td>
<td>191</td>
<td>161</td>
</tr>
<tr>
<td>Singapore (1991)</td>
<td>104</td>
<td>77</td>
</tr>
<tr>
<td>Hong Kong (1991)</td>
<td>56</td>
<td>37</td>
</tr>
<tr>
<td>Japan (1992)</td>
<td>45</td>
<td>38</td>
</tr>
<tr>
<td>China (1990)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>49</td>
<td>46</td>
</tr>
<tr>
<td>Rural</td>
<td>24</td>
<td>21</td>
</tr>
<tr>
<td>Philippines (1991)</td>
<td>38</td>
<td>24</td>
</tr>
<tr>
<td>Malaysia (1990)</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>Thailand (1992)</td>
<td>24</td>
<td>2</td>
</tr>
</tbody>
</table>

3 Adapted from Khor, (1997).
Although the mortality figures related to CHD are grim, statistics show a less bleak picture of survival rate in the form hospital discharge from government hospitals in Malaysia. In 1995, the discharge rate with CHD as the underlying cause of admission among adults aged between 20 to 59 years in 1995 was approximately 57% per 100,000 population. Of the total discharge rate for CHD, approximately 70% of them were males (Ministry of Health, 1996). This figure implies that more than half of the people admitted for either an MI or angina actually survive the illness from which they were admitted; a significant proportion of them men.

As in the industrialised countries, where mortality rates are falling, change in survival contributed one third and change in CHD rates two thirds, on average, of the total change in survival rates, indicating the importance of the prevention of CHD. For example, according to CDC, a major factor contributing to the decline in the mortality of CHD in the US has been the decline in cigarette smoking. In 1965, 42% of people over 18 smoked regularly whereas in 1995, the rate had declined to 25%. Decreases in blood pressure and blood cholesterol levels have contributed to the reduction in CHD-related mortality (c.f. Morbidity and Mortality Weekly Report, 1999). Similar cases may be true for CHD in Malaysia. The increase in pattern of survival among Malaysian patients as well as those in other countries may be largely due to better management of the disease, both primary and secondary.

1.5 Management

Management following diagnosis of CHD is important; it has been reported that left untreated, 30% of angina patients and as many as 40% of MI patients will have died. The treatment management of CHD varies depending on the extent and severity of the disease; ranging from drug therapies to surgical procedures. Psychological intervention programmes have also been introduced in recent years to assist patients' recovery process. The following section discusses specific treatment management programmes for angina and MI patients following their diagnosis.
1.5.1 Medical

For patients with UA, symptoms have to be treated immediately. Untreated, 30% of all patients will either have died or suffered MI within three months. Patients are best managed in specialised coronary care units (CCUs) where arrhythmias and progressive ECG can be monitored. The aims of management of unstable angina are to relieve the acute pain of ischaemia, to prevent recurrence of that ischaemia and establish a more stable clinical condition.

Nitrates are used in the relief of acute ischaemia. They act by relaxing vascular smooth muscle in systemic and coronary arteries and veins. Most episodes of angina are relieved within 2-3 minutes by sublingual glyceryl nitrate (GTN) either in tablet or aerosol form. Beta blockers and/or calcium antagonists are often used in the treatment of UA, reducing its frequency. Beta blockers are effective prophylactic agents. They reduce oxygen demand by lowering heart rate, reducing blood pressure and depressing myocardial contractility. The more commonly used beta blockers are propalanol, atenolol and metoprolol. Calcium antagonists reduce myocardial oxygen consumption by reducing systemic vascular resistance and coronary artery tone. In addition to the above, anticoagulation with intravenous heparin (an anti-clotting drug) is also mandatory in many UA cases. Finally, aspirins, which inhibit platelet activation at the site of the intimal damage are given to patients in whom there is no contraindication.

The mortality from MI is approximately 40% (Timmins et. al., 1997). Most of these deaths occur out of hospital and are largely the result of lethal arrhythmias such as ventricular fibrillation and ventricular tachycardia. Swift admission to hospital is crucial where patients will be given continuous ECG monitoring in specialised coronary care units (CCU); nurses will give resuscitation promptly should arrhythmia occur.

Another immediate form of treatment of MI is thrombolysis, the breaking up and dissolution of blood clots, occurring naturally in the body. It may be augmented and accelerated by thrombolytic agents such as streptokinase and tissue plasminogen activator (TPA). Thrombolytic therapy in MI aims to recanalise the occluded coronary vessels, thereby minimising myocardial damage.
Some patients require consideration for revascularisation. One option is to relieve the coronary obstruction by dilatation with a balloon known as percutaneous transluminal coronary angioplasty (PTCA). An alternative, more invasive procedure is to bypass the obstruction surgically, namely coronary bypass grafting (CABG).

PTCA, introduced in 1977, is a relatively new way of treating CHD. It is now used increasingly on patients with multi-vessel disease. A guiding catheter is introduced into the femoral artery and passed via the aorta into the mouth of the coronary artery. A guide wire is then passed through the catheter and manipulated into the artery with the stenosis to be treated. An inflatable balloon mounted on a thin catheter is then passed across the stenosis in the deflated state using X-ray screening. The balloon is then inflated to dilate the artery and relieve the obstruction. The use of PTCA has been successful. However, the main limitation with this technique is that the artery at the site of the dilatation may re-narrow, usually within six months of the procedure, causing recurrence of symptoms in about 25% of patients, when either further PTCA is performed or alternatively, CABG is offered.

CABG provides significant relief from angina in about 80% of patients; mortality is less than 2%, increasing between 5 to 10% for a second procedure. CABG is carried out when one or more of the coronary arteries is blocked and cannot be unblocked by PTCA. A new passageway is created for the blood to pass through to restore the blood flow to the heart muscle at the other end of the blockage. The new route, called the graft, is created for each of the blocked arteries. This involves the use of the patient's own blood vessel (from an artery from the chest wall) or saphenous veins (from a leg) to bypass the obstruction. The heart is rendered motionless either by ischaemic arrest or with cold concentrated potassium solution; blood stops circulating at this time. A heart/lung bypass machine is used to oxygenate the blood. Apart from PTCA and CABG, other techniques used are coronary artery stenting and laser therapy. Modern technology is being used to develop more advanced procedures in the management of CHD.
1.5.2 Secondary prevention

Secondary prevention programmes aimed at preventing disease progression in patients who have CHD are gaining credibility in recent years. The main feature of secondary prevention is risk-factor modification. Quitting smoking after MI, for instance, reduces the risk of recurrent attacks by up to 50% (c.f. Jones and West, 1995). Similarly, lowering blood cholesterol level via dietary restrictions reduces cardiac mortality in post MI and angina patients. Changing dietary behaviours also facilitate weight reduction and control blood pressure. Exercise programmes have also contributed to improved health conditions in patients recovering from CHD, both physically and psychologically. In recognition of the benefits of secondary prevention, many hospitals have begun providing formal cardiac rehabilitation programmes (CRP) to patients following their illness, in line with the recommendation made by WHO (1993).

World Health Organisation (1993) defined cardiac rehabilitation as:

"the sum of activities required to influence favourably the underlying cause of the disease, as well as to ensure the best possible physical, mental and social conditions so that they may, by their own efforts, preserve or resume when lost, as normal a place as possible in the life of the community"

Over the last decade, the objectives of CRP have become more comprehensive and more realistic (Cay, 1995; Maes, 1992; Squier and Kaplan, 1996). Where initially CRP provided only exercise programmes aimed at reconditioning the individual physiologically, so as to enhance myocardial function, modern CRP have now included facilities that help restore patients’ physical, psychological and social well-being. In other words, quality of life has become an important agenda in the goal of modern CRP (Cay, 1995; Maes, 1992; Pashkow, 1993). Education and psychological interventions such as counselling and social support groups aimed at alleviating negative affects such as anxiety and depression, are made available. More importantly, modern CRP are beginning to tailor to the needs of individual patients (Jones and West, 1995).

The benefits of CRP are myriad. For one, they have been shown to reduce cardiac mortality by up to 37% in the first year (Pashkow, 1993) and by 20% in the third year, as revealed by several meta-analytic reviews of controlled interventions (e.g. O’Connor,
Buring, Yusuf et. al, 1989; Oldridge, Guyatt, Fisher and Rim, 1988). CRP have also been shown to be cost-effective, similar to that of CABG, although lower than the use of drug therapies (Oldridge, Guyatt, Jones et. al., 1991). Meta-analyses have also shown that CRP lead to improved exercise tolerance levels, decline in symptoms of angina and cessation of smoking by up to 26% (see Digenio and Joughin, 1997). In addition to the modifications in risk factors, CRP have also been found to have positive benefits on patients' psychosocial well-being (e.g. Oldridge et. al., 1988; 1990, 1991, 1995; van Elderen et. al., 1999). In sum, there is a growing body of evidence that CRP can extend survival, improve quality of life, decrease the need for interventional procedures such as angioplasty and bypass grafting, and reduce the incidence of subsequent myocardial infarction (Digenio and Joughin, 1997). However, not all believe that modern CRP are sufficient nor beneficial to all cardiac patients. The arguments for both sides will be reviewed and discussed in detail in Chapter 2.

1.6 Alternative/Complementary Medicine

An important feature involved in illness management is patients' treatment-seeking behaviours. In the attempt to treat their illness, most patients in the West resort to allopathic or orthodox medicine, upon which the dominant medical system in industrialized societies is based. The allopathic medical system is developed based on objective beliefs that are recognised by contemporary medical practitioners as established scientific therapeutic processes (Kleinman, 1993). The management of CHD discussed above (see Section 1.5) is exclusively allopathic.

The strong dependence on allopathic medicine to treat illnesses may be prevalent in many Western societies. However, this is not entirely so in medically pluralistic societies such as Malaysia. This section briefly addresses the importance of looking at the factors involved in the consultation and/or use of complementary medicine in medically pluralistic societies. Although there is no record of studies looking at the relationship between CHD and complementary medicine to date, knowledge of the features of medically pluralistic society is helpful for understanding processes involved in influencing treatment-seeking behaviours and their consequent impacts on psychological outcomes and daily functioning.
The phenomenon where traditional systems of medicine and healing co-exist with modern allopathic medicine is referred to as medical pluralism. It is a feature of many industrialized countries just as it is in most non-industrialized societies (Sharma, 1992). In addition to or instead of allopathic medicine, people in medically pluralistic societies often consult alternative forms of healing systems, namely, self-care medication, complementary and/or folk medicine, both as primary prevention measures as well as treatment regimes.

Folk medicine (or more often referred to as alternative/complementary medicine) is a healing practice derived from the individuals’ heritage; the beliefs, values and cultural idioms attached to the meaning of acquiring and experiencing the symptoms of illness. These beliefs, values and idioms, in turn, influence treatment-seeking behaviours (Kleinman, 1993).

Among the more widely used types of traditional medicines are natural folk medicine, obtained from the natural environment. These include herbs, plants and minerals used to prevent as well as treat various ailments. The Chinese is a society known to widely utilise herbs and plants in their treatment of illnesses. The use of herbs, plants and minerals in the Chinese culture originates from the belief for a need to restore balance between the ‘yin’ and ‘yang’. For example, to make up a deficiency of ‘yang’, or to aid the fire element against an excess of the water element, numerous Chinese herbs are imbued with special properties to help restore the balance.

Similar use of the natural environment is also found in traditional Islamic societies. The use of elements from nature is in accordance with practices of the Prophet (As-Suyuti, 1997), originating more than 1500 years ago. Honey, for example, is seen an important substance in treating various illnesses, including colds, fever and migraines whilst dates are recommended to control high blood pressure.

Another form of folk medicine sought in cultures other than the West is that of magico-religious tradition. This tradition uses charms, holy words and actions both to prevent and cure different types of illnesses, particularly psychological in nature. In such
traditional societies, the traditional medicine man or 'shaman' is deemed as the expert on the issues of disease causation and has at his command the mystical powers to communicate with the supernatural (Sharma, 1992).

Home remedies are another form of medicine often used to treat mainly minor ailments such as colds and headaches. There is evidence of the universality in self-medication behaviour across different societies; for example, non-prescribed medicine and home remedies are preferred over consultation from general practitioners in treating common colds, sinuses and headaches (Sharma, 1992).

Although allopathic medical system is the predominant medical system in the West, there has been a re-emergence in the use of complementary medicine among patients in the West in recent years. A recent study revealed that 60% of the medical schools in the US are now incorporating alternative medicine into their curriculum (Wetzel, Eisenberg and Kaptchuk, 1998). The use of complementary medicine has also recently extended to the mainstream health care systems. In the UK, the National Health Service (NHS) has made recommendations that complementary medicines such as aromatherapy and homoeopathy be made available to patients, in addition to existing modern medicine in treating various illness conditions, ranging from psychological conditions to physical conditions such as back pain and even cancer. The increasing application of complementary medicine, thus, 'represents a significant second system, apart from conventional medicine'.

Studies have shown that Western medically pluralistic societies, differences exist in the ways by which complementary medicine is consulted and used. These differences are a function of environmental factors such as geographical area and sociodemographic factors such as gender, ethnicity, religious affiliation and socioeconomic status. Surveys show that people in the south of England, for example, tend to use complementary medicine more than people in the north (Fulder, c.f. Sharma, 1992; p. 15). According to most surveys in the UK and other European countries, figures indicate a slightly greater percentage of women to be users of complementary medicine compared to men; whites are also more likely to use complementary medicine than other ethnic groups. There are also differences in the use of alternative treatment between different socioeconomic
classes. For example, in the UK, there are slightly more complementary medicine users from socioeconomic grades A and B than others (Fulder, c.f. Sharma p. 31).

Much less is known of the psychological characteristics of complementary medicine users. Work on the relationship between psychological characteristics and treatment-seeking patterns of behaviours is relatively new. One of the hypothesis put forward is that users of complementary medicine differ from non-users with respect to psychological traits. Systematic psychological studies on complementary medicines, although limited, are promising.

Bishop and colleagues (1996; 1998) conducted several studies looking treatment-seeking behaviours among Singaporeans. An interesting pattern that emerged from their work is the prevalence in the simultaneous use of both allopathic treatment and folk medicine in treating the same illness by Singaporeans in their sample. Singaporeans were likely to seek both allopathic as well as sinus's folk medicine to treat symptoms of their illness. This pattern of treatment-seeking behaviour is considered a norm in many medically pluralistic societies such as Singapore (Bishop, 1996; 1998). They also found that among the factors influencing failure and/or refusal to seek allopathic medical treatment include perceptions of illness causation, its severity as well as individual meaning attached to the illness (Bishop, 1998; Quah and Bishop, 1996; Tan and Bishop, 1996).

More recently, initial studies looking at the use of complementary medicine among cancer patients in the West have been conducted. For example, Truant and Bottorff (1999) investigated the process by which women with breast cancer make decisions related to using complementary therapies. Open-ended interviews were conducted on 16 women receiving allopathic treatment and who used a wide range of complementary therapies. Their findings revealed that decision making related to the use of complementary medicine was perceived as a means of regaining control during experiences of uncertainty associated with breast cancer. Ritvo and colleagues (1999) further proposed that complementary treatment-seeking behaviour is closely associated with patients' need to maintain positive expectancies or optimism when faced with the risk and uncertainty of cancer.
Although much more work needs to be done assessing the processes that influence treatment-seeking behaviours especially in relation to CHD, the findings to date point to the importance of understanding the relationship between complementary treatment and specific patterns of illness behaviours, decisions concerning treatment alternatives, actual therapeutic practices and evaluations of therapeutic outcomes. In short, there exists differences in the ways groups of individuals, particularly in medically pluralistic societies such as Malaysia, respond to illness, which in turn, influence treatment behaviours and illness outcomes.

1.7 Malaysia

The concept medical pluralism is relevant in the context of Malaysia, a society which practices both allopathic and alternative medicine. Malaysia is also undergoing modernisation and rapid social changes, though traditional cultural beliefs are still widely embraced and practiced. The dualistic nature of the Malaysian society may influence values attached to different health and illness-related behaviours.

1.7.1 Allopathic

In 1957, at the time of independence from the British government, the Malaysian Ministry of Health inherited a medical and health service which was predominantly urban-based. Policies were developed at different stages to establish a comprehensive health service catered for all Malaysians for different health and illness problems. During the First Malaysia Plan (1966-1970), attention was given to systematic control of infectious and communicable diseases and improvements of environmental sanitation and nutritional status (Ministry of Health, 1996).

Since the 1960's, a shift in emphasis has been observed in the health campaigns and programmes developed and organised by the Malaysian Ministry of Health. The transitions in aims of these campaigns reflect the changes in disease profile and morbidity and mortality trends in Malaysia. The epidemiological changes are strongly associated with urbanisation, economic affluence, sedentary occupations and lifestyles taking place in Malaysia. In the 1960's to the late 1970's, most of these health
campaigns were geared towards the prevention and treatment of infectious diseases such as tuberculosis, malaria and dengue fever.

Within the last decade, however, emphasis has been stressed on promoting healthy lifestyles and active treatment and rehabilitative efforts at all levels of health care delivery system. Among the campaigns that have been carried out within the last few years were the "Healthy Lifestyle Campaign on Coronary Heart Disease" in 1995 and "The Promotion of Appropriate Diet and Healthy Lifestyles - Programme for the Prevention and Control of Cardiovascular Diseases" in 1995.

The focus of these campaigns and health-promotion programmes on cardiovascular diseases (CVD), particularly coronary heart disease (CHD) is not surprising, as the latter has replaced infectious diseases as the number one mortality factor in Malaysian hospitals, accounting for approximately 17% of all medically certified deaths (Ministry of Health, 1996). In recognition of the trend in CHD morbidity and mortality, the National Heart Institute (or Institut Jantung Negara - IJN) was established in 1995. This establishment provides the latest technology in the care and treatment of CVDs. Among the treatments provided are open-heart surgery, coronary bypass graft surgery and percutaneous transluminal coronary angiography. In addition to providing treatment and care for patients, IJN also provides health education programmes to the public via information technology and the mass media. Recently, a series of education programmes on the aetiology of and outcomes of CVD as well as promoting healthy lifestyles were broadcasted on television; the reception from the Malaysian public was positive (Berita Harian, 1997). In addition, IJN is also collaborating with various international establishments in conducting research, both epidemiological as well as technological (Berita Harian, 1997) with the aim of decreasing CVD-related mortality rates as well as to improve services provided to its patients.

1.7.2 Alternative/complementary

Despite the advances made in the facilities provided by mainstream allopathic medical care, many Malaysians still resort to complementary medicine to treat various illnesses, ranging from psychological conditions to minor ailments to more serious illnesses such as hypertension and diabetes. Complementary medicine or better known as 'traditional
medicine' or perubatan tradisional has existed in Malaysia for over 500 years (Chen, 1975). They are still widely consulted and utilised by all ethnic groups in Malaysia. For example, among the Malays, who are predominantly Muslims, the belief that illnesses can be caused by demons, evil spirits or being hexed by others is still widespread, even among those who are well-educated (Azhar and Varma, 2000). The services of traditional healers, or bomohs are usually consulted. However, over the last two decades, the consultation of bomohs has been on the decline. This is mainly due to the religious revival of Muslims, which has resulted in alternative seeking behaviours. Most Muslims now turn to God for help, resorting to personal and/or congregational prayers to alleviate physical and psychological symptoms related to illness (Azhar and Varma, 2000). Other alternative forms of treatment often consulted among Malays are holy drinks, the use of ointments made from natural herbs and massage treatments by trusted others in the community.

Chinese in Malaysia are generally well-educated; like Malays, they continue to practice Chinese cultural traditions. Like the Chinese in Singapore, the belief in the powers of yin and yang are still prevalent. Sinsehs are often consulted, and Chinese herbs and medicines are widely available and used in Malaysia, both by Chinese and non-Chinese alike.

Chen (1975) conducted an extensive review on the cultural traditional medical systems in Malaysia. One notable feature of his review showed that there are differential use of complementary treatment by different Malaysian ethnic groups. For instance, for the Malays, disease causation as well as therapy depend heavily on belief in God whilst the Chinese medical system relies heavily on theories of harmony between concepts such as 'yin' and 'yang'.

To date, no psychological studies looking at complementary medicine within the context of CHD in Malaysia have been conducted. Knowledge of the demographic characteristics and psychological characteristics of complementary medicine users in Malaysia is helpful for understanding the relationship between use of alternative treatment and psychological outcomes from CHD. Thus, among the aims of this research are to determine whether the use of complementary medicine is associated
with demographic and psychological characteristics of Malaysian patients and whether the use of complementary medicine is associated with psychological outcomes of CHD.
CHAPTER 2

PSYCHOLOGICAL ASPECTS OF CHD:
DETERMINANTS OF RECOVERY AND OUTCOMES

Aim

The present chapter reviews the literature on studies looking at psychological predictors of recovery from and outcomes of CHD. Research in this area is extensive, ranging from sociodemographic characteristics to emotional status and social support. This review will only consider aspects deemed most relevant to the present research project, taking into account issues of generalisability as well as cultural sensitivity and specificity.

Several of the predictor variables are drawn from existing models widely used in research in health and social psychology, namely social cognitive models (SCMs). Among the factors drawn from SCMs are self-efficacy, locus of control and intentions. Other psychological factors reviewed in this chapter are affective status and coping styles which include social support and religiosity/spirituality.

The focus of this review will be on three domains of illness outcomes: emotional well-being, functional status and quality of life. The review will begin with self-referent constructs (e.g. self-efficacy) followed by intentions and affective status (e.g. anxiety, depression and pessimism) before presenting work on interpersonal constructs (e.g. coping and locus of control). The section on coping will incorporate literature on seeking social support and turning to religion. This chapter will also cover psychosocial aspects of cardiac rehabilitation, critically discussing the findings of studies conducted to date. Lastly, a model hypothesising the relationships between these psychological variables and cardiac outcomes within the Malaysian context is presented and discussed.
2.0 Background and Significance

CHD has emerged as the single most important cardiovascular disease, replacing infectious diseases as the leading cause of mortality in Malaysia. It accounted for 17% of medically-certified deaths in Malaysian government-owned hospitals in 1995, an increase from 1.8% in 1950 (Ministry of Health, 1996). The increase in cardiac morbidity and mortality rates in Malaysia is similar to trends in other developing nations, and replicate the trends for CHD observed in many Western and/or industrialised nations over the past two decades (see Chapter 1). Malaysian health authorities have taken steps to increase cardiac survival rates by providing the latest drug therapy, and non-surgical as well as surgical procedures for patients diagnosed with various forms of CHD. Among the procedures provided by both public and private health institutes are angiography, PTCA and CABG (see Chapter 1). Much investment has been made into research on the techniques of CHD-related primary medical interventions. Despite the strides made in the provision of medical treatments for patients under hospital care, mortality in hospital as well as following hospital discharge is still relatively high (Ministry of Health, 1996).

Myriad factors may account for the high incidence of CHD-related mortality rates. Studies in the West have shown that psychological characteristics such as personality, emotions and cognitions have been found to influence outcomes of CHD, particularly MI. For example, depression predicts mortality up to ten years following a first MI (Frasure-Smith, Lespeurance and Talajic, 1995a, 1995b; Everson, Roberts, Goldberg and Kaplan, 1998) while worry predicts death at 20 years (Kubzansky, Kawachi, Spiro, Weiss, Vokonas and Sparrow, 1997). Not much is known, however, of the psychological characteristics of Malaysian cardiac patients, either immediately following the illness or after hospital discharge. Research looking into the psychological aspects of CHD in Malaysia is still in its infancy, with only one other known study of this nature previously conducted (Khan, 1998). Thus, the present study highlights the importance of understanding the psychological aspects of the recovery and rehabilitation from CHD, in cultures other than the West, specifically among Malaysian patients. The findings may prove beneficial to Malaysian health authorities.
in their efforts to develop more effective illness prevention, intervention and rehabilitation programmes for cardiac patients in Malaysia.

2.1 Determinants of recovery from CHD

Despite the decrease in CHD morbidity and mortality in the West, there is still grave concern over recovery rates for patients who survive their cardiac event. Impairments in physical and psychological well-being have been observed (e.g. Ben-Sira and Eliezer, 1990; Johnson, 1988; Sykes, 1994) even up to ten years after their first MI (Frasure-Smith, et. al., 1995; Schleifer, Macari-Hinson, Coyle, et. al., 1989).

These outcomes are not surprising as studies show that CHD results in symptoms of pain and fatigue, neurocognitive deficits and severe limitation in daily function (Squeier and Kaplan, 1996). Given the nature of the illness, which is typically sudden and life-threatening, readjusting to life for cardiac patients is often difficult, distressing and stressful. Different physical, psychological and social factors interact to facilitate or impede patients’ recovery process. Interestingly, studies have shown that severity of the cardiac disease as measured by ventricular ejection fraction does not singly predict recovery from CHD (Frasure-Smith et. al., 1995a, 1995b; McGee, 1994; Steeds and Chanmer, 2000). Instead, factors such as emotions, coping styles and self-beliefs have been found to affect the outcomes of CHD, either directly or indirectly. For example, depression prior to MI has been found to predict non-adherence to medical regimen (William, Haney and McKinnis, 1986), lower rates of smoking cessation (Huijbrechts, Duivenvoorden, Deckers, Leenders, Pop, Passchier and Erdman, 1996) as well as re-infarction (Frasure-Smith et. al., 1995a; 1995b).

Several social cognitive models have been used to explain the mechanisms and processes by which psychological factors affect outcomes of illness, including CHD. SCMs postulate that cognitions are proximal determinants of health-related behaviours. These social cognitive factors mediate the effects of other more stable psychological determinants on behaviours. More significant is the assumption that these cognitive factors are modifiable, and hence amenable to intervention. They have been shown, to varying degrees, to distinguish between those who will and will not undertake a range of cardiac-related behaviours including cessation of smoking and uptake of exercise
The following sections address several of these social cognitive factors, starting with self-referent beliefs (such as self-efficacy, Bandura, 1977, 1986; 1994), intentions (from the Theory of Planned Behaviour; Ajzen, 1991; Ajzen and Madden, 1986) and health locus of control (from the Health Locus of Control Model; Wallston, Wallston and DeVellis, 1978). Next, other cognitive and non-cognitive psychological variables found to be predictive of outcomes from CHD are reviewed, including negative affect (e.g. anxiety and depression) and coping styles (e.g. denial, active coping, seeking social support and turning to religion).

2.1.1 Self-referent beliefs

The concept of self-efficacy stems from social cognitive theory, which sees individuals as self-reflective agents, rather than merely passive recipients of environmental forces. Defined as ‘the belief in personal abilities and capabilities to perform certain behaviours’, self-efficacy is ‘not concerned with the skills one actually possesses, but with judgements of what one can do with whatever skills one has’ (Bandura, 1986). According to Bandura (1986), self-efficacy plays an important role in influencing the ways an individual acquires new behaviours and maintains old ones. The individual appraises the sources of efficacy information by taking into account personal, social, temporal and situational circumstances. Self-efficacy is the belief that a behaviour is within personal control. The belief that one is able to quit smoking is an example of self-efficacy belief.

The concept of self-efficacy has been extended in its attempt to account for specific illness behaviours, phases and outcomes (e.g. Schwarzer and Fuchs, 1998). For example, Marlatt (c.f. Schwarzer and Fuchs, 1998; p. 171), proposed five categories of self-efficacy that are related to stages of motivation and prevention pertaining to addictive behaviours: resistance self-efficacy, harm reduction self-efficacy, action self-efficacy, coping self-efficacy and recovery self-efficacy. Schwarzer and Fuchs (1998) contended that behaviour is more likely to be effective when individuals utilize coping self-efficacy, “the optimistic beliefs of capacity to overcome difficulties in performing
an aimed behaviour” (p. 173). The application of this extension on the self-efficacy concept in various health behaviours is promising.

The application of self-efficacy in health and illness research is quite extensive. Review of the literature reveals that self-efficacy to successfully perform a health-related action is predictive of the actual likelihood of success (Bandura, 1994; Schwarzer and Fuchs, 1998; p. 165). It is a crucial determinant of the adoption of a particular behaviour (e.g. changing diet), modification of as well as maintaining the behavioural change (e.g. dietary fat intake). For example, Povey and colleagues (2000) found that people (N = 287) with high self-efficacy had lower fat intake. Among other health behaviours successfully predicted by the self-efficacy model are breast cancer screening, physical exercise and weight control (e.g. Schwarzer and Fuchs, 1998). Patients with high self-efficacy beliefs are better able to control pain than patients with low self-efficacy (Bandura, O’Leary, Taylor, Gauthier and Gossard, 1987). Self-efficacy has also been shown to be associated with emotional status. For example, Davis (1988) found low self-efficacy to be a strong predictor of depression among 200 older or elderly adults in a community setting.

Within the context of CHD, self-efficacy beliefs have been found to be associated with various cardiovascular functions such as blood pressure and heart rate (Bandura, Reese and Adams, 1982; Schwarzer and Fuchs, 1998). Cardiac patients with high self-efficacy beliefs are more likely to experience healthier blood pressure and heart rate readings in stressful situations compared to patients with low perceived self-efficacy (Bandura et. al., 1987). Self-efficacy has also been shown to affect other components of stress response (O’Leary, 1992), with lower self-efficacy associated with greater stress response.

Much of the work on self-efficacy within the context of CHD focuses on behaviours of prevention or rehabilitation. Most of the findings revealed positive relationships between self-efficacy and cardiac outcomes (Bandura, et. al., 1994, 1987; Ewart and Fitzgerald, 1994; Ritvo, Irvine, Katz et. al., 1999; Scheir and Carver, 1987). For example, self-efficacy has been shown to predict participation in exercise programmes (McAuley, 1992; Oldridge et. al., 1990; 1995), adherence to exercise regimens (Ewart
and Fitzgerald, 1994; Dzewaltowski, 1989), frequency of light exercise (Bennett
Mayfield, Norman, Lowe and Morgan, 1999), cessation of smoking (O'Leary, 1992) as
well as healthy eating behaviour (Schwarzer and Fuchs, 1998). Sullivan, LaCroix,
Russo and Katon (1998) found that in a prospective study on MI patients, self-efficacy
to maintain function and to control symptoms significantly predicted physical function,
social function and family function after controlling for baseline function, baseline
anxiety and other significant correlates. Similar patterns of findings were obtained for
surviving surgical patients. For instance, Perkins and Jenkins (1998) reported that self-
efficacy expectancies were significantly and positively related to behaviour
performance (e.g. diet, walking, resuming roles) among patients recovering from
PTCA. Patients with high self-efficacy also reported lower levels of mood disturbance.
Lastly and as importantly, self-efficacy has been found to be a significant predictor of
attendance at CRP (see Coats, McGee, Stokes and Thompson, 1995, Jeng and Braun,
1994; Sullivan, et. al., 1998).

The findings to date demonstrate the role self-efficacy plays in the adoption of and
maintenance of healthy behaviours. They show that self-efficacy has important
implications in the context of rehabilitation. The findings provide support for the
adoption of cognitive behavioural interventions for cardiac patients aimed at increasing
confidence in adopting and maintaining healthy behaviours as well as controlling
related symptoms (Jeng and Braun, 1994). The adoption and maintenance of healthy
behaviours, would in turn facilitate recovery from CHD. Self-efficacy expectations
could act as a bridge between knowledge and behaviours (Perkins and Jenkins, 1998).
Self-efficacy beliefs are useful in determining whether or not a behaviour is going to be
carried out, the amount of effort that will be expended in carrying out the desired
behaviour and the duration for which the behaviour is carried out. In the context of
cardiac rehabilitation, efficacy expectations and beliefs can be enhanced by providing
patients the opportunity for graded masterly experience, using goal-setting and modeling
of success by similar others (Bandura, Adams, Hardy and Howells, 1980).

2.1.2 Intentions
One variable closely associated with self-efficacy in determining health and illness
related behaviours is intention. According to the self-efficacy model developed by
Bandura (1986, 1994), self-efficacy beliefs or expectancies shape behavioural intentions. These behavioural intentions, in turn, predict the adoption of the intended behaviour. Thus, according to the model, individuals who believe that they will succeed are likely to form an intention to engage in the desired or recommended behaviours.

The Theory of Planned Behaviour (TPB; Ajzen and Madden, 1986) also advocates intention to be a proximal determinant of behaviour.

The predictive value of intention as a proximal determinant of behaviour in health psychology research has met with some success. For example, Armitage and Conner (1999) conducted a study (N = 413) assessing the predictive validity and causal ordering linking beliefs, attitudes, intentions and behaviour over a three-month period. Their findings show that attitudes, subjective norms and self-efficacy control were consistent predictors of intention across all time points; intention, in turn, predicted food choice behaviour. Hausenblaus, Carron and Mack’s (1997) meta-analysis revealed a mean correlation of 0.47 between intention and behaviour. Similarly, Abraham and colleagues’ review (1998) showed that intentions are reliably but moderately correlated with a range of health behaviours such as attendance for clinical screening (0.35), addictive behaviours (0.56) and exercise behaviours (0.52).

Different studies have shown that intention to engage in a behaviour (e.g. exercise) is predictive of performance of that specific behaviour. Povey and colleagues’ (2000) study on the general public (N = 287) showed that intentions significantly predicted lower fat intake (β = -.22) and higher fruit and vegetable intake (β = .42). Rutter’s (2000) prospective study (N = 1215) on women and breast cancer revealed that intention to attend breast cancer screening was the single most important predictor of actual first-time attendance (B = 1.08, OR = 2.9), more so than attitudes, subjective norms and personal control beliefs. Further, Bennett and colleagues (1999) found behavioural intention to be a significant predictor of frequency of exercise, accounting for 51% of the variance, after controlling for pre-MI exercise among 43 cardiac patients.

However, not all studies have shown that people with intentions successfully translate these intentions into behaviour. For example, Orbell and Sheeran (c.f. Sheeran and
Orbell, 1999) found that only one half of a sample of women who intended to undergo cervical cancer screening did so within a one year period.

Several suggestions have been proposed to account for the discrepancy in findings for intentions as predictors of behaviour. One such explanation relates to the stability of intentions in predicting actual behaviour (Chatzisarantis and Biddle, 1998). Sheeran and Orbell (1999) argued that intention is likely to be predictive of behaviour in the short term. They further suggested that motivation to perform an intended behaviour, on its own, may not be sufficient to ensure adherence. Rutter’s (2000) findings show intention to be a significant predictor of first time breast cancer screening attendance ($B = 1.08, \ OR = 2.9$). However, it was no longer a significant predictor of re-attendance three years later ($B = 0.32, \ OR = 1.4$). Analyses revealed that only first time attendance significantly predicted re-attendance, suggesting that past routine behaviour could replace intention as the proximal determinant of subsequent behaviours. Norman, Conner and Bell’s (2000) study ($N = 87$) on the application of the TPB to exercise provides some support for this contention. They found that past behaviour directly predicted future exercise behaviours, over and above other TPB variables, including intention ($\beta = .47$ for past behaviour vs. $\beta = -.10$ for intention). Bargh (c.f. Abraham et. al., 1998) proposes that when someone repeatedly performs a behaviour in a particular context, “the motive and its implementation instructions become integrated into the individual’s representations of that situation”, rendering behaviours to be repeated, independent of other variables, including earlier intentions. This explanation is consistent with the Triandis (1977) model which states that as a behaviour is repeated, it should become more habitual in nature.

Despite the reported inconsistencies in findings, intention is a valuable variable in predicting actual behaviour. The findings above suggest that in the context of recovery from CHD, the adoption of actual behaviour can be achieved by influencing patients’ intentions (Coats, McGee, Stokes and Thompson, 1995, p. 97). This is especially true in the context of cardiac rehabilitation, whereby identifying patients with as well as without intentions to attend recommended rehabilitation programmes, could be an important step in achieving the goals of CRP.
2.1.3 Anxiety and depression

The role of emotions in the aetiology of and recovery from CHD has received increased attention in the psychological as well as medical literature in the last decade. Some studies in cardiac psychology have looked at the role of negative affects, specifically anxiety and depression, in the aetiology of CHD (e.g., Kubzansky et al., 1997; Steeds and Channer, 2000). Many others, on the other hand, have looked at the role these emotions play in the process of recovery from CHD (e.g., Bennett et al., 1999; Fielding, 1991; Frasure-Smith et al., 1995a; 1995b).

Definitions and conceptualisations of anxiety and depression vary, depending on the theoretical background adopted. For example, some conceptualise anxiety as a trait, implying a stable, enduring temperament, while others define it as a state, suggesting that anxiety is an emotional reaction to specific situations (Spielberger, Gorsuch, Lushene, Vagg and Jacobs, 1977). Anxiety here is defined as a ‘future-oriented negative affective state resulting from perceptions of threat, characterised by a perceived inability to predict, control, or obtain desired results in upcoming situations’ (Barlow, 1988). Similar complications arise in defining depression, due to the nature of the affect; it covers a wide variety of ‘states of misery, ranging from grief at loss to demoralisation resulting from a painful illness’ (Snaith, 1987). Furthermore, there is a need to distinguish between mild depressions and more severe ones (Snaith, 1987). For the purposes of this review, depression is ‘symptoms related to the lack of positive moods, appetite or motivation disturbance, difficulties in concentrating and a sense of helplessness’ (Fielding, 1991), usually resulting from a traumatic incident. In short, for the purpose of this review, anxiety and depression are conceptualised as states, rather than traits, encompassing affective, cognitive and behavioural components.

Both anxiety (Kubzansky et al., 1997) and depression (Anda, Williamson, Jones, 1993; Sullivan et al., 1997) have been shown to act as potential risk factors for the development of the disease. Kubzansky’s and colleagues’ (1997) systematic review of the relationship between anxiety and the incidence of and mortality from CHD revealed that chronic anxiety acted as a risk factor by influencing health-care behaviours, increasing the risk of hypertension and triggering fatal cardiac events. In short, this
review provides evidence that anxiety may increase the risk of developing heart-related complications, even leading to fatality.

In addition to acting as potential risk factors for coronary disease, negative affects are also common reactions to the illness. Diagnosis of CHD may exacerbate existing negative affects or it may result in the onset of anxiety and/or depression. Studies have shown that anxiety and depression are highly prevalent among patients immediately following cardiac events and, more disturbingly, after discharge from the hospital (Bennet et. al., 1999; Fielding, R., 1991; Schleifer et. al., 1989). For example, between 40% to 50% of MI patients report moderate to severe levels of anxiety while in hospital (Lloyd and Cawley, 1979; Thompson, Webster, Cordle and Sutton, 1987) while approximately 16% manifested symptoms of anxiety up to one year following their illness (Crowe et. al., 1996). Other studies of depression following MI have also shown similar patterns of prevalence: one study showed that 20% of patients experience moderate to severe levels of depression immediately following an MI diagnosis (Trelawny-Ross and Russell, 1987). Another study showed that up to 45% of MI patients met the diagnostic criteria of minor and major depression in the hospital, while 33% of patients continued feeling depressed three to four months after the initial assessments (Schleifer et. al., 1989). Crowe and colleagues (1996) found that symptoms of anxiety, but not those of depression, were prevalent among 785 MI patients assessed in the hospital and a year after diagnosis. Meanwhile, Chiou and colleagues (1997) found that negative affect among Taiwanese MI patients was lower compared to the levels of anxiety and depression reported by cardiac patients in Western samples.

Many cases of anxiety and depression go undetected and untreated in patients diagnosed with CHD. About one third of surviving cardiac patients continue to experience depression long after discharge from hospital (Fielding, 1991). More disturbingly, depression has been found to predict cardiac-related mortality (Frasure-Smith et. al., 1995). Barefoot and colleagues (1996) found an 84% greater risk of cardiac mortality five to ten years following diagnosis of CHD among patients with high baseline depression compared to non-depressed patients. Evidence linking anxiety and cardiac-related mortality is less widely cited, although there is evidence that anxiety triggers
coronary events through plaque rupture or thrombosis that could lead to new cardiac events (Denollet, Sys and Brutsaert, 1995) and fatality (Kubzansky et. al., 1997).

Studies looking at the relationship between negative affect and the psychosocial outcomes of CHD have revealed several interesting patterns of findings. For instance, anxiety and depression have been found to be significantly related to functional status (Steffens, Connor, Jiang et. al., 1999), engagement and return to work (Cay and Walker, 1988; Havik and Maeland, 1990; Schleifer et. al., 1989) and quality of life (Conn et. al., 1991).

One prevalent pattern of findings in the literature is the debilitating role negative affect plays in patients' level of physical and role functioning following discharge from the hospital (Sullivan, LaCroix, Baum et. al., 1997; Sullivan, LaCroix, Russo, Swords, Sornson and Katon, 1999; Sullivan, LaCroix, Spertus and Hecht, 2000; Steffens et. al., 1999). Steffens and colleagues' (1999) study (N = 335) found that, when controlling for age, gender and medical severity, the presence of major depression was associated with patients' functional status. Depressed patients, when compared to non-depressed patients, assessed by the Duke Depression Evaluation Schedule, were less likely to perform daily household chores, social and physical activities (93% vs. 71%). They were also less likely able to perform activities of daily living (e.g. eating, bathing and dressing). In a different analysis, the study found that the prediction of lack of self-maintenance significantly increased when depression was added into the equation (from $R^2 = .13$ without depression vs. $R^2 = .14$ with depression). This relationship is cross-sectional, however. As the authors noted, the relationship may imply that depressed patients may be more functionally impaired than non-depressed patients because of their depressive symptoms. It was also further stressed that the association between depressive symptoms and functional status may not necessarily imply a clinical relationship; that depressive symptoms and functional status may be two conditions, each with its own course (Steffens et. al., 1999).

There is, however, evidence that depression may have a causal relationship with functional status among surviving cardiac patients. Sullivan and colleagues (1997, 1999, 2000) conducted prospective studies that provide some evidence of the possible
causal relationship between negative affect and physical and role functioning. In their first study, Sullivan and colleagues (1997) found that anxiety and depressive symptoms affect physical and role functions for the following one year among cardiac patients undergoing angiography. Their second study (N = 157) found that patients with minor as well as major depression (N = 47), as assessed by the Hamilton Depression Rating Scale, were significantly more functionally impaired at baseline and at one-year follow-up than non-depressed patients (N = 110) (Sullivan et. al; 1999). Interestingly, anxiety and depression continue to have effects on physical and role functioning in the same cohort of cardiac patients over a five-year period (Sullivan et. al., 2000). In short, these studies provide prospective evidence that depression is associated with decreased capacity for physical as well as role functions among cardiac patients. It has been noted by the authors, however, that the sample size was relatively small and thus may have exaggerated the predictive relationship between depression and functional status.

Another pattern reported in the literature is the relationship between affect and health-related behaviours, namely self-care behaviours (Conn et. al., 1991) and adherence to treatment regimens (William et. al., 1986). Among older cardiac patients (N = 94), less depression as measured by The Profile of Mood States scale, was significantly associated with patients’ attempts to modify their diet ($R^2 = .17$), reduce their smoking ($R^2 = .15$) and exercise ($R^2 = .21$) one year following their illness. In addition, depression accounted for 49% of the variance in quality of life scores. Interestingly, however, anxiety failed to predict these self-care behaviours. Bennet and colleagues (1999) also found similar relationships; positive affect, assessed by the Global Mood Scale (Denollet, 1993), was significantly related to frequency of exercise after controlling for baseline exercise levels ($r = .42$). However, anxiety and depression, as assessed using the Hospital Anxiety and Depression scale (Zigmond and Snaith, 1983), were not associated with these same outcomes, suggesting a possible lack of compatibility in the assessments tools used. These findings show that general moods, rather than specific affects such as anxiety or depression, may be a better predictor of diet and exercise behaviours. A possible explanation for Bennet et. al.’s (1999) findings may be due to the study’s small sample size (N = 43). Further studies assessing both general moods and specific affects are needed to support this contention.
Despite evidence of the relationship between negative affect and self-care behaviours, questions arise as to how severe anxiety and depression must be to affect functional and psychological outcomes. These questions came about as a result of the failure to replicate or confirm the findings cited above. For example, Ahern, Gorkin and Anderson (c.f. Crowe et. al., 1996) found no association between symptoms of anxiety and cardiac outcomes in the Cardiac Arrhythmia Pilot Study. Crowe and colleagues (1996), on the other hand, found that only anxiety was prevalent in hospital patients (N = 785), whereas depressive symptoms were rare.

Sullivan and colleagues (1999), using the Diagnostic Interview Schedule for DSMIII-R, provide evidence that both major and minor depressive symptoms are associated with decreased capacity for functioning in those with cardiac disease. Both groups of patients were significantly more functionally impaired at baseline and at one-year follow-up than those with no depression [F(1,130) = 10.79 and F(1,121) = 9.66, for minor and major depression, respectively]. However, no significant differences were obtained between the major and minor depressive symptoms groups in the functional outcomes [F(1,39) = .008]. These findings lend support to the hypothesis that the existence of negative affect and/or mood, regardless of level, has debilitating effects on illness outcomes.

There are several possible mechanisms by which negative moods, including anxiety and depression may impair functional capacity and self-care behaviours in cardiac patients. One such mechanism is via increased fear of recurrent cardiac symptoms. Anxious and/or depressed patients may be more likely to believe that the resumption of physical functions would precipitate further heart-related complications, thus are less willing to engage in such behaviours. For example, walking outside the home or doing household chores may lead to awareness of palpitations, breathlessness or even chest pains in those patients who are already anxious and/depressed. This pattern is consistent with the literature showing that anxiety and depression are associated with multiple complaints of minor and major physical illnesses (Frasure-Smith et. al., 1995a). Another possible mechanism is motivational. A typical symptom of anxiety and depression is the loss of interest in carrying out daily activities. Finally, the relationship between negative affect and functional status and self-care behaviours may be a function of cognitive processes
such as pessimism. Pessimistic views may mediate the effect of patients’ emotions on functional outcomes. Patients who are anxious or depressed may experience distortions of thoughts, hopes and feelings toward their future, which in turn, impede health-care and self-maintenance behaviours.

There is also a suggestion that negative affect, namely depression, should not be categorised exclusively as a risk factor for CHD alone or as a reaction to the cardiac disease. Such narrow categorisation may result in the failure to obtain significant relationships between negative affect and outcomes from CHD. Fielding (1991), for example, identified at least three categories of depressive symptomatology manifested by MI patients: firstly, depression before diagnosis of MI, which could intensify during hospitalisation. The next category constitutes patients with a history of cardiac illness, and who, on readmission with suspected cardiac symptoms are more likely to report depressive symptoms. The final category defines depression as a reaction to the hospitalisation process, and not to the illness per se; these transient depressive reactions are characterised by patients who are non-depressed first time admissions for CHD (Fielding, 1991). In summary, a plausible reason that could account for the lack of relationship between negative affect and adaptation to CHD in some studies may be attributed to the means by which affective symptoms are conceptualised and assessed. It is important to identify the nature of depressive symptoms manifested and/or reported by patients. The symptoms reported in hospital may reflect pre-existing depression or they may be reaction to hospitalisation and illness; hence the importance of prospective studies.

In short, despite inconsistencies in the patterns of findings reported in the literature, a majority of studies have shown that anxiety and depression are important determinants of recovery from CHD. Anxiety and depressive symptoms have varying but significant effects on daily functioning and health care behaviours and subsequently, long-term adaptation to CHD (Heller, Lim, Valenti and Knapp, 1997; Kubzansky et. al., 1997, 1999; Sullivan et; al., 1999). They may also act as independent risk factors for prognosis of patients with CHD over and above disease severity (Melamed, Heruti, Shiloh, Zeidan and David, 1999; Steeds and Channer, 2000).
2.1.4 Future beliefs and expectancies

Beliefs and expectancies of the future refer to ‘subjective probabilities and subjective values for positive or negative events in one’s personal life’ (Wengler and Rosen, 2000). Optimism or positive expectancies and pessimism or negative expectancies are important concepts in the processes of estimating modifiability and consequences of an illness (Ritvo et al., 1999; Scheier and Carver, 1987). Actions are greatly influenced by the expectations about the consequences of those actions. Optimistic expectations are more likely to be associated with adaptive coping behaviours and positive health status, whereas negative expectations are more likely to be associated with maladaptive coping and poor health status (e.g. Abdel-Khalek, 1998; Stoddard, 1995; van-Doorn, 1999). Moreover, optimism has also been found to be associated with beliefs in internal control whereas pessimism to be related to beliefs in chance (Vinck, Wels, Arickx and Vinck, 1998).

Scheier and Carver (1987 and 1992) conceptualise dispositional optimism as global and relatively stable across time. They view optimism and pessimism as opposite ends of the same dimension. Others, however, view optimism and pessimism as two related but different constructs (Myers and Steed, 1999). Myers and Steed’s (1999) review reported that the correlation between optimism and pessimism ranges from between -0.02 to -0.57. Their review also reports that optimism and pessimism correlated differently with different measures; these two constructs have also been found to contribute unique variance to different measures. Some recent findings provide support for this distinction (e.g. Abdel-Khalek, 1998; Mroczek, Spiro, Aldwin, Ozer et al., 1993; Robinson, Kim, MacCallum, and Kiecolt, 1997; Sultan and Bureau, 1999).

Measures developed to assess future expectancies differ in orientation, depending on the aim of assessment. The Helplessness Scale (Beck, Weismann, Lexter and Trexler, 1974), for example, is used to assess clinical severity of hopelessness, whilst The Life Orientation Scale (Scheier and Carver, 1985) is used to assess individual’s general future beliefs and expectancies. Work on healthy individuals show that people tend to be optimistic and believe more positive than negative things will happen to them (Wengler and Rosen, 2000). Optimism is also correlated with fewer reported physical symptoms (Scheier and Carver, 1985). Optimism has also been associated with
variables such as self-efficacy and anger expression; with optimism positively related to self-efficacy and negatively associated with anger expression (Ausbrooks, Thomas and Williams, 1995). There is also a suggestion in the literature that future expectancies are a function of cultural identity. For example, Chang (1996) found that Asian American students (N = 111) were more pessimistic than Caucasian American students (N = 111). Further analyses revealed that lack of optimism predicted more depressive, psychological and physical symptoms for Asian Americans whereas lack of pessimism predicted two of the three health outcomes for Caucasian Americans. In another study comparing Ghanaian and American students, the results show that the former reported less hopelessness and were more optimistic of their future compared to the latter (Eshun, 1999).

There is a growing body of research looking at the role future expectancies play in health behaviours and illness outcomes. Health optimistic individuals are more likely to report better physical and role adjustment to their illness (Brenner, Melamed and Panush, 1994), demonstrate greater adherence to health care recommendations (Leedham, Meyerowitz, Muirhead and Frist, 1995) and show more favourable physical recovery (Carver, Pozo, Harris et al., 1993). Patients who are optimistic of their future following their illness are more likely to report less negative moods across different illness conditions (e.g. Brenner, et al., 1994; Carver and Gaines, 1987; Myers and Steed, 1999). A study looking at the effects of optimism and pessimism on ambulatory blood pressure and mood in everyday life found that pessimistic and anxious adults had higher blood pressure levels and experienced more negative moods compared to optimistic individuals (van-Doorn, 1999). Epping and colleagues (1999) found that low dispositional optimism predicted symptoms of anxiety and depression at diagnosis and again at six months in a sample of 80 women with Stage I - Stage IV breast cancer. Further analyses revealed that the relationships at both time points were partially mediated by the use of emotion-focused disengagement coping.

Studies looking specifically at optimism/pessimism within the context of CHD are limited. However, the findings suggest the important role future expectancies play in affecting the outcomes of cardiac-related outcomes. For example, Scheier and colleagues' (c.f. Scheier and Carver, 1992) investigation on CABG patients over a five-
year period found that optimistic patients fared better psychologically than pessimistic patients; independent of severity of illness and extent of surgery. The former reported lower hostility and depression pre-surgically and better quality of life six months after the surgery compared to pessimistic patients. Optimism continued to be an important prospective predictor of subjective well-being five years post-surgery. Ben-Zur and colleagues' (2000) study on 171 post CABG patients found that pessimism was associated with ineffective emotion-focused coping strategies and low functional capacity. It was also associated with anxiety and negative mood states. Meanwhile, Fitzgerald and colleagues (1993) found that the relationship between optimism and well-being was not as straightforward in their sample of CABG patients (N = 49). They reported that although optimism was positively associated with appraisals of quality of life eight months post-surgery \[(F(1,47) = 4.54, p < .05)\], independent of medical severity, the relationship was significantly reduced when perceived control variables were included in the prediction. The latter finding suggests that optimism may be a function of perceived personal control and/or other similar coping strategies associated with positive illness outcomes.

Further research is needed, taking into account variables such as coping strategies, control self-beliefs, as well as psychosocial variables such as cultural identities and social support. In short, these findings reveal the significance of looking at optimism and pessimism within the illness context. The relationships between these constructs and illness outcomes have important implications in illness intervention programmes. Counselling programmes, for example, could help pessimistic persons to think more positively about their illness.

2.1.5 Coping styles

One of the psychological factors that has been found to buffer or mediate distress following a traumatic event (e.g. heart attack), is coping. Studies on coping with CHD show varying findings, with different strategies influencing different CHD outcomes (e.g. van Elderen, Maes and Dusseldorp, 1999; see Livneh, 1999).

Research on coping evolved from Lazarus' work on stress (Lazarus, 1966; Lazarus and Folkman, 1984). It is defined as the thoughts and actions people use to manage stressful
events. Typically, coping strategies are categorised either as problem-focused or emotion-focused coping. The former is aimed at problem-solving or taking action to eliminate or manage the source of stress, while emotion-focused coping is aimed at reducing or managing the emotional distress associated with the stressful event (Folkman and Lazarus, 1985; Carver, Scheier and Weintraub, 1989). In most stressful circumstances, a majority of people utilise both types of strategies, with varying success (Folkman and Lazarus, 1980; Livneh, 1999).

Studies on coping and illness have revealed variation in the extent to which coping styles influence emotional and physical outcomes. The differences among findings can be attributed to the way coping is conceptualised and assessed. Some conceptualise coping as dispositional, suggesting that coping is consistent across the type and level of stress experienced. Dispositional coping is characterised by the coping styles approach, generally described in terms of dichotomy such as approach/avoidance, denial/acceptance and active/passive (Cohen, 1987; Cohen and Symes, 1985). Others conceptualise coping as contextual, changing in type and intensity, depending on the nature and severity of stress experienced (Lazarus, 1993). Contextual coping suggests that different combinations of strategies may be effective for different individuals under different stressful circumstances. Evidence supporting and contradicting both approaches is widely reported in the literature (e.g. Livneh, 1999). In general, the two approaches are seen as complementary, each approach has its own strengths and weaknesses in explaining adaptation to stressful events (Holahan et. al., 1996).

Among the most prevalent form of coping mechanism adopted by cardiac patients is denial. Denial is used as a defence mechanism to assuage serious panic reactions and to control the overwhelming emotional distress following a coronary event. Research has shown that denial is not necessarily detrimental; patients who most effectively denied the severity of their illness were more likely to survive the first days of intensive care (Krantz, 1980). However, the long-term effects of denial are neither as positive nor as clear (Krantz, 1980; Livneh, 1999). Several studies have reported the positive role denial has on physical functioning and activities, emotional adaptation (Havik and Maeland, 1988) and general psychological symptomatology (Billing, Lindell,
Sederholm and Theorell, 1980) and psychopathology (Garcia-Esteve, Valdes, Riesco, Jodar and DeFlores, 1992).

On the other hand, some other studies have shown that patients who continued denying their illness were less likely to comply with the medical regimen and were more likely to be hospitalised for another MI (Levine, Warrenburg, Kerns, Schwartz, Delaney and Fontana, 1987). They were also more likely to be depressed and distressed (Ades, Waldmann, McCann and Weaver, 1996; KeltikangasJarvinen and Jokinen, 1989).

Similar findings have also been obtained for avoidance coping. Van Elderen and colleagues' (1999) study (N = 278) found that avoidance coping was positively correlated with well-being and negatively correlated with anxiety following the onset of a CHD. These findings are, however, cross-sectional. Longitudinal analyses have revealed a different pattern of relationships between coping styles used and illness outcomes. Avoidance was no longer significantly associated with well-being and anxiety at 3 and 12 months following illness, suggesting that avoidance, like denial, does not positively influence psychological adaptation in the long run (van Elderen et al., 1999). These findings supported earlier meta-analysis work conducted by Suls and Fletcher (1985), showing that avoidant coping was beneficial in the short run whilst more active coping was effective in the long term.

Some studies found that denial is not necessarily prevalent among those hospitalised with cardiac disease. Thomas, Shappington, Gross, Norman, Friedman and Lynch (1983) found that patients discussed their illness more frequently than denying it. This finding suggests that when given the opportunity to do so, patients would appraise and evaluate the stressful event associated with their illness. Acceptance of illness immediately following a heart attack was associated with healthier mental and emotional adjustment (Scherck, 1992). Acceptance enabled patients to engage in reappraisal of events during the first three days following their hospital admission. Although some view acceptance of illness as suggestive of being pessimistic or hopeless, others view acceptance as a healthy coping strategy (Schussler, 1992). One plausible reason that could account for such inconsistencies in findings is the method used to assess coping. Thomas and colleagues (1983) used interviews whereas others
have used self-report questionnaires. Interviews may yield more meaningful information because of their open-ended nature. In short, findings on the prevalence and effects of denial on adaptation to CHD are mixed and depend, in part, on the time of assessment and the methods used.

Denollet and De Potter (1992), Scherck (1992) and Van Elderen and colleagues (1999) showed that different forms of problem-focused coping and active approach coping are more adaptive for CHD patients. Approach-oriented coping predicted lower levels of depression and lower levels of anxiety as well as higher levels of positive well-being (Holahan, Holahan, Moos and Brennan, 1997; Van Elderen et. al., 1999). Livneh's (1999) review further indicated the effectiveness of problem-focused and active coping styles in influencing patients' psychosocial adaptation; emotion-focused and non-active coping styles were shown to be less effective and/or beneficial. Differences in the effectiveness of coping styles and emotional adaptation to cardiac illness are illustrated by Van Elderen's and colleagues' (1999) study. Their findings revealed that although in the short term, avoidance coping was beneficial to patients' emotional well-being, the use of approach coping significantly predicted lower levels anxiety and depression among cardiac patients in the months following discharge from the hospital.

As mentioned earlier, the use of affective or emotion-focused coping has yielded less positive findings. Several studies suggest that emotion-focused coping is closely associated with pessimistic views (Abdel-Khalek, 1998; Stoddard, 1995); it mediates the relationship between low dispositional optimism and negative affect (Epping et. al., 1999). Other studies found that patients utilising affective coping fared less well psychologically following discharge from hospital compared to those who reported using problem-solving. The former was associated with increased anxiety and depression; it was also predictive of disruption to social and role functioning (c.f. Livneh, 1999). Ben-Zur and colleagues (2000) reported that in their sample of 171 post CABG patients, psychological distress and low functional capacity was associated with pessimism and emotion-focused coping strategies.

However, not all forms of emotion-focused coping are maladaptive. Seeking support, for one, has been found to have positive effects on patients' emotional well-being.
(Holahan et al., 1997, King, 1985, Schwarzer and Lepin, 1991). Carver and colleagues (1987) distinguished between seeking instrumental support and seeking emotional support. The former describes coping that involves seeking advice, assistance or information regarding the stress at hand, meanwhile the latter concerns getting moral support, sympathy and understanding from family and friends. Although these coping styles are distinguished conceptually, it has been suggested elsewhere that they often exist simultaneously (Carver et al., 1987). There is also evidence that instrumental support and emotional support are differentially associated with different health variables. Ziff’s (1995) study (N = 1185), for example, found that instrumental support was an important predictor of health-related quality of life when provided by professionals whereas emotional support was a significant predictor of health-related quality of life when provided by family and friends.

The conceptualisation of seeking support as a coping mechanism, either instrumental or emotional, evolved from work on social support. Social support has been defined as ‘resources provided by others’ (Cohen, 1987; Cohen and Syme, 1985). Emotional, informational or tangible social support is implicated in both the aetiology of (Eriksen, 1994; Gerin, Pieper, Levy and Pickering, 1992; Orth-Gomer, Rosengren and Wilhelmsen, 1993) and recovery from CHD (Waltz, Badura, Pfaff and Schott, 1988) and cardiac-related psychological distress (Baum and Singer, 1987). However, the definition and assessment of social support are still being debated in the literature.

According to Cohen and Syme (1985), social support either directly enhances health and well-being irrespective of stress level (a direct effect) or it protects individuals from the debilitating effects of stressful events (a buffering effect). There is some evidence in the literature that in the context of recovery from CHD, social support, specifically spouse support, aids in alleviating emotional distress both in the short term and long after discharge from the hospital (Waltz et al., 1988, Yates, 1995). Ell and Haywood (1984) further reported that receiving family support, confiding in family and friends and receiving understanding from others aided in alleviating depression and anxiety in patients with major coronary events six months after initial hospitalisation. However, a number of other studies failed to replicate the positive relationship between spouse support and recovery from CHD (Hilbert, 1985).
The discrepancy in findings suggests the need to distinguish between perceived support received and support sought. Some work in this area revealed that the quality of support received is dependent on the perception of the individual patient, for individuals differ in what they perceive as adequate and appropriate support. Some may perceive support irrelevant, even obstructing their rehabilitative efforts, hence do not deem seeking support as necessary, whereas others may perceive support important in their attempt to manage the stress associated with the illness at hand (Ell and Haywood, 1984). For example, Connell and D’Augelli (1990) found that patients who rated favourably the support received, reported better psychosocial adaptation to their illness. Patients who were not satisfied with the support they received fared less well. A conclusion derived from these findings is that in order to maximise the benefits of social support, there is a need on the part of patients to actively develop, mobilise and maintain the type and amount of social support they want (e.g. Ell and Haywood, 1984; Schroeder, Schawarzer and Koertz, 1998).

Research evaluating seeking support as a coping mechanism in rehabilitation from CHD is quite scarce, although there is evidence on the prevalence of seeking support as a coping strategy, both in the hospital (Schroder et. al., 1998; Shih, Meleis, Yu, Hu, Lou and Huang, 1998) and at home (Davidson, 1996; King, 1985). A few studies have looked at the possible role of seeking support as a direct predictor of psychological prognosis (Davidson, 1996) and also as a mediator in the rehabilitation process (Schroder et. al., 1998). Davidson’s (1996) longitudinal study (N = 101) on social support and depressive symptoms among MI and CABG patients revealed that perceived emotional support acted as an independent predictor of depressive symptoms six months after patients’ cardiac events, over and above demographic and other contextual variables. In another prospective study, covariance structure analysis revealed that seeking support, which was positively associated with perceived self-efficacy, was adaptive for CABG patients (Schroder et. al., 1998). This suggests that seeking support as a coping mechanism interacts with other (inter)personal constructs in influencing illness outcomes. In short, the available work points to the benefits of seeking support in alleviating emotional distress, namely depression.
One form of coping closely associated with the concept of support is turning to God and/or religion. Carver and colleagues (1989) defined this coping as 'the tendency to turn to religion in times of stress'. Religion in the context of illness provides social support to the patient, visible in the form of community support and non-visible in the form of a relationship with supernatural power. It may also promote healthy behaviours (e.g. non-smoking or smoking cessation, prohibition of alcohol consumption or excessive alcohol intake), depending on the religion. Most importantly, religion provides a sense of meaning and coherence to the illness experienced. Turning to religion in times of stress may also be a way for positive reinterpretation and growth. Carver and colleagues (1989) suggested that adopting this coping strategy is a way of managing stress. Armstrong (1999) study supported this contention. His study showed that spirituality moderated the relationship between stress and coping, in that higher levels of spirituality were associated with higher levels of problem-focused coping and lower levels of emotion-focused coping and denial in the face of stress.

For the purpose of this review and subsequent empirical chapters, religious coping is conceptualised as indicative of religiosity and/or spirituality, although it has been noted that it is important to differentiate between religiosity and spirituality and religious coping (e.g. George, Larson, Koenig and McCullough, 2000; Thoresen, 1999).

The findings on religiosity and well-being are varied. Some have contended that religiosity is associated with irrational thinking and emotional disturbance (Ellis, 1980). Maltby and Day (2000) found that religiosity is closely associated with depressive symptoms, which in turn are significantly associated with lower scores on positive measures (e.g. self-esteem and problem-focused coping) and higher scores on negative measures (e.g. neuroticism and avoidance coping) among English college students. Kausar and Akram’s (1998) study (N = 120) comparing patients with terminal and nonterminal diseases showed that patients with terminal illness used more religious coping strategies and perceived less control of their illness and sought more emotional support than patients with nonterminal diseases. Fitchett and colleagues (1999) also failed to obtain positive relationships between religious coping variables and health outcomes in their longitudinal study on 96 medical rehabilitation patients.
However, not all of the findings on the relationship between psychological well-being and religious variables are negative. A review of the literature reveals that the relationship between religion factors and outcomes of different illness conditions are more promising (e.g. Armstrong, 1999; Greene-Bush, Rye, Brant, Emery, Pargament and Riessinger, 1999; Muro, 1999; Pargament, Koenig and Perez, 2000). Fehrer and Maly (1999), for example, found that among elderly women newly diagnosed with breast cancer, religious beliefs, regardless of affiliation, provided patients with the emotional support needed to deal with their illness. Religious beliefs also provided them with social support as well as meaning to their cancer experience. Alferi and colleagues (1999) found differences in reports of distress post surgery among their sample of breast cancer patients. Among Catholic Hispanic women, greater religiosity and religious coping were associated with more distress at six and twelve months follow-up following diagnosis. In contrast, among Evangelical Hispanic women, both religiosity and religious coping were related to less distress post-surgery. Other studies reported that a positive relationship exists between a person’s religion/spirituality and positive mental and emotional well-being (Ell, Mantell, Hamovitch and Nishimoto, 1989 and Fehrer and Maly, 1999), as well as physical well-being (see Levin and Vanderpool, 1991 for detailed review).

The religious coping construct has been extensively studied by Pargament (1997) and colleagues (1998, 1999, 2000). Their earlier studies reveal that religious coping (i.e. turning to God, increased frequency of prayers) was significantly associated with positive mental as well as physical outcomes in their patient sample. Pargament (1997) conceptualised religious coping as multidimensional including both positive and negative strategies; self-directing style, deferring style and collaborative style. Self-directing and collaborative coping are conceptualised as positive coping whereas deferring coping is negative. A later study on chronic patients (N = 61) supported the multidimensionality of religious coping (Greene-Bush et. al., 1999). After controlling for demographic variables, findings revealed that positive coping strategies were associated with positive affect whereas negative religious coping were not associated with outcome variables. Corbett (1999) reported somewhat different findings in her sample of 116 African American women. The study found that self-directing religious
coping style was positively related to perceived stress and depression. In contrast, the collaborative and deferring religious coping styles were negatively related to perceived stress and depression, suggesting that the self-directing religious coping style was not the most advantageous religious coping style for this sample.

The religious coping styles proposed by Pargament (1988) have been extended to include several other ways of coping. Wong and Gorsuch (2000), for example, proposed a surrender style. It is “not a passive waiting for God to take care of everything but rather it entails an active choice to relinquish one’s will to God’s rule”. Their initial findings on this sub-construct indicated that it was internally reliable (0.94), and it was positively correlated with greater spiritual well-being and intrinsic motivation.

Recently, Pargament, Koenig and Perez (2000) developed and validated the RCOPE measure, used to assess the full range of religious coping methods, both positive and negative. The positive methods include religious forgiveness, seeking spiritual support whilst the negative methods include spiritual discontent and punishing God’s reappraisals. Initial findings reveal that religious coping accounted for significant unique variance in measures of adjustment (e.g. physical health, mental health and emotional distress) after controlling for demographic and other religious measures (e.g. frequency of prayer and church attendance).

Research on religiosity and religious coping in the context of CHD has yielded similarly varied findings. In probably the first study of its kind, Croog and Levine (1972) looked at the relationship between having an MI and patients’ values attached to religion. They found that having a heart attack did not effect patients’ levels of religiosity or attendance at religious services, although some patients reported a strengthening in positive beliefs and feelings about religion after their heart attack. A limitation of this study is the failure to assess patients’ initial strength of religious beliefs (Croog and Levine, 1972). More recently, King and colleagues (1999) found that strength of religious belief was lower in patients who were in a more serious state of clinical condition at admission \(F(2, 192) = 3.09\). Moreover, patients with stronger spiritual beliefs were twice as likely to remain the same or get clinically worse six months after admission (OR = 2.3, CI = 1.1 - 5.1); religious beliefs were more predictive of illness
outcomes than physical state assessed by clinicians or self-reported psychological state (OR = 2.5, CI = 1.2 - 5.2). As noted by the authors, several reasons could account for these patterns of findings. One explanation offered was that people who were seriously ill might be expected to find their faith more salient than others with less serious conditions. Severity of illness may subsequently lead to poorer outcomes.

On the other hand, several other studies have shown positive relationships between religious variables and illness outcomes. For example, religion and/or religious coping is associated with better health and longer survival after heart transplant (Harris, Dew and Lee, 1995), decreased mortality from cardiac-related surgeries (Oxman, Freeman and Manheimer, 1995), maintenance of blood pressure (Levin and Vanderpool, 1987) and reduced risk of both fatal and non-fatal re-infarction (Thoresen, 1990). A study conducted by Woods and Ironson (1999) on medically ill patients (e.g. cardiac, cancer and HIV; N = 60) found that patients who considered themselves religious or spiritual indicated that their beliefs influenced their participation in a variety of health-related behaviours.

Differences in the patterns of findings cited above can be attributed to several factors. For one, most of the work done is cross-sectional in design. Any relationship obtained between religious variables and illness outcomes does not necessarily imply causality. For example, a possible reason why people with stronger spiritual beliefs appear to do less well clinically may be because they are more vulnerable in some physical or psychological sense (King et. al., 1999). Another plausible reason may be attributed to the lack of consensus on the measures used to assess religion variables. The discrepancy in assessment methods is attributed to the absence of a solid theoretical background upon which these concepts were formulated (Maltby and Day, 2000). For one, assessments of religiosity or religious coping are usually based on two to three-item scales (Thoresen, 1999), relying on questions on religious affiliation or frequency of church attendance. New measures using qualitative strategies (e.g. case studies and focus groups) and quantitatively measured constructs have been proposed (Jenkins and Pargament, 1995) and developed (Pargament et. al., 1988; 2000).
Another issue that needs to be taken into account is religious affiliation (Thoresen, 1999). Distinctions need to be made between religious groups. For example, Tix and Frazier (1998) found that religious affiliation moderated the effects of religious coping and adjustment among patients undergoing kidney transplant. Furthermore, different religious affiliations have different forms or rituals that characterise ‘religiosity’. For instance, Christians who attend the church once a week would be considered religious; on the other hand, Muslims who do not pray five times a day would not consider themselves religious. There is also a need to distinguish between the concept of religiosity and that of spirituality; some studies have shown that people consider themselves more religious than spiritual and vice-versa (Woods and Ironson, 1999); being more of one than the other may yield more positive illness outcomes. More recently, suggestions have been made to categorise religiosity into extrinsic religious orientation and intrinsic religious orientation; each dimension has different impacts on outcome variables (Jackson and Coursey, 1988; Maltby and Day, 2000).

In short, although findings on the relationship between religious variables and illness outcomes vary, the body of evidence available suggests a positive influence of religious coping on recovery from CHD. Extensive studies, which control for possible mediating or confounding variables that could explain illness outcomes, are needed to confirm the available findings. More importantly, research needs to take into account ethnic as well as cultural variables in the study of religion and illness.

To recapitulate, findings on coping in the context of CHD revealed that coping should be looked at in the context in which it occurs. Different coping styles yield different outcomes; some of these coping styles are effective when dealing with some illness conditions, while others are not as beneficial. In addition, more work is needed to address the issues in assessing coping; much of the concern lies with the limited validity of the psychometric tools available. Conceptual deficits in terms of generalisability, stability and dimensionality still exist (Schwarzer and Schwarzer, 1996); making it hard to draw conclusions on the exact role coping plays in rehabilitative efforts for physical illness, particularly CHD. Lastly, much of the work done is cross-sectional, thus no causal or mediational relationships can be concluded. However, provisionally, the findings show that in general, problem-solving and active-oriented patterns of coping
are associated with long-term healthy adjustment among those recovering from heart
disease.

2.1.6 Locus of control
Control is a construct widely researched in the context of health behaviours and
physical illness (e.g. Jacox, 1996; Marshall, 1991). It refers to individual perceptions of
the control they have over their life and environment in influencing their situation
and/or condition. One such belief is health locus of control; the extent to which
individuals perceive health and illness-related issues to be within their control (Wallston
and Wallston, 1984).

The health locus of control concept was developed based on the framework of Rotter’s
social learning theory (1954). Rotter (1966) conceptualized the locus of control
construct as generalized expectancy beliefs; beliefs about individuals’ perceived
relationship between their behaviours and experienced outcomes. Initially, Rotter
(1966) operationalized these beliefs along the following dimensions: internal and
external. Internal generalized expectancy or locus of control beliefs refer to the
perceptions that events are a consequence of the individual’s own actions and hence,
under personal control. External locus of control beliefs refer to the perceptions that
events that happen are beyond personal control; events that happen are not related to an
individual’s own behaviours. The main assumption of the health locus of control
concept is that individuals with an internal orientation of control are more likely to
perform health recommended actions, which in turn, result in better health, whilst those
who believe that control over their health is beyond them are less likely to engage in
health-promoting behaviours.

This assumption has led to the hypothesis that locus of control is a significant predictor
of health behaviours, with those with a strong internal locus of control being more
likely to have better health status compared to those without. There is evidence
supporting the positive role of internal locus of control on health behaviours in the
literature. For example, one study found that people with an internal locus of control
tend to have more knowledge about their disease and perform self-care behaviours to a
greater extent (Wassem, 1991). They are also less likely to experience debilitating
functional status in the long term (Wallhagen, Strawbridge, Kaplan and Cohen, 1994). Norman, Bennett, Smith and Murphy’s (1999) study on a representative sample of 11,632 found further support for the positive association between internal control and key lifestyle indicators (e.g. non-smoking, exercise and diet); people with high internal scores performed the most health behaviours.

However, not all studies found significant relationships between internal locus and illness outcomes. One study (N = 580) failed to find any significant relationships between internal locus of control and physical activities among diabetic patients (Gregg et al., 1996), suggesting that locus of control may function differently for patient samples. The lack of consistent findings on the reliability of locus of control in predicting health behaviours led to several criticisms of the construct. Levenson (1974), for example, suggested that locus of control constructs is multidimensional. He asserted that “internal locus of control beliefs are orthogonal to external locus of control beliefs and that within these latter beliefs it is possible to distinguish between external control exerted by powerful others and the influence of chance or fate” (c.f. Norman and Bennett, 1995; p. 64).

This criticism led to the development of the Multidimensional Health Locus of Control (MHLC) scale developed by Wallston, Wallston and Devellis (1978). The MHLC scale assesses three forms of control beliefs: internal (I), powerful others (P) and chance (C). According to the MHLC, each construct functions independently in predicting specific health behaviours. The main prediction from this model is that internals should be more likely to engage in health-promoting activities; internal locus of control is postulated to be “good, healthy and adaptive”. In contrast, chance locus of control is postulated to be negative in nature; individuals high in chance expectancy beliefs are less likely to engage in health enhancing behaviours. Powerful others locus of control is thought to be adaptive in influencing healthy behaviours when these behaviours are recommended by health professionals; it is less influential with regard to self-initiated behaviours. Further, some have likened ‘chance’ locus of control to that of ‘God locus of control’; associations between ‘chance’ locus of control and internal locus of control are nearly always negative, although not all findings support the negative relationship (see Jackson and Coursey, 1988).
There is evidence in the literature supporting the multidimensionality of health locus of control constructs. Broschott, Gebhardt and Godaert's (1994) study (N = 556) revealed that these constructs are factorially independent, and that they relate differentially to personality traits, measurements of subjective stress and self-reported health symptoms. The I scale, for example, was significantly negatively correlated with nearly all psychopathological symptoms assessed, with correlations ranging from -.25 to -.46 (e.g. anxiety, depression and sleeping problems), whilst the external scales (i.e. P and C) were generally positively correlated with these symptoms (r = .25 to .38). This study also compared the utility of Rotter's unidimensional (I-E) scale in relation to the IPC scale. Their findings show that Rotter's scale mainly assessed chance oriented external locus of control, concluding that one advantage of the IPC scales over that of Rotter's IE scale is an "unequivocal appraisal of three distinct dimensions of locus of control" (Broschott et. al., 1994).

There have also been contentions that locus of control in relation to health and illness may go beyond internal, powerful others and chance. Some researchers have posited that locus of control to God significantly predicts behaviours, independent of internal, powerful others and chance loci of control. Although work extending the locus of control constructs to God is relatively scarce, it is growing. Much of the earlier work in the normal population found God locus of control to be negatively related to personal control and to be independent of overall measures of successful coping (e.g. Pargament, Sullivan, Tyler and Steele, 1982). Most studies published in the literature support this pattern of findings. Pargament and colleagues (1997) who conceptualized God locus of control in terms of problem-solving (see p. 55) found that, among religious believers, problem-solving to God (deferring style) was negatively related to measures of competence and negatively correlated with internal control (self-directing style). However, initial studies on non-Caucasian samples have revealed dissimilar patterns of findings. One of the findings was the positive relationship between this God locus of control with Rotter's internal locus of control, contradicting much of the earlier findings showing negative relationships with personal control (Jackson and Coursey, 1988). More recently, Wallston and colleagues (1999) developed the God Locus of Control scale, in adjunct to the MHLC. Initial findings provide evidence of the scale's reliability.
and validity. This development in the conceptualization of the locus of control model merits further work, especially so in health and illness research.

The inconsistencies in findings could be attributed to several factors. One factor is that locus of control is often studied without regard for situation-specific attribution of control (Marshall, 1991). In an attempt to address this weakness, situation-specific measures have been developed (e.g. Wallston et. al., 1978; Partridge and Johnston, 1989), the utility of which need further validation. The evidence available is quite promising, however. Frazier and Waid's (1999) study on elderly people (N = 91) found that situation-specific internal and external loci of control differentially predicted anxiety; the loss of internal control and stronger attribution to chance increased levels of anxiety whilst attribution to powerful others increased hypochondriasis. Another study found that stronger attribution to others (e.g. doctors and physicians) significantly correlated with self-reported adherence in adults with cystic fibrosis (Myers and Myers, 1999). More relevant is a study (N = 312) examining diabetes-specific health locus of control patterns and HbA1C; it reported that patients with high internal control and weak chance control were metabolically better regulated compared to patients with other attribution patterns (Stenstroem, Wikby, Anderson and Ryden, 1998).

To date, not much work has looked at the relationship between locus of control and recovery from CHD. The findings available are far from conclusive. In a study conducted on first-time MI patients, Bar-On (1987) found that patients (N = 89) who attributed their illness and its possible outcomes to external factors were less likely to return to work earlier; they also had lower ratings in their physical and sexual functioning six months post MI. This finding is supported by Birkimer and colleagues' (1991) study on cardiac rehabilitation graduates (N = 117). Internal locus of control was associated with better overall ratings of health (r = .27) and fewer complications in daily functioning (r = -.23). Chance locus of control was strongly associated with poor health status (r = -.37) and higher serum cholesterol levels (r = .34) and fat consumption (r = .26). The findings of these studies imply that each locus of control construct was predictive of specific cardiac outcomes. Another study in the literature looking at locus of control and recovery from CHD was conducted by Powers (1994). He found no association between appraisal of control and psychological distress after controlling for
contextual variables. However, Fowers found an interactive effect between the level of stress and perception of control in accounting for psychological distress among patients attending a cardiac rehabilitation programme: high levels of stress and low levels of control were associated with more distress.

Despite the inconsistencies in findings on the relationship between loci of control and CHD outcomes, this area of research is promising given the nature and course of heart disease. This is so especially in the context of cardiac rehabilitation and intervention programmes where among others, patients’ appraisals of illness controllability could be modified and may be important determinants of cardiac-healthy behaviours.

2.2 Psychological Aspects of Cardiac Rehabilitation Programmes (CRP)

A cardiac rehabilitation programme (CRP) is a service provided to assist cardiac patients to recover from their illness, aimed at reconditioning the patients physically, emotionally and socially, so as to enable them to return to as normal a life as possible (see Chapter 1 for definition). It is a process of enabling, encouraging and assisting patients to make the transition from a state of illness to a state of health, as near as possible to the life they had before the onset of their illness (Cay, 1995). This process involves improvement in function, relief of symptoms as well as enhancement of patients’ quality of life. This section of the review will first present work done looking at factors associated with participation at CRP. Next, the review will discuss findings on the differences in illness outcomes for both attenders and non-attenders. Lastly, the review will present concerns cited in the literature regarding the effectiveness of CRPs in delivering and achieving their aims (see Coats et. al., 1995, Jones and West, 1995 or Pashkow, 1993 for more information regarding CRP).

Petrie and colleagues (1996) reported that only a third of eligible patients under 65 years old attend rehabilitation programmes after discharge from the hospital. Similar percentages of attendance have also been reported elsewhere (e.g. Cooper, Lloyd, Weinman and Jackson, 1999; Jones and West, 1995). Research into psychological variables associated with participation in rehabilitation programmes has been reviewed
by Blumenthal and Emery (1988), Lane and colleagues (1999), and McGee (1994). Participation rates can be explained by both demographic and psychological factors. McGee and Horgan (1992) reported that rate of participation among women is lower than that of men; women are also more likely to drop out of such programmes earlier than men. The pattern of gender differences in participation in and compliance to CRP is confirmed in other studies (e.g. Ades, Waldman, McCann and Weaver, 1996). Age is another factor influencing attendance at CRP (Ades et al., 1996), with younger patients being more likely to attend CRP following discharge from the hospital compared to older patients.

Among the psychosocial variables found to predict attendance are illness beliefs. Cooper and colleagues (1999) found that two illness beliefs predicted non-attendance at CRP: cause and controllability. Patients who failed to attend CRP (n = 82) were less likely to believe that their illness was attributed to their lifestyle compared to patients who attended (n = 55). Non-attenders were also less likely to believe that their illness was controllable. In addition to illness beliefs, denial at hospitalisation was also found to be a significant predictor of non-attendance at CRP (Ades et al., 1996). The role of perceived control and denial in influencing attendance at and adherence to CRP is also supported by other studies (e.g. Fielding, 1991). Other psychological variables found to predict attendance (or conversely, drop out) of CRP are emotional status. For example, Blumenthal and colleagues (1982) found that depression and anxiety (among other variables), independent of physical status, significantly differentiated patients who dropped out of programmes early on from those who continued their enrollment. These patterns of findings suggest that patients who are unlikely to attend CRP may be prospectively identified based upon their psychological characteristics assessed in the hospital. It has been suggested that up to 90% of cases of dropouts could be identified by such pre-programme assessments (McGee, 1994).

Studies looking at outcomes of attendance at CRP are growing; most focus on outcomes such as return to work, emotional distress and physical functioning. In a study (N = 66) comparing patients who attended a five-months exercise-based CRP and those who dropped out, the findings indicated healthier overall post-infarction lifestyle among the experimental group, controlling for pre-MI lifestyles (Giese and Schomer, 1986). They
were more likely to eat healthily, exercise regularly and adopt healthy self-care behaviors. Patients who dropped out of the programme were more likely to report mood disturbances at the beginning of the programme. Oldridge and colleagues (1991) conducted a randomised control trial (N = 201), assessing the impact of a six-week rehabilitation programme on patients’ quality of life, mood levels, exercise tolerance and return to work. They found small, but significant improvements in the rehabilitation group at eight weeks in their emotional well-being, in their state of anxiety and exercise tolerance level. Interestingly, the differences in outcomes between the two groups disappeared by 12 months; similar improvements were observed in health-related quality of life and other outcome measures in both groups.

Despite these positive findings, other studies have shown that rehabilitation programmes do not impact on the physical and psychological well-being of all patients who attend CRP (Blumenthal and Emery, 1988; Lane, 1999; McGee, 1994). For example, in a controlled study of men and women who participated in the Montreal Heart Attack Readjustment Trial (Taylor and Kirby, 1997), there were no significant differences in depression scores from baseline to 12 months between the intervention group and those receiving routine care. Oldridge and colleagues’ (1995) randomised control trial of 187 patients found that overall, rehabilitation and control patients showed similar and significant improvements in anxiety, depression and mood states over twelve months. These findings confirm earlier work which did not find significant differences among cardiac rehabilitation patients and control subjects in psychosocial adaptation and functioning (see Denollet, 1993).

It has been suggested that CRP have failed to demonstrate long-term benefits consistently to all their patients (Bennett and Carroll, 1994). For example, there is evidence that there are differences in compliance to a prescribed home exercise regimen a year after completing formal rehabilitation between Caucasians and African-Americans. The latter were nearly three times less likely to continue their exercise regimen after completing the rehabilitation programme compared to Caucasians (Afzal, Noor, Brawner, Jankowski and Ketyjian, 1999). These findings suggest the need to develop programmes that are sensitive to cultural differences among ethnic groups.
Questions have been raised about the content and applicability of these rehabilitation programmes. Should rehabilitation programmes be offered to all patients, regardless of their diagnosis, demographics and psychological characteristics? Initially, only MI patients were offered CRP but over recent years, patients recovering from CABG and PTCA have also been recruited into such programmes. Given the differences in diagnosis and severity of illness, these groups of patients have differing rehabilitation needs, thus questioning the applicability of a generic programme.

There has been also much debate on the efficacy as well as efficiency of cardiac rehabilitation programmes in improving patients' short as well as long term recovery (Bennett and Carroll, 1994; Mayou, 1996). Whilst some programmes appear to be effective in achieving the aims of improving patients' physical functioning and quality of life post coronary event, other programmes have failed to do so (van Uden et. al., 1989). For example, a study conducted by O'Rourke and Hampson (1999) assessing the efficacy of two rehabilitation programmes found differences in illness control beliefs and depression between patients who received The Edinburgh Heart Manual and those who did not; the former reported stronger illness control beliefs and less depression at follow-up. However, no significant differences were found on GP contact and hospital admission post MI between the two groups. Oldridge and Rogowski (1990) found no significant differences in overall ratings of self-efficacy in terms of routine physical activities, daily living tasks and ability to cope with illness between patients who attended a ward ambulation programme (n = 26) and a dedicated exercise center programme (n = 25). However, a significant difference in efficacy with regards to walking time and overall exertion was found. The exercise center patients scored higher on these dimensions than the ambulation group (p < .05). In general, this finding suggests that in-patient ambulation programmes are as effective in improving patients' self-efficacy post MI as specialised exercise-based programmes.

Another concern voiced is the format of the programmes offered. The guidelines for cardiac rehabilitation set up by British Association for Cardiac Rehabilitation (1996) recommended that among others, CRP should incorporate the skills of a range of professionals, psychologists included. However, surveys of the programmes available in the UK show that in only 21% was a psychologist part of the rehabilitation team and in
only 9% did the psychologist directly interact with patients (Lewin et al., 1995; 1998). Many of the programmes developed are exercise-based; hence may have overlooked the psychological and emotional status of patients. The review by Lewin et al. (1998) revealed that adherence to UK national guidelines is poor; psychosocial factors were poorly assessed in a majority of the programmes examined. Thus, the incompatibility of the type of programme offered (e.g. treadmill exercise) and the intended outcomes (e.g. reduced anxiety and depression) may thus account the lack of positive findings in many of these studies. Additionally, some have contended that rehabilitation programmes may be beneficial to some patients but not to others (van-Uden et al., 1989). It is possible that whereas many patients need intensive rehabilitation programmes, others could benefit from minimal intervention.

Another concern that has been raised is the validity of the measurements used to assess patient outcomes following attendance at rehabilitation programmes; there is little consensus on the psychosocial evaluation instruments used. Denollet (1993) addressed two potential problems associated with assessments of cardiac rehabilitation outcomes: firstly, non-specificity and secondly, measurement of incorrect constructs. One way of avoiding pitfalls in assessment is to rely less on measures of psychopathology (e.g. Beck’s Depression Inventory (BDI) and Minnesota Multiphasic Personality Inventory: (MMPI) in assessing emotional distress. Denollet (1993) asserted that cardiac patients are not mentally ill but predominantly experience decrements in physical health, functional status and well-being; hence measures assessing feelings of disability and decrements in well-being are more appropriate for assessing the psychosocial benefits of attendance at CRP (Denollet, 1993). McGee, Hevey and Horgan’s (1999) systematic review of psychosocial outcome assessments for use in cardiac rehabilitation service found that although some instruments demonstrated significant potential as assessment tools (e.g. Global Mood Scale and Heart Patients Psychological Questionnaire), others showed less reliability. The authors have recommended comparative assessment of these instruments to inform future recommendations about instrument selection for evaluation purposes.

Perhaps the more pressing issue concerning rehabilitation programmes is their generalisability across ethnic groups and cultures. The concept of cardiac rehabilitation
is new in non-Western countries. To date, there is only one study conducted in Asia that has looked at patient outcomes post-rehabilitation (Alvin and Mojica, 1997). The study looked at 22 cardiac patients in the Philippines who had attended a phase I CRP. They found that a majority of patients had returned to gainful employment and led a productive lifestyle in terms of the performance of activities of daily life. Their findings are suggestive of the potential benefits of the programme offered in the Philippines, despite the limitations of the study.

If participation in cardiac rehabilitation programmes reduces disability and improves quality of life, then it is imperative that all cardiac patients are given the opportunity to attend. Psychological assessment should form a part of these rehabilitation programmes. More importantly, the exact provision of rehabilitation should be tailored to individual needs. For instance, it has been suggested that potentially costly interventions aimed at alleviating anxiety and/or depression should be directed to those who showed elevated emotional distress (Lane et. al., 1999). Patients identified as being anxious and/or depressed at discharge and those who are predisposed to poor adaptation after a coronary event should be targeted for cognitive behavioural interventions, in addition to the exercise and education programmes offered by the cardiac rehabilitation teams. In short, in order to ensure the effectiveness of CRP on patients' recovery from CHD, it is important to optimally match patients to the programmes available.

2.3 Theoretical Issues

Research looking at the psychological determinants of recovery and outcomes of CHD is extensive. Social cognitive models have been widely applied in the attempt to explain the relationship between psychosocial factors and health and illness behaviours related to CHD. The predictive utility of SCMs is supported by many findings in the health literature. However, as with many other models, SCMs are not without their limitations. For one, SCMs focus mainly on social cognitive variables; they do not regard emotional variables such as moods and negative affect to be important predictors of health and illness outcomes. SCMs also do not address the importance of sociodemographic characteristics in influencing health behaviours and illness outcomes. Religious
affiliation, for one, has been shown to moderate the relationship between spirituality and physical and psychological well-being in some patient populations. Lastly, SCMs do not include regulatory processes involved in determining the adoption and maintenance of health-related behaviours.

The present research project acknowledges the importance of including social cognitive variables such as self-efficacy and intentions in predicting cardiac-related behaviours and outcomes. However, it also takes into account the limitations mentioned above. Thus, in an attempt to determine the predictors of psychological and behavioural outcomes of Malaysian cardiac patients, the present study also includes other psychosocial variables found to be significant predictors of CHD-related outcomes, based on the above literature review.

In short, myriad factors interact to influence the outcomes of CHD. Some of these factors are cognitive in nature, whilst others are social or emotional. Some are stable across time and conditions, whilst others are situation-specific, fluctuating in frequency and intensity. Several of the factors directly influence illness outcomes; others act as mediators. As many studies have shown, the predictive and causal patterns of psychological variables on the physical, psychological and social functioning of CHD patients are not conclusive. In order to explore the predictive power of different psychological variables on the outcomes of CHD, the following model was developed, incorporating several social cognitive variables used in SCMs as well psychological constructs not included in the SCMs but deemed important and applicable in the Malaysian context (see Chapter 4, Chapter 5 and Chapter 6).

2.4 Hypothesised Model Predicting Psychological Aspects of CHD among Malaysians

Based on the review above, a model predicting psychological outcomes of CHD among Malaysians was derived (see Figure 2.1). The model predicts the longitudinal relationship between psychological variables assessed at the time of hospitalisation and emotional well-being, functional status and quality of life up to six months post cardiac
event. The model hypothesises that emotional well-being, functional status and quality of life among post Malaysian cardiac patients are predicted by self-referent beliefs, interpersonal constructs such as coping and locus of control and emotional status assessed during patients' period of hospitalisation. These psychosocial variables are thought to be stronger predictors of emotional well-being and functional status for post cardiac patients, over and above sociodemographic variables.

According to the model, self-referent beliefs directly predict emotional well-being, quality of life and functional status of Malaysian cardiac patients following discharge. Self-referent beliefs also predict these psychosocial outcomes through the mediation of interpersonal constructs such as coping, locus of control and pessimistic views. The model further suggests that anxiety and depression following patients' cardiac event directly predict emotional well-being, functional status and quality of life six months post discharge.

The predictor variables in Figure 2.1 are ordered from left to right in terms of their hypothesised proximity as determinants of outcomes. The model suggests that sociodemographic characteristics such as age, gender and ethnicity are directly related to self-referent beliefs. Older patients, for instance, are more likely to report lower levels of self-efficacy than younger ones.

Next, the model posits that self-referent beliefs affect the way patients' cope with their illness; self-efficacy and self-esteem also affect the way patients attribute their recovery from it. In addition, self-referent beliefs, particularly self-esteem, influence the way patients perceive their future. For example, patients with low self-esteem are more likely to be pessimistic of their future.

Self-referent beliefs are further hypothesised to shape patients' intentions to attend CRP. Patients with high general and specific self-efficacy are predicted to form an intention to attend CRP, whereas patients with low general and specific self-efficacy are predicted not to. Self-referent beliefs are also hypothesised to influence intention to seek complementary treatment. Unlike attendance at CRP, patients with low self-efficacy are predicted to form an intention to seek complementary treatment, whereas highly efficacious patients will not intend to do so. The model suggests that the
relationship between self-referent beliefs and intentions could be direct as well as indirect, via mediation of coping, locus of control and pessimism constructs.

In accordance with SCMs such as the Theory of Planned Behaviour, actual attendance at CRP and actual use of complementary treatment are directly predicted by intentions to perform the respective actions. These behaviours are also directly predicted by self-referent beliefs.

Finally, the model suggests that attendance at CRP and the use of complementary treatment are directly related to psychosocial outcomes. For example, attendance at CRP is hypothesised to have a positive relationship with psychosocial adaptation to CHD.
Figure 2.1 Hypothesised Model on Psychological Aspects of Recovery from CHD among Malaysians
Chapter 4, Chapter 5 and Chapter 6 will address the specific relationships between predictor variables and psychosocial outcome variables as presented in the model. First, Chapter 4 will look at the cross-sectional relationship between predictor variables (i.e. sociodemographic variables, self-referent beliefs, psychological constructs) and negative affect as well as intentions. Chapter 5 will address the longitudinal relationships between the predictor variables and emotional well-being, functional status and quality of life. Lastly, Chapter 6 will look at the cross-sectional relationships between sociodemographic variables and psychosocial outcomes six months after discharge. Research questions based on the model are formulated for each respective study.
CHAPTER 3

STUDY 1
DERIVATION OF MEASURES

Aim

The aim of this thesis was to study psychological aspects of recovery from CHD among Malaysian patients. To date, no psychological study of this kind has been conducted in Malaysia. No published information is available on whether attempts have been made to validate psychological measures related to CHD developed in the West on Malaysian samples, although there is some literature on the use of several Western-based measures in Malaysian settings. Much less is known on whether there are psychological assessment tools developed specifically for use on Malaysians.

Thus, an aim of this study (Study 1) was to derive measures to be used to assess psychological characteristics of CHD patients in Malaysia (Study 2, Study 3 and Study 4). Specifically, the study was conducted to determine the reliability and validity of measures of the constructs specified in the model of CHD recovery (see Figure 2.1) when administered to a healthy, normal Malaysian population. These data were used to modify the measures as necessary for use in the subsequent studies of Malaysian cardiac patients.

3.1 Methods

3.1.1 Participants

Participants were a convenience sample, recruited from three settings: a higher learning institution, a secondary school and a department of a government ministry. Of the 130 questionnaires distributed, 97 were completed and returned (74 % response rate). Twenty (21 %) of the respondents were students from the higher learning institute, 56 (57%) were secondary school teachers and the remaining 21 (22%) were from a
government ministry. Forty-seven (48%) were women and 50 (52%) were men. Participation was voluntary. All participants were healthy at the time of the assessment and had reported no previous diagnosis of any serious illness.

3.1.2 Design and Procedure
The study was a cross-sectional survey assessing Malaysians' perceptions of illness-related thoughts, emotions and behaviours. A research assistant hand-distributed the questionnaires to approximately 130 people in these organisations within a period of two weeks. Potential respondents were briefed of the aims of the study after consent was given. They were given a week to return the questionnaires to the research assistant.

3.1.3 Materials
Data for this study were collected through a questionnaire which incorporated measures that were originally formulated in English. These measures were then backtranslated by two bilingual translators. Both the English and Malay versions were provided. Participants were asked to indicate which language they relied upon more when completing the questionnaire. A majority of Malaysians are bilingual. Inclusion of both Malay and English was to ensure that participants would understand the items and had a choice in responding to the items. This was also to determine whether there would be any differences in the quality of responses from those responding to either Malay or English. The differences in responses may highlight the lack of construct and/or face validity of the measures used.

3.1.3.1 Selection of scales and items: criteria
Questionnaire for this study was designed to be concise but comprehensive so as to prevent participant fatigue and/or boredom. In selecting the appropriate measures of the constructs specified in the proposed model of CHD recovery (see Figure 2.1), several issues were taken into consideration among which include the following: (1) scales with consistently high reliability and validity as assessed in previous studies in the West, with alpha coefficient of .60 or more (Nunally, 1978); (2) scales that have been widely used in general and clinical settings.
Next, selection of scale items were based on the following criteria: (1) items with factor loadings of .50 as reported by the respective scale developers; (2) items that are deemed appropriate for Malaysian setting; (3) items that are appropriate for patients (i.e. not cause further distress and/or anxiety).

3.1.3.2 The original scales

The General Self-Efficacy scale

The General Self-efficacy scale was developed by Sherer and colleagues (1982) to assess peoples' perceptions of their ability to perform difficult tasks. The scale has also been used to assess peoples' perceptions of their capabilities to handle difficult situations. The reliability coefficient of the original 17-item scale was .86. It was also found to be highly significant with other internally-oriented factors such as self-esteem ($r = .51$) and social desirability ($r = .43$).

The Global Self-Esteem scale

Rosenberg's (1965) item scale was constructed to assess perceptions of one's general feelings of self worth and value. The scale has been widely used in both healthy and patient populations.

The Recovery Locus of Control scale

Partridge and Johnston (1989) developed the 9-item Recovery Locus of Control (RLC) scale to assess peoples' attributions and beliefs concerning factors determining their illness outcomes. The scale is two-dimensional, providing a measure of the internality and externality of patients' perceptions of their recovery. Five items are worded to reflect internal beliefs and four items reflect external beliefs. The scale has been found to be consistently reliable with alpha coefficients ranging from .67 to .77.

The Multidimensional Locus of Control scale

The Multidimensional Locus of Control (MHLC) scale was developed to assess individuals' perceptions on general issues concerning health and illness, and their beliefs about the causes and processes of becoming ill (Wallston, Wallston and DeVellis, 1978). It provides measures of three dimensions of health locus of control: internality, chance and powerful others.
The COPE scale
The COPE scale is a 60 item multidimensional coping inventory developed by Carver, Scheir and Weintraub (1987) and incorporates 15 theoretically based, conceptually distinct scales. The coping dimensions included were active coping, planning, denial, acceptance, emotional support, behavioural disengagement and turning to religion. Test-retest reliability analyses have been consistently stable, with alpha coefficients ranging from .42 to .89 when used in different populations (Carver et. al., 1987). Of the original 60 items assessing different coping strategies, only 29 items (8 coping styles) were selected to form the new cope scale for this study.

The Helplessness scale
Beck and colleagues (1973) developed the Helplessness scale to assess pessimism about one's future. The scale was originally intended for use on diverse patient population. Internal reliability of the 20 item scale has a high degree of internal consistency and has been shown to highly correlate with ratings of hopelessness. Ten items with the strongest inter-item correlation coefficients were selected to derive the pessimism scale for this particular study.

The Hospital Anxiety and Depression scale (HAD)
Zigmond and Snaith's (1983) 14 item HAD scale was developed to assess level of anxiety and depression experienced by both in-patient and outpatient populations. The measure has been found to be highly correlated with ratings of anxiety and depression among medical outpatients (r = .54 and r = .79, respectively). This particular scale was selected because it contains both constructs in one short single scale; hence is appropriate for administration to hospitalised patients. Furthermore, the HAD scale has also been shown to be more appropriate in detecting and assessing possible clinical levels of emotional disturbance among non-psychiatric medical outpatient population (Zigmond and Snaith, 1983).
3.2 The Questionnaire

The questionnaire consisted of seven scales, assessing five psychological content areas:

3.2.1 Self-referent beliefs

Self-referent beliefs consisted of items assessing self-efficacy (seven items) and self-esteem (nine items). Participants were instructed to respond to the items based on their general feelings about themselves. The instructions for the self-efficacy and self-esteem measures were as follows:

_We are interested in the way you perceive yourself. Based on the scale below, please indicate the extent to which you agree or disagree with each of the following statements in describing your general views of yourself._

Each item was rated on a 5-point Likert scale as follows, with higher scores indicating stronger self-efficacy or stronger self-esteem: "1" = “strongly disagree”, “2” = “disagree”, “3” = “uncertain”, “4” = “agree” and “5” = “strongly agree”.

3.2.2 Locus of control

Health locus of control scales were utilised to assess attributions of control related to the causes of and recovery of illness. Two scales made up this section: the MHLC and the RLC. All 18 items from version B of the MHLC and all nine items of the RLC were incorporated into the questionnaire. Participants were instructed to respond to the following instructions: _The following are statements other people have made about their views on illness in general. Based on the scale below, please indicate the extent to which you agree or disagree with each statement in describing your views about the causes and outcomes of illness._

Each item was rated on a 5 point Likert scale: 1 = “strongly disagree”, 2 = “agree”, 3 = “uncertain”, 4 = “agree” and 5 = “strongly agree”. Higher scores indicate stronger endorsement of a particular locus of control item.
3.2.3 Coping

The pilot questionnaire incorporated eight of the original 15 sub-scales: active coping, planning, seeking emotional support, turning to God, focus on and venting of emotions, behavioral disengagement acceptance and denial. Participants were instructed to respond to the 29-item scale based on the following instructions: There are many ways of dealing with difficult situations in life. We are interested in how you handle stressful life situations. Based on the scale below, please indicate the extent to which you use the following ways in dealing with life problems.

The Likert rating scale ranged from 1 = “I don’t do this at all”, 2 = “I sometimes do this”, 3 = “I often do this” and 4 = “I always do this”. Higher scores indicate higher tendency to use the particular coping style.

3.2.4 Emotional well-being

All 14 items from the HAD scale made up this section. Participants were asked to report their emotional experiences during the past week based on the following instructions: The following statements may describe your the last seven days. Based on the scale below, please indicate the extent to which you experience those feelings.

The Likert rating scale ranged from 1 = “never”, 2 = “sometimes”, 3 = “uncertain”, 4 = “often” and 5 = “always”. Higher scores indicate higher depression or higher anxiety.

3.2.5 Sociodemographic information

Items on participants’ age, gender, ethnicity, religion, marital status and occupation were also incorporated. Participants were asked to indicate to which language they relied on more in response to their items in the questionnaire. See Appendix 2 for a copy of the questionnaire.

3.3 Analyses

Two different methods were used to determine the components underlying multidimensional measures (i.e. MHLC, RLC, HADS and the COPE): factor extraction
and factor specification. Principal components analyses (PCA) and oblique (Oblimin) rotation were first conducted on multidimensional scales to determine whether the components extracted were consistent with the existing theoretical constructs. Factors with eigenvalues of 1 or more were retained, and items with factor loading of less than .30 were omitted. In the factor specification analysis, solutions for different numbers of factors were examined: three components were specified for the MHL, two for the RLC, two for the HAD scale and eight for the COPE. The aim of specifying the number of components was to determine whether the factors extracted would be consistent with the theoretical constructs supposedly measured by each respective measure.

To examine internal reliability, Cronbach alpha reliability coefficients of extracted and specified constructs were obtained and compared. Constructs with alpha coefficients less than .60 were excluded from further analyses. Items were also deleted if their deletion increased the Cronbach alpha value of the new scale. Selection of constructs (variables) to be used for further analyses was based on Cronbach alpha coefficient, with minimal loss of items. Lastly, to examine construct validity, bivariate analyses among variables were performed to ascertain the directions and strengths of their relationships.

3.4 Results

3.4.1 Sociodemographic Characteristics
A similar proportion of men and women participated in this study (51.5% and 48.5%, respectively). Of the 97 participants, 56 (57.7%) were married and the remaining 41 (42.2%) were single. Twenty (20.6%) of the participants were undergraduate students, 10 (10.3%) were unskilled labourers and the remaining 56 (57.7%) were skilled or semi-skilled professionals. A majority of the participants were Malays (83.5%) and reported affiliation with Islam (87.6%). The mean age of participants was 30 years (SD = 6.12), with age ranging from 19 to 56 years. Table 3.1 summarises participants' sociodemographic characteristics.
Table 3.1  Sociodemographic characteristics of participants (N = 97)

<table>
<thead>
<tr>
<th>Sociodemographic Characteristics</th>
<th>Frequencies (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>30.04 years (SD = 6.12)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>50 (51.5%)</td>
</tr>
<tr>
<td>Female</td>
<td>47 (48.5%)</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Malays</td>
<td>81 (83.5%)</td>
</tr>
<tr>
<td>Non-Malays</td>
<td>16 (16.5%)</td>
</tr>
<tr>
<td><strong>Religion</strong></td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>85 (87.6%)</td>
</tr>
<tr>
<td>Others</td>
<td>12 (12.4%)</td>
</tr>
<tr>
<td><strong>Marital Status</strong></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>41 (42.2%)</td>
</tr>
<tr>
<td>Married</td>
<td>56 (57.7%)</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>20 (20.6%)</td>
</tr>
<tr>
<td>Unskilled Workers</td>
<td>10 (10.3%)</td>
</tr>
</tbody>
</table>

3.4.2 Derivation of Measures

3.4.2.1 Factor extraction

3.4.2.1.1 The MHLC

Eight factors emerged from MHLC scale, of which three were interpretable. The interpretable factors were “others control” (Factor 2), “internal control” (Factor 4) and “fate control” (Factor 8). None of the remaining six factors consisted of any coherent patterns of loadings.

3.4.2.1.2 The RLC scale

Direct Oblimin rotation extracted three factors, accounting for 56% of the variance. The first factor was comprised of three internal locus of control items. The second factor was comprised of three external locus of control items whilst the third factor was made up of two internal items and one external.
3.4.2.1.3 The COPE scale
PCA with Direct Oblimin rotation yielded nine factors, accounting for 68% of the variance. Of the nine factors, only five were interpretable. The factors that were identified from their patterns of loadings were “Planning or Active Coping” (6 items), “Behavioral Disengagement” (4 items), “Seeking Emotional Support” (6 items), “Denial” (3 items) and “Turning to God” (3 items). Although these factor structures matched the original factor structures, some of the items did not load on the factors in the expected manner. For instance, “Behavioral Disengagement” and “Seeking Emotional Support” had additional item loadings. It has been noted that some items may overlap (Carver et al., 1989). Items may load on a theoretically similar factor instead of loading on the expected one. The remaining three factors were not interpretable. Items that were expected to load on “Venting of Emotions” did not form any particular patterns of loadings.

3.4.2.1.4 The HAD scale
Four factors were extracted by PCA using Direct Oblimin rotation, together accounting for 57.6% of the variance. Five items loaded on the Factor 1 (“anxiety”) and three items loaded on Factor 2 (“depression”). Four items, two assessing anxiety and two assessing depression loaded on Factor 3. Two remaining items (“I have lost interest on my appearance” and “I can enjoy a good book or radio or TV programme”) loaded on Factor 4.

3.4.2.2 Factor specification
The lack of clear, interpretable factors as well as the exclusion or loss of many items led to the use of factor specification. The aim was to compare which method would yield more reliable constructs. It was also performed to see whether the extracted factors were comparable with constructs of the original measures. The rotated solution limited to a specific number of factors was examined for each measure: eight components were specified for the COPE, three components were specified for the MHLC, two for the RLC and two for the HAD scale.

3.4.2.2.1 The MHLC
The three specified factors together accounted for 34% of the variance. Factor 1 consisted of predominantly ‘chance’ items (7), and one ‘others’ and one ‘self’ item. Factor 2 was made up of four ‘others’ items and five ‘self’ items whilst Factor 3 was made up of one ‘chance’ item, two ‘others’ items and one ‘self’ item.
3.4.2.2.2 The RLC
The two specified factors together accounted for 44.4% of the variance. Factor 1 ("internal recovery locus of control") was made up of six items whilst Factor 2 ("external recovery locus of control") was made up of three items. Except for one item, all other items loaded on their respective factors.

3.4.2.2.3 The COPE
Six of the eight specified factors were interpretable, accounting for 65% of the variance. Factor 1 was interpreted as "Turning to God", Factor 2 was "Behavioral Disengagement", Factor 3 was "Seeking Support", Factor 4 was "Denial", Factor 6 was "Planning" and Factor 7 was "Active Coping". Items which loaded on Factor 5 and Factor 8 were mixed, comprising of items originally assessing active coping, denial and venting of emotions.

3.4.2.2.4 The HAD scale
The two specified factors accounted for 40.1% of the variance. All except two items loaded on their respective factors. Factor 1 ("Anxiety") was made up of nine items whilst Factor 2 ("Depression") was made up of five items.

3.4.3 Selection of constructs
Constructs for unidimensional measures (i.e. self-efficacy, self-esteem and pessimism) were formulated and computed. Constructs or variables to be used for further analyses were then selected, and Cronbach alpha coefficients for each construct, both extracted and specified were computed and compared. Scale scores were means based on summing the items and dividing by the number of items in each scale. Reliability analyses showed varying internal reliability, ranging from .64 to .81. Table 3.2 summarises the Cronbach alpha coefficients of the newly-derived constructs. The MHLC and the external locus of control construct were dropped from further analyses for failing to meet the criteria mentioned above.
Table 3.2  Cronbach alpha coefficients of all constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Number of items</th>
<th>Cronbach alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>6</td>
<td>.76</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>7</td>
<td>.64</td>
</tr>
<tr>
<td>Pessimism</td>
<td>10</td>
<td>.69</td>
</tr>
<tr>
<td>Internal locus</td>
<td>5</td>
<td>.68</td>
</tr>
<tr>
<td>Active coping</td>
<td>5</td>
<td>.81</td>
</tr>
<tr>
<td>Behavioral disengagement</td>
<td>4</td>
<td>.67</td>
</tr>
<tr>
<td>Seeking support</td>
<td>5</td>
<td>.79</td>
</tr>
<tr>
<td>Denial</td>
<td>2</td>
<td>.73</td>
</tr>
<tr>
<td>Turning to God</td>
<td>3</td>
<td>.77</td>
</tr>
<tr>
<td>Anxiety</td>
<td>7</td>
<td>.77</td>
</tr>
<tr>
<td>Depression</td>
<td>5</td>
<td>.66</td>
</tr>
</tbody>
</table>

3.4.4 Psychometric properties of constructs

Eleven constructs were generated from the following six scales: General Self-Efficacy, Global Self-Esteem, Recovery Locus of Control, the Helplessness scale, the COPE and the Hospital Anxiety and Depression scale. The constructs derived were self-efficacy, self-esteem, internal recovery locus of control, pessimism, active coping, behavioral disengagement, seeking support, denial, turning to God, anxiety and depression. For each construct, a mean score was computed by summing up the scores for each item and dividing the sum by the number of items in each construct. In general, the means of the scores were normally distributed with several exceptions. The distribution of scores for three coping styles was marginally skewed (Kolmogorov-Smirnov ranging from .19 for denial to .29 for turning to God, df = 22, p < .01). The distributions for depression and pessimism constructs were also slightly skewed (Kolmogorov-Smirnov = .12 and .11, respectively, df = 97, p < .01). Internal recovery locus of control was also skewed (Kolmogorov-Smirnov = .12, df = 97, p < .01). The degree of skewness of these constructs was deemed not sufficient to require transformation.
Broadly, analyses indicated that Malaysians in this sample had high self-efficacy and high self-esteem. They also reported that they turned to God often to cope with stressful situations. They were also very likely to deal with stress actively. Malaysians in this sample were not highly depressed nor pessimistic of their future. They, however, reported moderate levels of anxiety. Table 3.3 provides a summary of the psychometric properties of constructs derived for this study.

### Table 3.3  Means and standard deviations of constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Means (SD)</th>
<th>Rating scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>3.87 (0.56)</td>
<td>1 = strongly disagree, 5 = strongly agree</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>3.86 (0.49)</td>
<td>same as above</td>
</tr>
<tr>
<td>Pessimism</td>
<td>2.01 (0.40)</td>
<td>same as above</td>
</tr>
<tr>
<td>Internal locus</td>
<td>3.91 (0.62)</td>
<td>same as above</td>
</tr>
<tr>
<td>Active coping</td>
<td>3.50 (0.52)</td>
<td>1 = never, 4 = often</td>
</tr>
<tr>
<td>Behavioral disengagement</td>
<td>1.87 (0.55)</td>
<td>same as above</td>
</tr>
<tr>
<td>Seeking support</td>
<td>2.98 (0.61)</td>
<td>same as above</td>
</tr>
<tr>
<td>Denial</td>
<td>2.15 (0.73)</td>
<td>same as above</td>
</tr>
<tr>
<td>Turning to God</td>
<td>3.64 (0.56)</td>
<td>same as above</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.35 (0.53)</td>
<td>same as above</td>
</tr>
<tr>
<td>Depression</td>
<td>1.76 (0.49)</td>
<td>same as above</td>
</tr>
</tbody>
</table>

#### 3.4.5 Bivariate relationships among constructs

Bivariate analyses, using the Pearson's two-tailed correlation r coefficient, were performed to determine the directions and strengths of relationships between the newly derived variables. In general, variables moderately correlated in the expected directions.

Self-efficacy and self-esteem were positively and significantly correlated with each other (r = .66, p < .001), suggesting that people who strongly rated themselves as capable of carrying out difficult tasks were also more likely to have perceived themselves to have strong self-worth. Self-efficacy was positively correlated with other adaptive constructs such as active coping and internal control (r = .32, p < .005 and r = .22, p < .05, respectively). Similar correlation coefficients were obtained for self-esteem.
and active coping ($r = .26, p <.05$) and internal control ($r = .29, p <.005$). These patterns of relationships are consistent with the conceptual notion that self-efficacy and self-esteem assess perceptions of personal abilities and control (Sherer et al., 1987).

Several significant associations were obtained among coping variables. For instance, seeking support was significantly associated with turning to God ($r = .24, p <.05$) and active coping ($r = .22, p <.05$). These relationships suggest that people who often sought support from friends and relatives were also more likely to turn to God in dealing with stressful situations. People who sought support were also more likely to actively deal with stressful situations. Bivariate analyses also revealed that active coping was positively significantly associated with turning to God ($r = .49, p <.001$), suggesting that people who took direct actions to overcome problems were also more likely to seek God for assistance in dealing with the problems. Behavioral disengagement was significantly associated with denial ($r = .34, p <.005$); those who reduce effort in solving problems were also more likely to deny the severity of the problem.

Bivariate analyses further revealed that anxiety and depression were not significantly related with each other ($r = -.007, n.s.$). The lack of association between these two constructs was quite unexpected for it has been reported that these constructs often overlap (Zigmond and Snaith, 1989). It does suggest, however, that anxiety and depression are two distinct constructs when applied on this healthy Malaysian sample. Anxiety was found to be significantly correlated with behavioral disengagement ($r = .20, p <.05$) and seeking emotional support ($r = .27, p <.01$). Depression was significantly correlated with one other construct: denial ($r = -.23, p <.05$), suggesting that people who were depressed were less likely to deny stressful situations or people who denied the severity of their problems were less likely to be depressed. Interestingly, neither anxiety nor depression were significantly correlated with pessimism. Figure 3.1 shows a correlation matrix of all psychological constructs derived in this study.
Figure 3.1 Correlation matrix of newly-derived constructs

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

3.5 Discussion

The purpose of this study was to examine whether measures developed in the West are applicable when used on non-Western samples and to use the findings to derive measures to be used in studies on Malaysian cardiac samples.

Preliminary analyses provided some support for the reliability of some the measures developed in the West when applied on healthy Malaysian samples. For instance, almost all of the derived constructs (with the exception of 'external recovery locus of control'), had Cronbach alpha coefficients of above 0.60, meeting the criteria suggested by Nunally (1978).

The findings also suggest that the constructs assessed in this study demonstrated some level of validity, indicated by the results obtained from factor analyses and bivariate analyses. For instance, self-referent beliefs (i.e. self-efficacy and self-esteem) were
significantly and positively related with each other. Self-efficacy was also significantly correlated with 'personal control' variables such as active coping and internal recovery locus of control variables. These relationships suggest that taking direct actions to solve problems and attribution of success of recovery from illness are related to perceptions of personal efficacy. These relationships are consistent with those found by Sherer and colleagues (1982) and are supportive of Bandura's (1977) self-efficacy model.

However, there were several unexpected relationships that emerged in bivariate analyses. For example, a significant positive relationship was found between active coping and turning to religion/God as a coping style. Conceptually, these two constructs are independent of each other (Carver et al., 1987). A possible explanation for the significant relationship between these two constructs is the way these items were perceived by this Malaysian sample. Items assessing turning to religion/God indicate 'personal efforts' taken by the individual to cope with the stressful situation (e.g. 'I pray more than usual'). Hence, turning to God to cope with a stressful situation may have been perceived as a form of active coping by Malaysians in this study.

An interesting finding of this study was the lack of significant correlation between the anxiety and depression sub-scales. It has been suggested that items assessing anxiety and depression may overlap, and that the HAD scale could be used as a unidimensional measure of emotional disturbance (Zigmond and Snaith, 1983). The finding of this study indicated otherwise; that the HAD scale measured two distinct mood states when applied on healthy Malaysians. Some studies provide some support for this distinction. Moorey and colleagues' (1991) study examining the factor structure and factor stability of the HAD scale in cancer patients (N = 575) showed that the HAD is bidimensional, tapping separate but related constructs of anxiety and depression.

Several reasons could account for the mixed findings on the reliability and validity of the measures derived in this study. For one, most of these measures were developed to assess psychological characteristics of patients samples. For example, the HAD scale was designed to assess potential clinical anxiety and depression among in-patients and out-patients populations. When used in patient populations in the West, the HAD scale demonstrated high internal reliability, with reported Cronbach alpha coefficients of .93
for anxiety and .90 for depression (Moorey, Greer, Watson, Gorman, Rowden, Tunmore, Bernadette and Bliss, 1991; Zigmond and Snaith, 1983). Studies have also shown that the HAD scale to be valid when used on patients with physical illness, demonstrating significant relationships with other psychological scales such as the General Health Questionnaire (GHQ) and the Diagnostic Interview Schedule (DIS) (c.f. Moorey et. al., 1991).

Similar reason could also be used to account for the lack of internal consistency in the RLC scale. The RLC scale was also developed to specifically assess perceptions of recovery from illness (Partridge and Johnston, 1989). The validity of applying these measures on healthy individuals is, thus, questionable.

In general, the preliminary findings of this study provide some support for the translated measures when used in Malaysian setting. The newly-derived constructs had moderate to good reliability and demonstrated some level of face validity. Although not conclusive, it can be suggested that some measures developed in the West are applicable in non-Western contexts. The applicability of these measures will be further validated in studies on Malaysian cardiac patients (Chapter 4, Chapter 5 and Chapter 6).
CHAPTER 4

STUDY 2

PSYCHOLOGICAL ASPECTS OF CHD AMONG IN-HOSPITAL MALAYSIAN PATIENTS: A CROSS-SECTIONAL ANALYSIS

Aims

An aim of this cross-sectional study was to determine whether a model based on findings from studies in the West on psychological adjustment to CHD would be applicable in the Malaysian context. The study looked at the relationships between different psychological constructs (i.e. self-referent beliefs, pessimism, locus of control, coping styles) and emotional adjustment to CHD, immediately after a cardiac event while patients are still in the hospital. Another aim of this study was to determine the relationships between these psychological constructs and behavioural intentions; specifically intention to attend CRP and intention to seek alternative medicine to treat CHD.

The focus of the present chapter is to report the findings of Study 2 which looked at the psychological correlates of Malaysian patients immediately after their cardiac event. The next chapter will look at whether these psychological constructs predict longer term CHD-related outcomes (Study 3).

4.0 Model and Hypotheses

Based on the literature review (Chapter 2), a model hypothesising the relationships between psychological variables and cardiac related outcomes was developed (see Figure 4.1). Broadly, the model predicts the longitudinal relationship between psychological variables assessed at the time of hospitalisation and emotional well-being, functional status and quality of life up to six months post cardiac event.
Figure 4.1 Model on relationships among in-hospital variables
The model hypothesises that emotional well-being, functional status and quality of life among post Malaysian cardiac patients are predicted by self-referent beliefs, psychological constructs such as coping and locus of control and emotional status assessed during patients' period of hospitalisation. These psychosocial variables are thought to be stronger predictors of emotional well-being and functional status for post cardiac patients, over and above sociodemographic variables.

The present chapter will analyse the concurrent relationships among variables at the period of hospitalisation. It will look at the cross-sectional relationships between sociodemographic factors, lifestyles, medical characteristics, self-referent beliefs, psychological constructs and intentions. These hypothesised relationships were based upon findings of studies conducted in the West.

The model proposes the following relationships: (1) sociodemographic characteristics such as age, gender and ethnicity and lifestyles are directly related to self-referent beliefs, (2) self-referent beliefs are related with each other, (3) self-referent beliefs are related with coping styles, loci of control and pessimism, (4) self-referent beliefs are directly related with intentions to attend CRP and to seek complementary medicine and (5) coping styles, loci of control and pessimism mediate the relationship between self-referent beliefs and negative affect.

Relating to the proposed relationship (1), it is hypothesised that older patients are more likely to report lower self-efficacy, diet efficacy and exercise efficacy than younger patients. Relating to the proposed relationship (2), self-efficacy is expected to correlate highly with diet efficacy and exercise efficacy. Relating to relationship (3), it is hypothesised that self-referent beliefs affect the way patients' cope with their illness. Self-efficacy and self-esteem are expected to affect coping strategies with higher self-efficacy and self-esteem associated with more adaptive coping styles. Self-efficacy and self-esteem are also expected to influence the way patients attribute their recovery from their illness. These constructs are expected to be positively associated with internal control. Self-esteem
is also expected to be associated with more pessimistic views of the future. Relating to relationship (4), it is hypothesised that self-patients with high general and specific self-efficacy are more likely to form an intention to attend CRP. Self-referent beliefs are also hypothesised to influence intention to seek complementary treatment; patients with lower self-efficacy are more likely to express intention to seek complementary treatment. Relating to the last proposed relationship (5), it is hypothesised that self-referent beliefs and psychological constructs predict negative affect experienced at the period of hospitalization. Coping styles, loci of control and pessimism are postulated to mediate the relationship between self-referent beliefs and patients' affective status.

In short, the cross-sectional model hypothesises that stable self-referent constructs are predictors of affective status and behavioral intentions. Self-referent beliefs could directly predict behavioral intentions; the relationship could also be mediated by contextual psychological constructs such as coping styles and locus of control constructs. In order to explore the predictive utility of this model in explaining psychological correlates of immediate post-MI patients in Malaysia, the following research questions are posed.

4.1 Research Questions

1. Are the relationships among the measures of self-referent beliefs and psychological constructs the same for this Malaysian cardiac sample as in previous studies on Western samples?
2. Can intention to attend CRP be predicted from demographic variables, health-related lifestyles, self-referent beliefs and psychological constructs?
3. Can intention to seek alternative treatment be predicted from demographic variables, health-related lifestyles, self-referent beliefs and psychological constructs?
4. Can emotional well-being (i.e. anxiety and depression) be predicted from demographic variables, health-related lifestyles, self-referent beliefs and psychological constructs?
5. Will self-referent beliefs have independent effects on emotional well-being and/or will their effects be mediated by psychological constructs?
4.2 Methods

4.2.1 Participants

Recruitment of patients was conducted in two waves: Wave 1 (August to October 1997) and Wave 2 (March to July 1998). Eligibility criteria included a first or subsequent diagnosis of either MI, angina, percutaneous transluminal coronary angiography (PTCA) or coronary artery bypass graft (CABG), literate and/or speaks either Malay or English and is conscious.

4.2.1.1 Wave 1

Patients were recruited at 3 different hospitals (1 private and 2 public). Eighty patients who met the inclusion criteria were approached and only 32 (40%) participated (20 in private and 12 in public). Among the reasons for non-participation were refusal, transferral for surgical procedures and lethargy.

Of the 32 patients, 27 were men and 5 were women with the age range of 31 to 72 years. The mean age of patients was 52.3 years (SD=10.96). Patients belonged to different ethnic groups: 20 (63%) were Malays, 3 (9%) Chinese, 8 (25%) Indians and 1 (3%) Sikh. Of the 32, 20 reported religious affiliation with Islam, 5 with Christianity, 5 Hinduism and 2 Buddhism. Patients' working status was as follows: 20 were employed and the remaining 12 were retired. Fifteen were classified as professionals or semi-professionals, 12 were labourers and 5 were self-employed.

4.2.1.2 Wave 2

Patients were recruited from one of the public hospitals attended in Wave 1. During the 4 months period, 90 patients met the diagnosis of MI, angina, CABG or PTCA. Of these, 65 (72%) patients participated in the study. Among the reasons for non-participation were refusal, transferral for surgical procedures, lethargy and death.

Of the 65 patients, 61 were men and 4 were women. The age range was 32 to 76 years, the mean age was 52.6 years (SD=11.29). Thirty-five (54%) patients were Malays, 9 (14%)
were Chinese, 20 (31%) were Indians and 1 (1%) Eurasian. Of the 65, 43 reported religious affiliation with Islam, 3 with Christianity, 11 with Hinduism and 8 Buddhism. Forty patients were currently employed, 6 were unemployed and the remaining 19 were retired. The socio-economic background of patients also varied: twenty (31%) were professionals or semi-professionals, 16 (25%) were self-employed and the remaining 29 (45%) were labourers.

4.2.2 Procedure

Ethical approval was obtained from the Malaysian Ministry of Health and the National Heart Institute prior to data collection at the hospitals (see Appendix 3). Data were collected at two different times for both waves of patients: baseline data (Time 1) were obtained in the cardiac care unit (CCU) while follow-up data (Time 2) were obtained 4 months following discharge from the hospital. Identical procedures were used for Wave 1 and Wave 2 participants. Methods and Results for the follow-up data (Time 2) are described in Chapter 7.

Names of patients admitted to the cardiac care unit (CCU) and cardiac recovery ward (CRW) were made available by the ward sister. MI and angina patients were approached 3 days after admission into the ward, while PTCA and CABG patients were approached 3 days after surgery. Patients meeting the eligibility requirements were given a patient information sheet. If they agreed to participate, patients were asked to sign a consent form. Patients were then asked whether they preferred to be interviewed or to complete the questionnaires themselves. Patients who preferred the latter were asked to complete the questionnaire in their own time and once completed, to return it to the researcher or the ward sister before their discharge. Interviews, on the other hand, took place in the CCU at a time convenient to the patient.

4.2.3 Measures

The instrument utilised at Time 1 (used as either an interview schedule or self-completion questionnaire) was made up of 6 main sections. One of the sections contained open-ended
questions concerning perceptions of the cause of illness and alternative treatment, along with items on intentions to attend cardiac rehabilitation programme. Another section contained items on patients’ sociodemographic and medical backgrounds.

The main sections comprised scales measuring different psychological dimensions relating to responses to and recovery from illness. The scales used in this study have been found to be consistently reliable and valid when used among different patient populations. However, for the purpose of this study, not all of the original items of each scale were utilised. Items were carefully selected to ensure appropriateness and sensitivity to Malaysian patients. Additional items derived from other sources were also included in the existing scales (see Chapter 3 for review of item selection process). All items of each scale were back translated into Malay and English.

Two of the scales used were obtained from the Measures in Health Psychology: A User’s Portfolio (Weinman, Wright and Johnston, 1995). The scales were the Hospital Anxiety and Depression scale (Zigmond and Snaith, 1983) and the COPE Scale (Carver, Scheier and Weintraub, 1989). The other scales were the General Self Efficacy scale (Sherer, Maddux, Mercadente et. al., 1982), the Global Self Esteem scale (Rosenberg, 1985), the Helplessness scale (Beck, Weismann, Lester and Trexler, 1974) and the Recovery Locus of Control scale (Partridge and Johnson, 1989). Background information on the characteristics of the original scales have been discussed and their psychometric properties reported in Chapter 3. (See Appendix 4 for Time 1 questionnaire).

4.2.3.1 Sociodemographic information
Information on age, gender, ethnic group, religious affiliation, marital status, employment status and occupation were obtained. Medical information such as readings of cholesterol, triglyceride fasting, high density lipoprotein, low density lipoprotein and blood pressure, was noted from the patients’ medical charts, if available.
4.2.3.2 The modified Hospital Anxiety and Depression scale (HAD)
All 14 items were used to measure anxiety and depression. Modifications were made to 2 of the items to ensure relevancy when used among Malaysians (i.e. items 7 and 14). The modified scale was found to be moderately reliable with a Cronbach alpha coefficient of .76 for anxiety and .66 for depression when assessed on healthy Malaysians (see Chapter 3).

Patients were asked to rate on a 5-point Likert scale based on the following instructions:
*The following statements may describe your feelings since your first day of admission to the hospital. Based on the scale below, please indicate the extent to which you experience those feelings.*

The Likert rating scale ranged from 1 = “never”, 2 = “sometimes”, 3 = “uncertain”, 4 = “often” and 5 = “always”. Higher scores indicate higher depression or higher anxiety.

4.2.3.3 The modified COPE scale
Twenty four of the original 60 items were selected for the modified COPE scale used in this study. The sub-scales selected were active coping/planning, seeking emotional support, turning to religion and behavioral disengagement. Cronbach alpha coefficients obtained in Study 1 for the modified cope ranged from between .81 for active coping/planning, .77 for turning to religion and .77 for seeking support.

The instructions for the modified cope measure were as follows:
*There are many ways of dealing with difficult situations in life. We are interested in how you handle stressful life situations. Based on the scale below, please indicate the extent to which you use the following ways in dealing with life problems.*

The Likert rating scale ranged from 1 = “never”, 2 = “sometimes”, 3 = “unsure”, 4 = “often” and 5 = “always”. Higher scores indicate higher tendency to use the particular coping style.
4.2.3.4 The modified General Self-Efficacy scale

Eight of the original 17 items were selected to derive the modified general self-efficacy measure. Four additional items assessing diet efficacy and exercise efficacy were formulated and included (e.g. "I think I can change my diet and eat healthy food and I think I can do exercises"). The Cronbach alpha coefficient found in Study 1 for the modified general self-efficacy scale was .78.

The instructions for the self-efficacy measure were as follows:

We are interested in the way you perceive yourself. Based on the scale below, please indicate the extent to which you agree or disagree with each of the following statements in describing your general views of yourself.

Each item was rated on a 5-point Likert scale as follows, with higher scores indicating stronger self-efficacy: "1" = "strongly disagree", "2" = "disagree", "3" = "uncertain", "4" = "agree" and "5" = "strongly agree".

4.2.3.5 The modified Global Self-esteem scale

Eight items were selected to derive the modified self-esteem scale. This modified scale revealed a moderate internal consistency when used on healthy Malaysians in Study 1 (Cronbach alpha coefficient of .64). It was also significantly correlated with the modified general self-efficacy scale (r = .54, p < .001) in Study 1.

The instructions and rating scale were as follows: We are interested in the way you perceive yourself. Based on the scale below, please indicate the extent to which you agree or disagree with each of the following statements in describing your general views of yourself.

Each item was rated on a 5-point Likert scale as follows, with higher scores indicating stronger self-efficacy: "1" = "strongly disagree", "2" = "disagree", "3" = "uncertain", "4" = "agree" and "5" = "strongly agree", with higher scores indicating stronger self-esteem.
4.2.3.6 The modified Helplessness scale
All ten items from the original scale were used for the modified pessimism scale. Cronbach alpha coefficient obtained in Study 1 for this modified scale was .69.

Items were rated on a 5-point Likert scale with the following instructions:
*The following are views people have of their future. Based on the scale below, please indicate the extent to which you agree or disagree with each statement in describing your feelings and views about your future.*

The Likert rating scale used was as follows: 1 = “strongly disagree”, 2 = “disagree”, 3 = “uncertain”, 4 = “agree” and 5 = “strongly agree”. Total scores are used as an index of pessimism; higher scores indicate more pessimistic views of respondents’ future well being.

4.2.3.7 The modified Recovery Locus of Control scale (RLC)
All 9 items from this scale were used, measuring internal control and external control. Three additional items measuring “God locus of control” were constructed and included in the modified RLC scale for this study. The internal subscale had a moderate Cronbach alpha coefficient of .68 for internal locus of control when used on healthy Malaysians.

The following instructions were used for the new recovery locus of control scale: *The following are statements other people have made about their recovery from their illness. Based on the scale below, please indicate the extent to which you agree or disagree with each statement in describing your views about your recovery.*

Each item was rated on a 5 point Likert scale: 1 = “strongly disagree”, 2 = “agree”, 3 = “uncertain”, 4 = “agree” and 5 = “strongly agree”. Higher scores indicate stronger endorsement of a particular locus of control item.

4.3.2.8 Health-related lifestyles and medical information
Items assessing health-related lifestyles were also included in this study. Patients were asked whether they had exercised, eaten healthily and smoked before the onset of their
illness. A dichotomous response set (0 = 'No' and 1 = 'Yes') was used. Patients' medical data (e.g. total cholesterol, triglyceride fasting, high density lipoprotein, low density lipoprotein) were noted from the ward sister, when available.

4.3 Translation

All items were backtranslated by two bilingual Malaysian translators. Both languages, Malay and English were included in the questionnaire (see Chapter 3).

4.4 Analyses

A cross-sectional analysis of baseline Time 1 data was performed. Descriptive statistics for all patients (Wave 1 and Wave 2 combined) were obtained.

Two different methods were used to determine the components underlying multidimensional measures (i.e. RLC, HADS and the COPE): empirically by use of factor extraction and factor specification, and conceptually by forming scales based on the authors' original theoretical constructs. The aim of these analyses was to determine whether comparable constructs to those used to assess psychological aspects of CHD in the West would be identified for Malaysian patients. Principal components analyses and oblique (Oblimin) rotation were first conducted on multidimensional scales to determine whether the components extracted were consistent with the existing theoretical constructs. Factors with an eigenvalues of 1 or more were retained, and items with factor loading of less than .30 were omitted. Missing data were replaced with means. In the factor specification analysis, solutions for different number of factors were examined: three components were specified for the RLC, two for the HAD scale and six for the COPE. The aim of specifying the number of components was to determine whether the factors extracted would be consistent with the theoretical constructs supposedly measured by each respective measure. Next, constructs were formulated conceptually. Cronbach alpha reliability coefficients of empirically derived and conceptually derived constructs were obtained and compared. Constructs with alpha coefficient less than .60 were excluded from further analyses. Items
were also deleted if their deletion increased the Cronbach alpha value of the new scale. Selection of constructs (variables) to be used for further analyses was based on its Cronbach alpha coefficient, with minimal loss of items. Pearson correlation coefficients between independent and dependent variables were also obtained to ascertain the directions and strengths of their relationships.

Next, forward logistic regressions were conducted to identify psychosocial factors that predicted intention to attend or not to attend rehabilitation programme and intention to seek alternative treatment or not. The iterative procedure was chosen because it allows for the control of criteria by which variables are entered and removed from the equation. A forward logistic regression enters the variables in the block one at a time based on the entry criteria. The procedure terminates when all variables have been entered or when the likelihood ratio is non-significant for all variables that have not been entered.

Based on the hypothesised model (see section 4.0), a series of multiple regression analyses was performed to identify variables that possibly functioned as mediating variables between sociodemographic variables and self-referent beliefs (i.e. independent variables), and emotional well-being (i.e. outcome variables). Three steps are carried out in the analysis of mediating variables (for further discussion, see Baron and Kenny, 1986). Firstly, the independent variable has to significantly predict the hypothesised mediating variable. Next, the same independent variable also has to significantly predict the outcome variable. Lastly, both independent and the hypothesised mediating variables have to significantly predict the outcome variable. At this step, two criteria need to be met for a mediation to occur. Firstly, the hypothesised mediating variable has to significantly predict the outcome variable. Finally, the independent variable’s prediction of the outcome variable is reduced when entered together with the mediating variable.

4.5 Results

4.5.1 Demographic characteristics
The sociodemographic characteristics of patients (Wave 1 = 32 and Wave 2 = 65) are summarised in Table 4.1. Of the 97 participants, 88 (91%) were men and 9 (9%) were women. Their mean age was 52.6 years (SD = 11.29) with an age range of 31 to 76 years. More than half of the patients belonged to the Malay ethnic group (56%), and the remainder 43 (44%) belonged to other ethnic groups such as Chinese, Indian and Eurasian. Nearly two-thirds (65%) of the patients reported affiliation with Islam, while the remaining 34 patients (35%) were Buddhist, Hindu or Christian. The patients were representative of the general Malaysian population in terms of ethnicity and religious affiliation. The majority of patients were married (90%). Sixty two (64%) patients were employed at the time of the interview, while the remaining 35 (36%) were either unemployed or retired. Patients represented professionals and unskilled occupations about equally.

Table 4.1  Sociodemographic characteristics of patients (N = 97)

<table>
<thead>
<tr>
<th>Sociodemographic Variables</th>
<th>Mean (SD) or Frequencies (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>52.6 years (SD = 11.29)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>88 (91%)</td>
</tr>
<tr>
<td>Female</td>
<td>9 (9%)</td>
</tr>
<tr>
<td>Ethnic group</td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>54 (56%)</td>
</tr>
<tr>
<td>Other</td>
<td>43 (44%)</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>63 (65%)</td>
</tr>
<tr>
<td>Other</td>
<td>34 (35%)</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>87 (90%)</td>
</tr>
<tr>
<td>Widowed/Single</td>
<td>10 (10%)</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>62 (64%)</td>
</tr>
<tr>
<td>Not employed/retired</td>
<td>35 (36%)</td>
</tr>
</tbody>
</table>
4.5.1.1 Medical indices
The medical characteristics of patients are summarised in Table 4.2. Of the 97 participants, 35 (36%) were diagnosed with an acute myocardial infarction (AMI), 28 (29%) with an unstable angina (UA), 19 (20%) patients with an anterior infarct (AI) while the remaining 15 (15%) were diagnosed with an interior infarct (II). Thirty-four (35%) patients had undergone surgery, either a PTCA or a CABG at the time of the interview. Medical indices such as triglyceride fasting, total cholesterol, high density lipoprotein, low density lipoprotein and blood pressure reflected those of the Malaysian cardiac patient population (Khor, 1994).

Table 4.2 Patients’ medical indices (N = 97)

<table>
<thead>
<tr>
<th>Medical index</th>
<th>Mean (SD) or Frequencies (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of CHD</td>
<td></td>
</tr>
<tr>
<td>Acute Myocardial Infarction (AMI)</td>
<td>35 (36%)</td>
</tr>
<tr>
<td>Unstable Angina (UA)</td>
<td>28 (29%)</td>
</tr>
<tr>
<td>Anterior Infarct (AI)</td>
<td>19 (20%)</td>
</tr>
<tr>
<td>Interior Infarct (II)</td>
<td>15 (15%)</td>
</tr>
<tr>
<td>Triglyceride Fasting (mmol/l)</td>
<td>1.76 (1.30)</td>
</tr>
<tr>
<td>Cholesterol (mmol/l)</td>
<td>5.76 (1.48)</td>
</tr>
<tr>
<td>High Density Lipoprotein (mmol/l)</td>
<td>1.21 (0.40)</td>
</tr>
<tr>
<td>Blood Pressure (mmHg)</td>
<td>73/117 (12/18)</td>
</tr>
</tbody>
</table>

An independent samples t-test was conducted to compare medical indices between Malays and non-Malays. A significant difference was obtained between Malays and non-Malays in their triglyceride fasting reading (t = -2.41, df = 45, p < .05), with non-Malays having a higher reading of triglyceride fasting than Malays. However, the difference was no longer significant when the Bonferroni correction procedure was applied.
4.5.1.2. Lifestyle Characteristics

Fifty-two (54%) of patients currently smoked. The mean number of cigarettes smoked per day was 13.3 (SD = 15.05). About a third of the sample (37%) reported eating a healthy diet (e.g., less oil in cooking, ate more vegetables) and similar percentage (36%) exercised once or more every week. No significant relationships were obtained between health-related lifestyles; patients who smoked were as likely to exercise as patients who did not smoke (see Table 4.3).

Table 4.3a  Association between smoking and exercise

<table>
<thead>
<tr>
<th>Smoking</th>
<th>Exercise</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35 (36%)</td>
<td>17 (18%)</td>
<td>.45</td>
<td>n.s.</td>
</tr>
<tr>
<td>No</td>
<td>27 (28%)</td>
<td>18 (19%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>62 (64%)</td>
<td>35 (36%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3b  Association between smoking and diet

<table>
<thead>
<tr>
<th>Smoking</th>
<th>Diet</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>32 (33%)</td>
<td>20 (21%)</td>
<td>.09</td>
<td>n.s.</td>
</tr>
<tr>
<td>No</td>
<td>29 (30%)</td>
<td>16 (16%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61 (63%)</td>
<td>36 (37%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3c  Association between exercise and diet

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Diet</th>
<th>$\chi^2$</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>43 (44%)</td>
<td>19 (20%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>18 (19%)</td>
<td>17 (17%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>61 (63%)</td>
<td>36 (37%)</td>
<td>3.08</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

A healthful lifestyle index was constructed by scoring 1 for each healthy behaviour endorsed. For instance, ‘not smoking’ earned 1 point. Thus this index ranged from 0 - 3 (0 = ‘not at all healthful’ to 3 = ‘very healthful’). The mean for the sample was 1.20 (SD = .90), with only 9% of the patients leading ‘very healthy’ lifestyles (see Table 4.4).

Table 4.4 Percentages of patients in different health-related lifestyles categories

<table>
<thead>
<tr>
<th>Lifestyle Variables</th>
<th>Frequencies (Percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Do you eat a healthy diet?”</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>61 (63%)</td>
</tr>
<tr>
<td>Yes</td>
<td>36 (37%)</td>
</tr>
<tr>
<td>“Do you exercise?”</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>62 (64%)</td>
</tr>
<tr>
<td>Yes</td>
<td>35 (36%)</td>
</tr>
<tr>
<td>“Do you smoke?”</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>52 (54%)</td>
</tr>
<tr>
<td>No</td>
<td>45 (46%)</td>
</tr>
<tr>
<td>“Healthful Lifestyles”</td>
<td></td>
</tr>
<tr>
<td>Not at all healthful</td>
<td>23 (24%)</td>
</tr>
<tr>
<td>Somewhat healthful</td>
<td>41 (42%)</td>
</tr>
<tr>
<td>Fairly healthful</td>
<td>24 (25%)</td>
</tr>
<tr>
<td>Very healthy</td>
<td>9 (9%)</td>
</tr>
</tbody>
</table>

4.5.2 Derivation of constructs

The aim of this analysis was to derive constructs that would be used as independent variables for further analyses. Two different approaches were utilised to derive constructs from the multidimensional measures used in this study (e.g. RLC, HADS, COPE): empirical and conceptual.
Empirically derived constructs were obtained by correlating all items of a measure and conducting a factor analysis using Principal Components and Oblimin rotation. Separate analyses were conducted for each measure, first for the RLC, followed by the HADS and then the COPE. The aim of these analyses was to determine empirically the number and pattern of constructs and to compare these constructs with those originally developed by the measures’ respective authors. Table 4.5a provides the factor loadings for each item on the factor on which it loaded most highly.

4.5.2.1 Factor extraction

4.5.2.1.1 The modified RLC scale

Four factors were extracted, accounting for 77% of the variance. Factor 1 consisted of five items, factor 2 of three items, factor 3 of three items and factor 4 of one item. The item which loaded on factor 4 was expected to load on factor 1. The first 3 factors were labelled ‘internal locus of control’, ‘God locus of control’ and ‘doctor locus of control’, respectively.

4.5.2.1.2 The modified HAD scale

Three factors were extracted. Only two of these were interpretable: Factor 1, ‘anxiety’, accounting for 46% of the variance and factor 2, ‘depression’, accounting for 11% of the variance. The third factor consisted of only one item. Only eight items loaded as expected. For instance, ‘anxiety’ consisted of three items belonging to HAD’s original ‘depression’ construct.

4.5.2.1.3 The modified COPE scale

Nine factors were extracted, which together accounted for 74% of the variance. However, the pattern of item loadings was not consistent with the authors’ original constructs. Six of the extracted factors were theoretically interpretable: ‘turning to God’, ‘giving up’, ‘active coping’, ‘passive coping’ ‘denial’ and ‘seeking emotional support’ accounting for 12%, 10%, 8%, 7%, 6% and 5% of the variance, respectively.
Table 4.5a Empirically derived constructs with factor loadings

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recovery Locus of Control scale</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 1: internal</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;What I do to help myself will determine ...&quot;</td>
<td>.91</td>
</tr>
<tr>
<td>&quot;My efforts are important ...&quot;</td>
<td>.85</td>
</tr>
<tr>
<td>&quot;It's up to me to make sure that I recover ...&quot;</td>
<td>.80</td>
</tr>
<tr>
<td>&quot;... depends on myself, not what others ...&quot;</td>
<td>.71</td>
</tr>
<tr>
<td>&quot;My recovery depends on me, not on what other ...&quot;</td>
<td>.68</td>
</tr>
<tr>
<td><strong>Factor 2: God</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;It’s God’s will which will determine ... recovery&quot;</td>
<td>.92</td>
</tr>
<tr>
<td>&quot;My recovery depends on the will of God&quot;</td>
<td>.90</td>
</tr>
<tr>
<td>&quot;God will take care of my health&quot;</td>
<td>.85</td>
</tr>
<tr>
<td><strong>Factor 3: Doctor</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;I will recover if I follow doctor’s orders&quot;</td>
<td>.90</td>
</tr>
<tr>
<td>&quot;It depends on doctors and nurses ...&quot;</td>
<td>.90</td>
</tr>
<tr>
<td>&quot;My recovery is beyond my control, ... doctors&quot;</td>
<td>.52</td>
</tr>
<tr>
<td><strong>Factor 4:</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;It doesn’t matter how much help I get ...&quot;</td>
<td>.92</td>
</tr>
<tr>
<td><strong>Hospital Anxiety and Depression scale</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Factor 1: Anxiety</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;Worrying thoughts go through my mind&quot;</td>
<td>.90</td>
</tr>
<tr>
<td>&quot;I get a sort of frightened feeling ...&quot;</td>
<td>.90</td>
</tr>
<tr>
<td>&quot;I feel tense or wound up&quot;</td>
<td>.88</td>
</tr>
<tr>
<td>&quot;I can sit at ease and feel relaxed&quot;</td>
<td>.79 R</td>
</tr>
<tr>
<td>&quot;I get ... butterflies in the stomach&quot;</td>
<td>.76</td>
</tr>
<tr>
<td>&quot;I get sudden feelings of panic&quot;</td>
<td>.64</td>
</tr>
<tr>
<td>&quot;I feel cheerful&quot;</td>
<td>.55 R</td>
</tr>
<tr>
<td>&quot;I still enjoy the things I used to enjoy&quot;</td>
<td>.53 R</td>
</tr>
<tr>
<td><strong>Factor 2: Depression</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;I have lost interest in my appearance&quot;</td>
<td>.77</td>
</tr>
<tr>
<td>&quot;I can enjoy a good book or radio or TV...&quot;</td>
<td>.76 R</td>
</tr>
<tr>
<td>&quot;I look forward with enjoyment to things&quot;</td>
<td>.69 R</td>
</tr>
<tr>
<td>&quot;I can laugh and see the funny side of things&quot;</td>
<td>.47 R</td>
</tr>
<tr>
<td>&quot;I feel as if I am slowed down&quot;</td>
<td>.40</td>
</tr>
<tr>
<td><strong>Factor 3:</strong></td>
<td></td>
</tr>
<tr>
<td>&quot;I feel restless as if I have to be on the move&quot;</td>
<td>.71</td>
</tr>
</tbody>
</table>
COPE scale

Factor 1:

"I ask people who have had similar experience ..."  .73
"I make a plan of action"  .43

Factor 2: Turning to Religion/God

"I put my trust in God"  .90
"I seek God’s help"  .86
"I try to find comfort in my religion"  .68

Factor 3: Giving up

"I just give up trying to reach my goal"  .84
"I admit to myself that I can’t deal with it ... give up"  .69
"I give up in trying to get what I want"  .62
"I try to get emotional support from friends ..."  .47 R

Factor 4: Active/Effort

"I think about how I might best handle ... problem"  .87
"I concentrate my efforts ... doing something ..."  .51
"I get used to the idea that it happened"  .47 R

Factor 5:

"I think hard about what steps to take"  .82 R
"I do what has to be done, step by step"  .71 R
"I refuse to believe that this has happened"  .44

Factor 6: Denial

"I act as though it hasn’t even happened"  .81
"I pretend that it hasn’t really happened"  .81

Factor 7:

"I pray more than usual"  .82
"I take a direct action to get around the problem"  .65 R

Factor 8: Seeking emotional support

"I discuss my feelings with someone"  .82
"I reduce the amount of effort into solving the problem"  .58 R
"I feel a lot of emotional distress ..."  .57

Factor 9:

"I accept this has happened and that it cannot be changed"  .91
"I say to myself that this isn’t real"  .54 R

* Factors that could not be interpreted
R Reverse scoring
The lack of clear, interpretable factors as well as the exclusion or loss of many items led to the use of factor specification. The aim was to compare which method would yield more reliable constructs. It was also performed to see whether the extracted factors were comparable with constructs of the original measures. The rotated solution limited to a specific number of factors was examined for each of the measures. Table 4.5b provides the factors specified for each measure with their respective item loadings greater than .30, as well as their respective Cronbach alpha coefficients.

4.5.2.2 Factor specification

4.5.2.2.1 The modified RLC
The three factors extracted accounted for 68% of the variance. Factor loadings showed that although all three factors were interpretable, two of the items did not belong conceptually to the factors on which they loaded. For instance, Factor 1 which could be labelled as ‘internal’ contained item 10, “My recovery is beyond me, it all depends on the doctor”.

4.5.2.2.2 The modified HAD scale
The two factors specified for the HAD scale accounted for 57% of the variance. The factors were labelled as ‘depression’ and ‘anxiety’. All items loaded on to the original constructs developed by the authors.

4.5.2.2.3 The COPE scale
The rotated solution limited to six factors was examined for the modified COPE. The six factors accounted for 59% of the variance. Although some of these factors were generally interpretable, factor loadings showed that many of the items did not conceptually belong to the factors on which they loaded. For instance, Factor 3 contained two items of ‘denial’ and two of ‘behavioural disengagement’ (e.g. “I refuse to believe that it has happened” and “I admit to myself that I can’t deal with it and give up trying”). Factor 4, labelled as ‘seeking emotional support’ contained item 9, “I get used to the idea that it happened”.

Table 4.6  Specified constructs, factor loadings and Cronbach alpha coefficients

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recovery Locus of Control scale</strong></td>
<td></td>
</tr>
<tr>
<td>Factor 1: internal (α = .91)</td>
<td></td>
</tr>
<tr>
<td>“What I do to help myself will determine ...”</td>
<td>.91</td>
</tr>
<tr>
<td>“My efforts are important ...”</td>
<td>.82</td>
</tr>
<tr>
<td>“It’s up to me to make sure that I recover ...”</td>
<td>.81</td>
</tr>
<tr>
<td>“... depends on myself, not what others ...”</td>
<td>.77</td>
</tr>
<tr>
<td>“My recovery depends on me, not on what other ...”</td>
<td>.69</td>
</tr>
<tr>
<td>“My recovery is beyond me; ... up to the doctors”</td>
<td>.45 R</td>
</tr>
<tr>
<td>Factor 2: God (α = .87)</td>
<td></td>
</tr>
<tr>
<td>“It’s God’s will which will determine ... recovery”</td>
<td>.91</td>
</tr>
<tr>
<td>“My recovery depends on the will of God”</td>
<td>.87</td>
</tr>
<tr>
<td>“God will take care of my health”</td>
<td>.87</td>
</tr>
<tr>
<td>Factor 3: Doctor (α = .63)</td>
<td></td>
</tr>
<tr>
<td>“It depends on doctors and nurses ...”</td>
<td>.88</td>
</tr>
<tr>
<td>“I will recover if I follow doctor’s orders”</td>
<td>.87</td>
</tr>
<tr>
<td>“No matter how much help I get, ... my own efforts”</td>
<td>.46 R</td>
</tr>
<tr>
<td><strong>Hospital Anxiety and Depression scale</strong></td>
<td></td>
</tr>
<tr>
<td>Factor 1: Depression (α = .86)</td>
<td></td>
</tr>
<tr>
<td>“I can laugh and see the funny side of things”</td>
<td>.80 R</td>
</tr>
<tr>
<td>“I look forward with enjoyment to things”</td>
<td>.79 R</td>
</tr>
<tr>
<td>“I can enjoy a good book or radio or TV ...”</td>
<td>.75 R</td>
</tr>
<tr>
<td>“I still enjoy the things I used to enjoy”</td>
<td>.72 R</td>
</tr>
<tr>
<td>“I feel cheerful”</td>
<td>.68 R</td>
</tr>
<tr>
<td>“I have lost interest in my appearance”</td>
<td>.45</td>
</tr>
<tr>
<td>“I feel as if I have slowed down”</td>
<td>.38</td>
</tr>
<tr>
<td>Factor 2: Anxiety (α = .88)</td>
<td></td>
</tr>
<tr>
<td>“Worrying thoughts go through my mind”</td>
<td>.83</td>
</tr>
<tr>
<td>“I feel tense or wound up”</td>
<td>.77</td>
</tr>
<tr>
<td>“I get a sort of frightened feeling ...”</td>
<td>.76</td>
</tr>
<tr>
<td>“I get ... butterflies in the stomach”</td>
<td>.64</td>
</tr>
<tr>
<td>“I get sudden feelings of panic”</td>
<td>.56</td>
</tr>
<tr>
<td>“I can sit at ease and feel relaxed”</td>
<td>.52 R</td>
</tr>
<tr>
<td><strong>COPE scale</strong></td>
<td></td>
</tr>
<tr>
<td>Factor 1: Active coping (α = .36)</td>
<td></td>
</tr>
<tr>
<td>“I make a plan of action”</td>
<td>.75</td>
</tr>
<tr>
<td>“I concentrate my efforts on doing something ...”</td>
<td>.73</td>
</tr>
</tbody>
</table>
"I take a direct action to get around the problem"  .63
"I think about how I might best handle the problem"  .62
"I give up the attempt to get what I want"  .44 R

Factor 2: Turning to God (α = .67)
"I put my trust in God"  .86
"I seek God's help"  .86
"I try to find comfort in my religion"  .73
"I pray more than usual"  .40

Factor 3: Denial/Giving up (α = .74)
"I refuse to believe that it has happened"  .80
"I say to myself that this isn't real"  .69
"I admit to myself that I can't deal with it ... give up"  .65
"I just give up trying to reach my goal"  .63

Factor 4: Emotional support (α = .59)
"I try to get emotional support from friends ..."  .70 R
"I feel a lot of emotional distress ..."  .62 R
"I discuss my feelings with someone"  .57 R
"I get used to the idea that it happened"  .45 R
"I ask people ... had similar experiences ..."  .43 R

Factor 5: Denial (α = .61)
"I act as though it hasn't even happened"  .83 R
"I pretend that it hasn't really happened"  .71 R

Factor 6: Passive coping (α = .52)
"I think hard about what steps to make"  .70 R
"I do what has to be done, one step at a time"  .66 R
"I reduce my amount of effort ... into solving the problem"  .63
"I accept that this has happened ... can't be changed"  .45

R Reverse Scoring

Given a clearer pattern of constructs from the factor specification method as well as high Cronbach alpha coefficients, the factors derived for the HAD scale were retained for further analyses. However, given the absence of factor comparability for the RLC, and lack of interpretability and generally low Cronbach alpha coefficients for the COPE, a more conceptual approach was taken to identifying the constructs of these two measures. These
constructs are made up of items consistent with the authors' original constructs. For instance, constructs derived for the COPE were “active coping”, “turning to God”, “giving up”, “denial” and “social support”. “Active coping” was composed of items such as “I take a direct action to get around the problem”, “I do what has to be done, one step at a time” and “I concentrate my efforts in doing something about it”. Meanwhile, “giving up” was made up of “I admit to myself that I can’t deal with it and give up trying” and “I just give up trying to reach my goal”. Table 4.7 presents the items of each conceptually derived constructs.

Table 4.7 Items for conceptually-derived constructs

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
</table>

**Recovery Locus of Control scale**

**Factor 1: internal**

“What I do to help myself will determine whether I recover from this illness or not”

“My efforts are important…”

“It’s up to me to make sure that I recover from this illness”

“My recovery depends on myself, not on other…”

“My recovery depends on me, not on what other people can do for me”

“No matter how much help I get, in the end its my own efforts that count”

**Factor 2: God**

“It’s God’s will which will determine … recovery”

“My recovery depends on the will of God”

“God will take care of my health”

**Factor 3: Doctor**

“It depends on doctors and nurses…”

“I will recover if I follow doctor’s orders”

“My recovery is beyond me; … up to the doctors”

**Hospital Anxiety and Depression scale**

**Factor 1: Depression**

“I can laugh and see the funny side of things”

“I look forward with enjoyment to things”

“I can enjoy a good book or radio or TV programme”

“I still enjoy the things I used to enjoy”

“I feel cheerful”

“I have lost interest in my appearance”

“I feel as if I have slowed down”
Factor 2: Anxiety
"Worrying thoughts go through my mind"
"I feel tense or wound up"
"I get a sort of frightened feeling as if something awful is about to happen"
"I get a sort of a frightened feeling like butterflies in the stomach"
"I get sudden feelings of panic"
"I can sit at ease and feel relaxed"

COPE scale
Factor 1: Active coping
"I make a plan of action"
"I concentrate my efforts on doing something about it"
"I take a direct action to get around the problem"
"I do what has to be done, one step at a time"

Factor 2: Turning to God
"I put my trust in God"
"I seek God’s help"
"I try to find comfort in my religion"

Factor 3: Denial
"I refuse to believe that it has happened"
"I say to myself that this isn’t real"
"I pretend that it hasn’t really happened"
"I act as though it hasn’t even happened"

Factor 4: Emotional support
"I try to get emotional support from friends and relatives"
"I feel a lot of emotional distress and I find myself expressing those feelings a lot"
"I discuss my feelings with someone"
"I ask people who have had similar experiences what they did"

Factor 5: Giving up
"I give up the attempt to get what I want"
"I accept that this has happened and that it can’t be changed"
"I just give up trying to reach my goal"
"I reduce the amount of effort I’m putting into solving the problem"

Next, constructs for the unidimensional measures (i.e. self-efficacy, self-esteem and pessimism) were formulated and computed. Cronbach alpha coefficients for all constructs, both empirically (i.e. the HAD) and conceptually (i.e. RLC and the COPE) derived were
computed and compared. Scale scores were means based on summing the items and dividing by the number of items in each scale. Reliability analyses showed that all constructs had acceptable to good internal reliability, ranging from .61 to .93. Table 4.8 lists the new constructs or variables and their respective Cronbach alpha coefficients.

Table 4.8 Modified constructs and Cronbach alpha coefficients

<table>
<thead>
<tr>
<th>Constructs/Variables</th>
<th>Number of items</th>
<th>Cronbach alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>8</td>
<td>.88</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>8</td>
<td>.82</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>2</td>
<td>.87</td>
</tr>
<tr>
<td>Diet Efficacy</td>
<td>2</td>
<td>.69</td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>6</td>
<td>.93</td>
</tr>
<tr>
<td>God Locus of Control</td>
<td>3</td>
<td>.87</td>
</tr>
<tr>
<td>Doctor Locus of Control</td>
<td>3</td>
<td>.76</td>
</tr>
<tr>
<td>Pessimism</td>
<td>10</td>
<td>.84</td>
</tr>
<tr>
<td>Anxiety</td>
<td>7</td>
<td>.88</td>
</tr>
<tr>
<td>Depression</td>
<td>7</td>
<td>.86</td>
</tr>
<tr>
<td>Active Coping</td>
<td>4</td>
<td>.73</td>
</tr>
<tr>
<td>Giving Up</td>
<td>3</td>
<td>.69</td>
</tr>
<tr>
<td>Turning to God</td>
<td>3</td>
<td>.81</td>
</tr>
<tr>
<td>Denial</td>
<td>4</td>
<td>.62</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>4</td>
<td>.61</td>
</tr>
</tbody>
</table>

4.5.3 Descriptive statistics

Self-referent constructs were slightly skewed, reflecting desirability (Shapiro-Wilk ranging from = .78 for exercise efficacy to .85 for self-efficacy, df = 28, p = .01). Two of the loci of control variables as well as two coping styles were also marginally skewed (Shapiro-Wilk ranging from = .70 for God locus of control and Shapiro-Wilk = .87 for denial, df = 28, p = .01). However, the skewness of these constructs was deemed not sufficient to require
transformation. All remaining constructs were normally distributed. Table 4.9 summarises the descriptive statistics for all constructs.

Table 4.9 Means and standard deviations for modified constructs

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Mean (SD)</th>
<th>Rating scale (1 to 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>3.70 (0.96)</td>
<td>5 = strongly agree</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>4.12 (0.73)</td>
<td>same as above</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>4.27 (0.84)</td>
<td>same as above</td>
</tr>
<tr>
<td>Diet Efficacy</td>
<td>4.23 (0.85)</td>
<td>same as above</td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>3.23 (1.10)</td>
<td>5 = strongly agree</td>
</tr>
<tr>
<td>God Locus of Control</td>
<td>3.58 (0.89)</td>
<td>same as above</td>
</tr>
<tr>
<td>Doctor Locus of Control</td>
<td>3.94 (1.03)</td>
<td>same as above</td>
</tr>
<tr>
<td>Pessimism</td>
<td>1.77 (0.55)</td>
<td>5 = strongly agree</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.55 (1.06)</td>
<td>5 = always</td>
</tr>
<tr>
<td>Depression</td>
<td>1.97 (0.73)</td>
<td>same as above</td>
</tr>
<tr>
<td>Active Coping</td>
<td>4.08 (0.77)</td>
<td>5 = always</td>
</tr>
<tr>
<td>Giving Up</td>
<td>1.93 (0.93)</td>
<td>same as above</td>
</tr>
<tr>
<td>Turning to God</td>
<td>4.74 (0.52)</td>
<td>same as above</td>
</tr>
<tr>
<td>Denial</td>
<td>2.23 (1.00)</td>
<td>same as above</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>3.70 (0.81)</td>
<td>same as above</td>
</tr>
</tbody>
</table>

In general, patients in this study had positive perceptions of themselves and attributed their recovery highly to doctors. The pattern of coping adopted by these patients was positive; they were more likely to be actively engaged in trying to adapt to their illness as well as
turning regularly to religion and/or God to cope with their CHD. Patients also reported relatively low levels of anxiety and depression.

4.5.4 Bivariate associations
Bivariate analyses were performed to identify the direction and strengths of associations among all the independent and dependent variables: demographics, health-related lifestyles, medical indices, self-referent beliefs, psychological constructs, emotional well-being and behavioural intentions.

4.5.4.1 Demographics, health-related lifestyles and medical indices
The pattern of relationships among demographic variables revealed the following significant associations: age and work status ($r = -.64, p < .001$), age and marital status ($r = .61, p < .001$) and gender and marital status ($r = .36, p < .001$). Older patients, and women patients, were more likely to be married. Older patients were also more likely to be either unemployed or retired.

No significant relationships were obtained among health-related lifestyle variables (see Table 4.3). Significant relationships were obtained, however, between smoking and the following demographic variables: age ($r = .70, p < .001$), gender ($r = .34, p < .001$), ethnic group ($r = -.25, p < .05$) and work status ($r = -.33, p < .005$). These patterns of relationships suggest that patients who smoked were most likely to be younger, employed Malay men. Neither diet nor exercise was significantly associated with any sociodemographic variables.

None of the medical indices were significant correlates of each other. Several significant relationships were obtained for medical indices and sociodemographic variables. Age was significantly associated with triglyceride fasting index ($r = -.34, p < .05$), high density lipoprotein ($r = .38, p < .05$) and systolic blood pressure ($r = .32, p < .05$). Older patients were more likely to have lower triglyceride fasting index, higher high density lipoprotein and higher systolic blood pressure. High density lipoprotein was also found to be significantly associated with ethnicity, gender and work status; unemployed, female and
non-Malay patients were more likely to have higher high density lipoprotein readings. None of the medical indices was significantly associated to smoking, diet or exercise.

4.5.4.2 Self-referent beliefs
Self-esteem and self-efficacy were highly correlated ($r = .69, p < .01$), indicating that higher self-worth is associated with stronger perceptions of ability to perform difficult tasks. General self-efficacy was also strongly associated with exercise efficacy and diet efficacy ($r = .58, p < .01$ and $r = .36, p < .01$, respectively). Interestingly, exercise efficacy was not significantly associated with diet efficacy ($r = .27, n.s.$). Neither exercise efficacy nor diet efficacy was significantly related to self-esteem.

4.5.4.3 Psychological constructs
Internal locus of control was significantly related to the other two loci of control constructs. Interestingly, a positive relationship between God locus of control and internal locus of control was found ($r = .56, p < .01$), contrary to existing literature. This relationship suggests that the higher the internal attribution of control over recovery from CHD, the stronger the attribution of control to a supernatural entity.

Giving up was significantly negatively associated with active coping ($r = -.41, p < .01$); the former was also positively associated with denial ($r = .26, p < .01$). Except for active coping ($r = -.37, p < .01$), no other coping strategy was significantly correlated with pessimism. More active coping was associated with less pessimism. No significant relationship was found between God locus of control and turning to God or religion as a coping strategy.

4.5.4.4 Self-referent beliefs and psychological constructs
The pattern of relationships among the psychological variables (i.e. self-referent beliefs and psychological constructs) was consistent with relationships among psychological variables of earlier studies on patients with CHD in the West. The correlation coefficients ranged from between $r = -.00$ to $r = .61$. 
Both self-efficacy and self-esteem were significantly related to pessimism ($r = -0.61$, $p < 0.01$ and $r = -0.46$, $p < 0.01$, respectively): the stronger the perceptions of patients' worth and abilities, the less pessimistic they are about their future. Self-esteem was significantly correlated with all loci of control constructs: internal locus of control ($r = 0.33$, $p < 0.05$), God locus of control ($r = 0.32$, $p < 0.01$) as well as doctor locus of control ($r = 0.28$, $p < 0.01$), all in the positive direction. Higher self-efficacy and higher self-esteem were significantly associated with more active coping ($r = 0.39$, $p < 0.01$ and $r = 0.29$, $p < 0.05$, respectively).

4.5.4.5 Demographics, health-related lifestyles, medical indices, self-referent beliefs and psychological constructs

A significant relationship was found between age and exercise efficacy ($r = -0.47$, $p < 0.01$), suggesting that older people were less likely to perceive themselves able to carry out physical activities. No other sociodemographic variable was significantly associated with self-referent beliefs variables.

Significant associations were obtained between ethnicity and God locus of control ($r = -0.26$, $p < 0.01$), between work status and pessimism ($r = -0.24$, $p < 0.01$), between gender and seeking support ($r = 0.35$, $p < 0.01$) and between marital status and active coping ($r = 0.33$, $p < 0.05$). The pattern of associations imply the following: Malays, rather than non-Malays, were more likely to attribute control over recovery to God, employed patients were less pessimistic of their future, women were more likely to seek support to cope with their illness and married patients were more likely to adopt active coping strategies in dealing with their CHD.

Bivariate associations between health-related lifestyles and psychological constructs show that patients who exercised were less pessimistic of their future ($r = -0.21$, $p < 0.05$) and patients who smoked were less likely to attribute their recovery to God ($r = 0.33$, $p < 0.05$). No other significant relationships between health-related lifestyles and psychological constructs were obtained.
4.5.4.6 Demographics, health-related lifestyles, medical indices, self-referent beliefs, psychological constructs and behavioural intentions

Results indicate that there were no significant relationships between intention to attend rehabilitation programme across age, gender and marital status. A significant relationship was found, however, for working status, with employed patients more likely to report intention to join a CRP \((r = .28, p < .01)\).

Two of the self-referent beliefs variables correlated significantly with intention to attend CRP: self-efficacy \((r = .75, p < .01)\) and exercise efficacy \((r = .63, p < .01)\). The pattern of relationships suggests that patients who were confident of their abilities to perform different tasks and to exercise were more likely to intend to join CRP.

Neither the loci of control constructs nor the coping styles constructs were significant correlates of intention to attend CRP. However, a significant relationship was found between pessimism and intention to join CRP \((r = -.42, p < .01)\); patients who were pessimistic of their future were less likely to intend to join a rehabilitation programme.

Some significant associations were obtained for intention to seek alternative treatment. Significant relationships were obtained for age, ethnicity as well as working status and intention to seek alternative treatment \((r = .22, p < .01, r = -.23, p < .05 \text{ and } -.31, p < .01)\) with older, retired Malay men being more likely to express intention to seek complementary medicine for their CHD. None of the self-referent beliefs variables nor the psychological constructs were significantly correlated to intention to seek alternative medicine.

4.5.4.7 Demographics, health-related lifestyles, medical indices, self-referent beliefs, psychological constructs and emotional well-being

Age as well as gender were significant correlates of anxiety \((r = -.21, p < .05 \text{ and } r = .23, p < .05)\), suggesting that older, women patients were more likely to be anxious. None of the health-related lifestyles was significantly associated with either emotional well-being variables.
Self-efficacy and self-esteem were significantly related to anxiety (r = -.40, p < .01 and r = -.30, p < .01, respectively), both in the negative direction. These relationships indicate that the higher the confidence and self-worth, the less anxious and depressed patients felt. Self-efficacy but not self-esteem was significantly related to depression (r = -.36, p < .01). Exercise efficacy was also significantly related to depression (r = -.33, p < .05).

As predicted, pessimism was significantly related to both anxiety and depression (r = .57, p < .01 and r = .49, p < .01, respectively); the more pessimistic patients are about their future, the stronger the anxiety and depression. Giving up was positively correlated with depression (r = .33, p < .01) while active coping was associated negatively with anxiety (r = -.26, p < .05), suggesting that patients who gave up in their attempt to cope with their illness were more likely to be depressed while patients who actively sought ways to deal with their illness were less likely to experience anxiety.

Two loci of control variables were significant correlates of depression: God locus of control (r = .30, p < .01) and doctor locus of control (r = -.24, p < .01). Patients who strongly attributed recovery to God were more likely to experience depression (r = .30, p < .01) but not patients who strongly attributed their recovery to doctors and/or other health professionals. Internal locus of control did not significantly correlate with either anxiety or depression. See Appendix 5 for a correlation table of all psychological constructs.

4.5.5 Predicting intention to join CRP

The most likely response to the question as to whether patients were willing to attend a CRP, if available, was “No” (65%), followed by “Yes” (35%) ($\chi^2 = 8.67$, df = 1, p < .005).

<table>
<thead>
<tr>
<th>Will you attend CRP?</th>
<th>Frequencies (Percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>63 (64%)</td>
</tr>
<tr>
<td>Yes</td>
<td>34 (35%)</td>
</tr>
</tbody>
</table>
A forward logistic regression was performed to predict intention to attend CRP from demographics, health-related lifestyles, self-referent beliefs and psychological constructs. Based on the bivariate associations analyses, only variables which significantly correlated with intention to attend CRP were entered as independent variables: working status, smoking, self-efficacy, exercise efficacy and pessimism. The results show that self-efficacy and exercise efficacy significantly predicted intention to attend CRP (OR = 1.24, CI = 1.03-1.48 and OR = 2.52, CI = 1.11 - 5.73, respectively). Patients with stronger global self-efficacy were nearly twice more likely to express intention to attend CRP. Patients with stronger efficacy in carrying out physical activities were twice more likely to express intention to attend CRP. Table 4.14 summarises the results of logistic regression analysis for intention to attend CRP.

Table 4.11 Prediction of intention to attend CRP

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>B</th>
<th>SE</th>
<th>p</th>
<th>ExpB</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>.22</td>
<td>.09</td>
<td>&lt;.05</td>
<td>1.24</td>
<td>1.03 - 1.48</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>.92</td>
<td>.42</td>
<td>&lt;.05</td>
<td>2.52</td>
<td>1.11 - 5.73</td>
</tr>
</tbody>
</table>

4.5.6 Predicting intention to seek alternative treatment

Similarly, a forward logistic regression was performed to predict intention to seek alternative treatment from demographics and psychological variables. Only significant correlates of intention to seek alternative treatment were entered as independent variables (i.e. age, ethnicity, working status and smoking). Working status significantly predicted intention to seek alternative treatment, with patients who were retired and/or unemployed were 12 times more likely to express intention to seek alternative medicine than currently employed patients (OR = 12.18, CI = 0.76 - 195.2). Malays were 10 times more likely than non-Malays to express intention to seek complementary medicine (OR = 11.5, CI = 1.32 - 99.65).
Table 4.12 Prediction of intention to seek alternative treatment

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>B</th>
<th>SE</th>
<th>p</th>
<th>ExpB</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Status</td>
<td>2.50</td>
<td>1.41</td>
<td>&lt;.05</td>
<td>12.2</td>
<td>0.76 - 195.2</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-2.44</td>
<td>1.10</td>
<td>&lt;.05</td>
<td>11.5</td>
<td>1.32 - 99.6</td>
</tr>
</tbody>
</table>

4.5.7 Predicting emotional well-being from demographics, self-referent beliefs and psychological constructs

Two separate stepwise multiple regressions were performed to predict emotional well-being; first for anxiety, then for depression. Only significant correlates of anxiety and depression were used as predictor variables.

Age, gender, self-efficacy, self-esteem and pessimism were entered as independent variables to predict anxiety. The results show that pessimism and gender significantly predicted anxiety, accounting for 32% of the variance. Stronger perceptions of pessimism about the future ($\beta = .52$, $p < .001$) and being women ($\beta = .24$, $p < .01$) predicted the likelihood of experiencing anxiety.

For depression, self-efficacy, exercise efficacy, pessimism, God locus of control, doctor locus of control, active coping and giving up were entered as predictor variables. The results revealed that pessimism and God locus of control significantly predicted depression, accounting for 33% of the variance. Stronger pessimistic views of the future ($\beta = .50$, $p < .001$) as well as attributing recovery to God ($\beta = .28$, $p < .005$) predicted the likelihood of experiencing depression. Table 4.13 summarises the results of regression analyses on anxiety and depression.
Table 4.13  Prediction of emotional well-being from demographics, self-referent beliefs and psychological constructs

<table>
<thead>
<tr>
<th></th>
<th>β</th>
<th>t</th>
<th>p</th>
<th>R²</th>
<th>Adj. R²</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anxiety</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pessimism</td>
<td>.52</td>
<td>6.14</td>
<td>&lt;.001</td>
<td>.32</td>
<td>.31</td>
<td>22.6</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Gender</td>
<td>.24</td>
<td>2.82</td>
<td>&lt;.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.16</td>
<td>-1.82</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-.12</td>
<td>-1.18</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>-.03</td>
<td>-0.29</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td></td>
<td></td>
<td></td>
<td>.33</td>
<td>.32</td>
<td>23.4</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Pessimism</td>
<td>.50</td>
<td>5.87</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>God Locus of Control</td>
<td>.28</td>
<td>3.29</td>
<td>&lt;.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>-.18</td>
<td>-1.76</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>-.11</td>
<td>-1.29</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor Locus of Control</td>
<td>-.15</td>
<td>-1.81</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Active Coping</td>
<td>.05</td>
<td>0.58</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giving Up</td>
<td>.10</td>
<td>1.14</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the results of the regression analyses above, no mediating analysis was performed because the assumptions of mediation were not met. For example, no psychological constructs predicted anxiety; therefore, self-referent constructs acted as direct predictors of anxiety. It was also expected that locus of control to God would mediate the relationship between self-efficacy and depression. However, mediation analysis revealed that self-efficacy did not significantly predict God locus of control. This relationship did not meet the first criteria suggested by Baron and Kenny (1986), hence further analyses were terminated.
4.6 Discussion

This cross-sectional study was a part of a longitudinal study examining the psychological constructs associated with CHD among Malaysians. An aim of this cross-sectional study was to determine whether a model based on findings from studies in the West on psychological adjustment to CHD would be applicable in the Malaysian context. Specifically, the study looked at the relationships between different psychological constructs (i.e. self-referent beliefs, pessimism, locus of control, coping styles) and emotional adjustment to CHD. Another aim of this study was to determine the relationships between these psychological constructs and behavioural intentions; specifically intention to attend CRP and intention to seek alternative medicine to treat CHD.

4.6.1 Demographic characteristics and health-related lifestyles among Malaysians: an overview

Patients in this study were primarily younger, married, employed Malay men. The sociodemographic patterns of this Malaysian cardiac sample in part reflect those of the Malaysian cardiac population. The average age of CHD onset among Malaysians in this study was 52.6 years which is comparable with the age of onset that of the Malaysian cardiac population. The proportion of Malays hospitalised with CHD in this study is the highest among the three main ethnic groups, the other two being Chinese and Indians. However, this finding does not replicate the proportion of Malays with a CHD in the general Malaysian cardiac population. According to the Malaysian Department of Statistics (Ministry of Health, 1996), the highest prevalence of CHD was among the Indians (33%) followed by Malays (25%) and Chinese (25%).

The higher proportion of Malays hospitalised for CHD in this study could be attributed to several risk factors not assessed in this study. For example, obesity, which is associated with dietary intake (e.g. elevated blood lipids and blood glucose) is most prevalent among Malays, with as many as 37% of Malays in the general population being overweight (BMI = 25 -30) compared to 21% among the Chinese and 32% among the Indians (Teo, Chong
and M. Zaini, 1988; c.f. Khor, 1994). It has also been reported that Malay men has the highest prevalence for hypertension (diastolic pressure > 95mmHg) and elevated triglycerides (> 190 mg/dl) compared to Chinese and Indian men (Kandia, Lekhra, Paranjothy and Ajeet, 1980; c.f. Khor, 1994). Serum cholesterol level also tends to be higher among Malays than Chinese (236 mg/dl vs. 227 mg/dl). However, the present study failed to find any significant differences in medical indices between Malays and non-Malays, although a slight difference in triglyceride level was observed.

4.6.2 General psychological characteristics of Malaysian cardiac patients
Cardiac patients in this study showed relatively healthy patterns of psycho-social characteristics. In general, they reported high self-esteem; they were confident of their self-worth and value. They were also not particularly pessimistic of their future, despite being hospitalised for CHD. Malaysian patients in this study reported relatively low levels of negative emotions in reaction to their illness. The pattern of coping adopted by these patients was positive; they were more likely to be actively engaged in trying to adapt to their illness. They also turned regularly to religion and/or God to cope with their CHD.

The findings on the levels of psychological characteristics of patients in this study do not conclusively support the general findings of many studies done in Western societies. Depression is highly prevalent among cardiac patients in the West, with one study reporting about 20% of patients suffering from moderate to severe levels of depression immediately after a heart attack (Trelawny-Ross and Russell, 1987). Similarly, anxiety is also relatively prevalent in patients diagnosed with a CHD; between 40% to 50% of MI patients report moderate to severe levels of anxiety while in hospital (see Bennett et. al., 1999; Lloyd and Cawley, 1979). The low levels of negative emotions reported by Malaysian patients in this study are comparable to those of Taiwanese cardiac patients (Chiou et. al., 1997). The lack of negative emotions manifested by patients in Malaysia may be reflective of the Eastern culture in general and the Malaysian culture, specifically. Expression of negative emotions is minimal and often repressed and/or denied. In other words, Malaysians in general are less likely to express sadness, sorrow and/or worry openly, particularly during interviews.
The use of active, problem-oriented coping strategies among patients in this study is consistent with the patterns of coping styles used by Western MI patients (e.g. Scherck, 1990; Livneh, 1999; van Elderen et al., 1999). Turning to God was the most common way of coping with CHD among Malaysians. This is expected because spirituality is an important aspect of life for Malaysians, regardless of religious orientation. Contrary to studies in the West, denial was not a common coping style used by Malaysians.

4.6.3 Bivariate associations of variables
Factor and reliability analyses on the measures used show that, in general, constructs developed and used in the West are reliable when used in the Malaysian context. The HAD scale, for instance, yielded similar Cronbach alpha coefficients in Western populations (e.g. 0.93 for anxiety and 0.90 for depression). Less is known of the reliability and validity of other measures when used in non-western societies (e.g. COPE, RLC and the Helplessness scales), see Chapter 3 for further discussion.

Bivariate analyses, in general, provided support for similar patterns of among variables as in the West. For example, anxiety and depression were positively related, consistent with several studies that show anxiety and depression to be interrelated in MI patients (see Kubzansky, 1997). The same pattern of relationship between anxiety and depression was also observed in Chiou et al.'s (1997) study. Moreover, the significant relationships between self-efficacy and anxiety, self-efficacy and depression (e.g. Comunian, 1989) as well as between pessimism with emotional well-being (e.g. Scheir, Magovern, Abbott, Matthews, Owens, Lefebve and Carver, 1989) provide evidence of the utility of the translated measurements. In other words, some measures developed in the West may generalise to Malaysia.

However, several associations found among Malaysian patients did not support the general findings in the West. For instance, a negative relationship was found between age and anxiety for patients in this study; younger patients were more anxious compared to older ones. This finding contradicts findings of several studies in the West where older MI patients showed lower anxiety than younger ones (Nickel, Brown and Smith, 1990;
Kubzansky et al., 1997). The negative relationship between age and anxiety also did not support the finding on Taiwanese patients where no association was observed between the two variables (Chiou et al., 1997).

The pattern of associations between coping strategies and emotional well-being is less clear-cut, compared to the findings in the West. In this study, active problem-oriented coping strategy was found to be negatively associated with anxiety while giving up was positively related to depression. This contradicts van Elderen et al.'s (1999) cross-sectional relationships between coping and emotional well-being among Western cardiac patients. The former observed that American MI patients who used a high degree of effective-oriented coping styles also reported high levels of anxiety and depression. Similarly, van Elderen et al. (1999) found significant positive relationships between approach (i.e. active coping style), on the one hand, and anxiety and depression on the other. However, the findings of the present study support the findings of Chiou et al.'s (1997) study on the cross-sectional relationships between coping styles and emotional well-being among Taiwanese. They found that the greater use of effective, problem-focused coping style was related to less anxiety.

Lastly, it is interesting to note the relationships found among loci of control constructs in this study. For example, internal locus of control was positively related to God locus of control, a relationship not found in previous Western literature. This pattern of relationship suggests that patients who attributed control of their recovery internally also attributed their recovery to God. The positive relationship may be due to the way belief and/or faith in God is internalised.

4.6.4 Intention to attend CRP
One of the main foci of this study was to predict patients’ intentions to attend CRP. Perceived general self-efficacy as well as perceived exercise efficacy significantly predicted intention to attend CRP.
This finding is consistent with the TPB (Ajzen and Madden, 1986) and the self-efficacy model (Bandura, 1977; 1982); patients who believed that they were capable of achieving a desired behaviour were more likely to have intentions to carry out that behaviour. Other studies in the West have also provided similar findings (e.g. Abdul-Majid, 1996; Coats et al., 1995; Bennett et al., 1999; Maddux, Norton and Stoltenberg, 1986).

An aim of CRP is to help promote and reinforce self-efficacy among its patients. However, it is interesting to note that patients who need CRP the most are the ones who are less likely to join, and more likely to drop out from such programmes. For example, Oldridge and Jones (1983) reported that patients who had high self-efficacy, were more willing to sign an agreement with regard to commitment to their exercise programme than those who lacked self-efficacy. It has been argued that the lack of consistent findings on the effectiveness of CRP may be due to the psychological characteristics of patients who attend such programmes (e.g. Ades et al., 1996; Blumenthal et al., 1982; Cooper et al., 1999). Those who would most likely benefit from attending a CRP would more likely be patients who fail to attend such programmes. The finding of the present study has important implications especially in the context of cardiac rehabilitation. Identifying patients with low self-efficacy and those with as well as without intentions to attend recommended rehabilitation programmes could be an important step in achieving the goals of CRP.

Interestingly, diet efficacy did not significantly predict intention to attend CRP. This finding may be due to the perception of CRP as being more closely linked to advocating exercises and physical activities than eating behaviours.

4.6.5 Intention to seek alternative treatment

Another aim of this study was to identify whether intention to seek alternative treatment for CHD could be predicted from demographics and psychological constructs. The finding shows that only working status predicted such intentions, suggesting that people who were unemployed and/or retired were more likely to express intentions to seek alternative treatment. This relationship may be a function of age; older, retired patients were more likely to have faith in complementary medicine compared to younger patients. No
psychological constructs predicted intention to seek alternative treatment. Research on seeking alternative treatment, particularly in relation to CHD is still in its infancy. The findings of previous research suggests that health beliefs, rather than patients’ psychological characteristics were more likely predictors of such behaviours (Bishop, 1996, Furnham and Bhagrath, 1993; Furnham and Smith, 1988). However, it has been recently suggested that psychological variables such as self-efficacy and optimism (Ritvo et al., 1999) as well as control and hope (Truant and Bortoff, 2000) may play a significant role in influencing patients’ motivation and decisions in seeking complementary medicine. Thus, future research should include measures of psychological constructs and health beliefs in predicting complementary treatment behaviors.

4.6.6 Prediction of emotional well-being
An aim of the study was to identify factors that predict patients’ emotional well-being at the time of hospitalisation. As reviewed earlier, anxiety and depression have been found to significantly predict CHD outcomes (e.g. physical functioning, adherence to treatment and mortality). The present study revealed that gender significantly predicted anxiety. The finding suggests that women patients were more likely to experience anxiety compared to men, consistent with the findings obtained in the studies conducted in the West (see Julian and Wenger, 1997). Unfortunately, not many studies have looked at the specific relationship between gender and anxiety among cardiac patients (see Kubzansky et al., 1997) and this concern has been echoed by many other researchers (e.g. Julian and Wenger, 1997). Failure to detect women’s emotional reaction to CHD may be a contributing factor to the poor prognosis of women’s psychosocial adaptation following an MI (see Vaccarino, de Leon and Berkman, 1997, p. 421-432). For instance, studies have shown that women get less referral and/or recommendation for medical treatment (Ayanian and Epstein, 1991), they were more likely to drop out of rehabilitation programmes (McGee and Horgan, 1992; Franklin, Bonzheim and Berg, 1997, p. 168) and they were also less likely to utilise health care services (Kostis, Wilson and O’Dowd et al., 1994). More disturbingly, fatality rate post MI is consistently higher for women than men (Roger and Gersch, 1997, p. 139). However, it has to be noted that the number of women in this study was very small; hence the finding should be treated as suggestive rather than definitive.
The study also revealed that pessimism significantly predicted anxiety as well as depression, suggesting that bleak perceptions of the future contributed to feelings of worry, panic and sadness among patients after the onset of their illness. This pattern of relationship is not surprising as all three constructs are cognitive-emotive in nature. Although distinct, these constructs are inter-related. For instance, some researchers have suggested that anxiety and depression may differ on dimensions of negative and positive affect, which are independent of one another. Anxiety is associated primarily with high levels of negative affect, whereas depression is associated with both high levels of negative and low levels of positive affect (Kubzansky et. al., 1997). Similarly, others have shown that optimism, hope and emotional well-being are related to each other but they are not identical constructs (in Myers and Steed, 1999).

Interestingly, attribution of recovery to God predicted depression. Earlier, it was noted that internal attribution of recovery was positively associated with attribution of recovery to God (see Chapter 3). However, when predicting depression, the latter alone turned out to be a significant predictor of depression. This finding suggests that the stronger attribution of recovery to God, the more likely patients expressed some level of negative emotions. This pattern of relationship provides some support for findings found in the West: attributing recovery to God may yield a sense of helplessness and/or fatalism, leading to depression. However, the direction of causality cannot be determined from this study. It further highlights the complexity of the locus of control concepts, particularly the relationship between internal and God locus of control. The relationships among these concepts should be addressed further in future research in non-western societies.

4.7 Summary and Limitations

The present study revealed a mixture of findings, with some supporting the findings of previous research in the West while others not. A major finding of this study is the relatively small number of significant associations in the prediction of emotional well-
being and behavioural intentions from self-referent beliefs and psychological constructs. For example, unlike as predicted, none of the self-referent variables and coping strategies accounted for patients’ emotional well-being. A possible explanation for the lack of association may be due to the lack of content and/or context validity of the measures developed in the West when applied in this Malaysian sample. For example, attributions of control may be qualitatively different for Western and Eastern samples. The finding that internal attribution of control of recovery is positively associated with attribution to God contradicts the patterns of relationship found in Western studies. These findings highlight the possible differences by which psychological constructs are conceptualised, internalised and perceived by Malaysian patients. Thus, the lack of significant relationships may warrant a reappraisal of the constructs used in a non-western context.

However, the lack of significant associations between psychological constructs and emotional well-being and behavioural intentions could be attributed to the relatively small sample size (N = 97). It has been suggested that for multiple regression analyses, a sample size of 150 is recommended in order to control for sampling error (see Tabachnick and Fidel, 1989). Hence, a larger patient sample size may yield more significant and meaningful associations in the prediction of patients’ well-being as well as behavioural intentions at the time of hospitalisation.

Lastly, the pattern of findings may be attributed to the cross-sectional design of the study. Several studies have consistently shown that longitudinal analyses may reveal a different pattern of relationships for the same variables (see van Elderen et al., 1999). The study also utilised the interviewing method to elicit response from patients. As suggested earlier, interviewing methods, although increases the likelihood of the number of responses, give rise to demand expectations effect. In this context, negative affect may not have been measured effectively. Malaysian patients may have perceived that sharing a negative emotion (e.g. depression) would be inappropriate, resulting in a bias in the report of emotions.
Furthermore, patients may have found it difficult to talk to a stranger about their feelings concerning their illness. This finding is consistent with the differences found in the patterns of communication and interaction between individualistic and collectivistic societies. Individualists tend to have various skills for meeting outsiders whereas collectivists tend to have fewer strategies for interacting with strangers (Triandis, Botempo, Villarel, Asai and Lucca, 1988). More studies need to be conducted comparing cardiac related behaviors between patients in individualistic and collectivistic societies.
CHAPTER 5

STUDY 3
PREDICTORS OF PSYCHOLOGICAL OUTCOMES OF CHD AMONG MALAYSIANS

Aims and Overview

An original aim of research was to study recovery from CHD longitudinally. Study 3 assessed the prospective relationships between variables assessed at Time 1 (Study 2) and psychological outcomes several months post-hospitalisation (Time 2). A longitudinal model hypothesising the relationships between psychological variables and cardiac-related outcomes was developed for this study (See Figure 5.1). This longitudinal model is an extension of the cross-sectional model developed for Study 2 (see Figure 4.1) which looked at the concurrent relationships among sociodemographic variables, self-referent beliefs, psychological constructs, behavioral intentions and affective status. This chapter focuses only on the longitudinal relationship between predictor variables and outcome variables (see Figure 5.1). The outcome variables assessed at Time 2 were anxiety, depression, quality of life, impact of illness on activity levels, energy levels and social functioning, attendance at CRP and reported use of alternative treatment. The participants were a subset of those participating in Study 2 (Chapter 4).

Thus, the specific aims of this study were to: (1) examine the concurrent relationships among outcome variables; (2) examine whether self-referent beliefs predict intention to attend CRP and intention to use complementary medicine; (3) determine whether intention to attend CRP assessed at Time 1 predicts actual attendance; (4) determine whether intention to use complementary medicine assessed at Time 1 predicts actual use of complementary medicine; (5) examine prospective relationships between psychological constructs and outcome variables; (6) determine whether psychological constructs mediate the relationship between self-referent beliefs and psychological outcomes of CHD.
Figure 5.1 Hypothesised Model on Psychological Aspects of Recovery from CHD among Malaysians
Relating to aim (1), it was hypothesised that negative affect at follow-up is negatively associated with functional status and quality of life. Patients with high levels of anxiety and depression are more likely to report poor physical and social functioning (Sullivan et al., 1997; 1999). They are also more likely to report poor quality of life.

Relating to aims (2), (3) and (4), it was hypothesised that self-referent beliefs directly shape patients' intention to attend CRP. Patients with high general and specific self-efficacy are more likely to form an intention to attend CRP. Intention to attend CRP, in turn, predicts actual attendance at CRP. It was also proposed that self-referent beliefs shape patients' intention to seek alternative treatment with lower self-efficacy predicts intention to use alternative treatment; intention in turn, predicts actual use of alternative treatment.

Relating to aims (5) and (6), self-referent beliefs were hypothesised to predict negative affect, functional status and quality of life post hospitalisation either directly, or indirectly via mediation by psychological constructs such as coping styles, recovery locus of control and pessimism. Patients with high self-efficacy and those who adopt active coping styles are more likely to report healthy physical and social functioning; they are also more likely to report good quality of life.

The model further proposes that negative affect assessed at the hospital directly predicts affective status, functional status and quality of life post CHD. Patients with high levels of anxiety and depression are more likely to continue experiencing negative affect at follow-up. They are also more likely to be functionally impaired and to report poor quality of life.

5.1 Research Questions

1. Are patients who responded to the follow-up questionnaires at Time 2 different from patients who did not respond in terms of their demographic and baseline psychological characteristics?
2. Can behavioral intentions be predicted from self-referent beliefs and psychological constructs assessed at Time 1?
3. Can actual attendance at CRP be predicted from behavioral intentions assessed at Time 1?
4. Can actual use of alternative treatment be predicted from behavioral intentions assessed at Time 1?
5. Controlling for negative affects at Time 1, can anxiety and depression at Time 2 be predicted from demographics, self-referent beliefs, psychological constructs assessed at Time 1?
6. Can quality of life at Time 2 be predicted from demographics, self-referent beliefs, psychological constructs, and emotions assessed at Time 1?
7. Can impact of illness be predicted from demographics, self-referent beliefs, psychological constructs, and emotions assessed at Time 1?
8. Will coping styles, recovery locus of control and pessimism mediate the relationship between self-referent beliefs variables and outcomes (anxiety, depression, quality of life, impact of illness, lifestyles)?

5.2 Methods

5.2.1 Participants
Of the 97 patients who participated in Study 2, 67 were included in this longitudinal study. Patients were recruited from the third hospital, two of whom were interviewed at Wave 1 while the remaining 65 were interviewed at Wave 2 (see Chapter 4 for details). Among the reasons for only including patients recruited from the third hospital (n = 67) were convenience and accessibility. For example, patients’ addresses were made available by the ward sister, enabling Time 2 questionnaires to be posted to the respective patients.
5.2.2 Procedure

Names of patients admitted to the CCU and/or CRW were made available by the ward sister. MI and angina patients were approached 3 days after admission into the ward, while PTCA and CABG patients were approached 3 days after surgery. Patients meeting the eligibility requirements were given a patient information sheet. If they agreed to participate, patients were asked to sign a consent form. Patients were then asked for an interview. The interviews took place in the CCU or CRW at a time convenient to the patient.

Four months after the initial assessment, patients were sent a follow-up questionnaire through the post. Patients were asked to return the completed in a stamped addressed envelope. They were given a maximum of two months to return the questionnaires. Reminders were sent to patients two weeks prior to the end of the two-months’ deadline. Another set of reminders were sent to patients who failed to return their questionnaires after the stipulated deadline. Of the 67 questionnaires posted, 26 patients returned their completed questionnaires (39% return rate). Two patients had died between the period of hospital discharge and Time 2 assessment, so 40% of the possible participants responded.

5.2.3 Measures

5.2.3.1 Time 1

A detailed description of measures has been reported elsewhere (see Chapter 4).

5.2.3.2 Time 2

The follow-up questionnaire consisted of 5 measures, 3 of which were previously used at Time 1. These were the Hospital Anxiety and Depression scale (Zigmond and Snaith, 1983), the Helplessness scale (Beck et. al., 1974) and the COPE scale (Carver et. al., 1989). The other measures were the Sickness Impact Profile (Bergner, 1981) and the Quality of Life scale (Chibnall, 1990). The instrument also contained sections on sociodemographic information and items on cardiac rehabilitation attendance and actual use of complementary treatment. All items were back-translated by two bilingual Malaysian
translators. Both the English and Malay versions of each question were provided (see Appendix 6 for a copy of the Time 2 questionnaire).

5.2.3.2.1 The modified Sickness Impact Profile (SIP)
Bergner's (1981) Sickness Impact Profile (SIP) was formulated to assess impacts of chronic illnesses on patients' functioning status across various dimensions. Only ten items were included in the questionnaire, assessing impact of illness on patients' physical functioning \((n = 8)\) and social functioning \((n = 2)\). Four additional items were constructed assessing impact of heart disease on patients' sexual relationship with their spouse \((n = 2)\) and impact of illness on patients' dietary behavior \((n = 2)\).

The instructions for the modified SIP were as follows:
The following statements may illustrate your experiences since your discharge from the hospital. Based on the scale below, please indicate the extent to which you have had these experiences since you left the hospital.

The rating scale ranged from 1 = “no, not true”, 2 = “sometimes” and 3 = “yes, true”. Higher scores indicate stronger impact of illness on the functioning level.

5.2.3.2.2 The modified Quality of Life scale (QOL)
Chibnall (1990) developed the Quality of Life Scale (QOL) to assess impact of chronic illness on patients' perceived life quality. The scale consists of seven items represent a single construct. All seven items from the original QOL scale were included in the questionnaire. The instructions for the QOL scale were as follows:
The items below represent aspects of everyday life. Based on the scale given, please indicate the extent to which you are satisfied with these aspects of your life.

The Likert rating scale ranged from 1 = “not at all satisfied”, 2 = “not quite satisfied”, 3 = “unsure”, 4 = “satisfied” and 5 = “very satisfied”. Higher scores indicate stronger satisfaction with overall quality of life.
5.3 Analyses

First, given that this was a sub-sample of the sample reported on in Study 2 (Chapter 4), psychometric properties of the constructs generated for Time 1, along with their respective Cronbach alpha coefficients were recomputed. Validity of the constructs was ascertained by bivariate associations. Similar analyses were performed for constructs generated for Time 2.

Differences in sociodemographic characteristics and baseline psychological characteristics between patients who responded to the follow-up questionnaires and patients who did not were assessed. Next, baseline demographic and psychological characteristics of patients who expressed intention to attend CRP as well as those who did not who were examined. Bivariate analyses were performed for these variables and intention to attend, to determine the patterns of relationships. Next, a forward logistic regression was conducted to predict intention to attend CRP from its significant correlates. An iterative procedure was chosen because it allows for the control of criteria by which variables are entered and removed from the equation. For example, a forward logistic regression enters the variables in the block one at a time based on the entry criteria. The procedure terminates when all variables have been entered or when the likelihood ratio is non-significant for all variables that have not been entered.

Similar sets of analyses were performed for actual attendance of CRP; patients who attended were compared to patients who did not on their baseline demographic and psychological characteristics. Bivariate relationships were assessed between these variables and actual attendance. Based on the results of these bivariate analyses, logistic regression was next performed to predict CRP attendance from its significant correlates. In order to distinguish patients who performed their intention to attend CRP from those who did not in terms of their psychological characteristics, a series of two-way analyses of variance (ANOVAs) was performed.
Next, intention to use alternative treatment and actual use of alternative treatment following discharge from the hospital were analysed. Bivariate relationships for baseline demographic, baseline psychological characteristics and intention to use alternative treatment were assessed. Bivariate relationships were assessed for actual use of alternative treatment and these baseline characteristics. Two separate forward logistic regressions were performed to predict first, intention to use alternative treatment and second, actual use of alternative treatment from their respective significant correlates. Because the small sample size for the logistic regression to predict actual use of alternative treatment, the results were interpreted with caution, and included here only as pilot data to suggest future research.

A paired samples t-test was performed next to determine whether significant differences exist in the levels of anxiety and depression reported at Time 1 and at Time 2. A Bonferroni correction procedure was applied to correct for Type 1 error where necessary. Relationships between baseline characteristics and outcome variables were obtained next. These were examined using partial correlation analyses, controlling for anxiety and depression at Time 1. The rationale for conducting partial correlations was to control for the effects of anxiety and depression reported at Time 1 on the psychological outcomes of CHD at Time 2.

Lastly, a series of multiple regression analyses was performed to predict outcome variables from baseline characteristics. Because of the small sample for these regressions, the findings were interpreted with caution and included here only as pilot data to suggest future research.

5.4 Results

5.4.1 Demographic characteristics
The demographic characteristics of patients included in this study were similar to the demographic characteristics of the entire sample of patients who participated in Study 2. A majority of patients (94%) assessed at the hospital were men. The mean age of patients was 52.6 years. Similar percentages of Malays and non-Malays participated in this study. Table 5.1 summarises the demographic characteristics of patients assessed at Time 1.
Table 5.1 Demographic characteristics of patients at Time 1 (N = 67) and Time 2 (n = 26)

<table>
<thead>
<tr>
<th>Sociodemographic Variables</th>
<th>Time 1 Mean (SD)</th>
<th>Time 2 Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>52.6 (11.4)</td>
<td>51.1 (9.42)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>63 (94%)</td>
<td>25 (96%)</td>
</tr>
<tr>
<td>Female</td>
<td>4 (6%)</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>Ethnic Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>36 (54%)</td>
<td>15 (58%)</td>
</tr>
<tr>
<td>Other</td>
<td>31 (46%)</td>
<td>11 (42%)</td>
</tr>
<tr>
<td>Religious Affiliation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>45 (67%)</td>
<td>22 (85%)</td>
</tr>
<tr>
<td>Other</td>
<td>22 (33%)</td>
<td>4 (15%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>61 (91%)</td>
<td>25 (96%)</td>
</tr>
<tr>
<td>Widowed/Single</td>
<td>6 (9%)</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>Work Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>56 (67%)</td>
<td>24 (92%)</td>
</tr>
<tr>
<td>Not employed/Retired</td>
<td>11 (16%)</td>
<td>2 (8%)</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled Workers</td>
<td>19 (28%)</td>
<td>12 (46%)</td>
</tr>
<tr>
<td>Unskilled Workers</td>
<td>48 (72%)</td>
<td>14 (54%)</td>
</tr>
</tbody>
</table>

Of the 26 patients who returned follow-up questionnaires, 25 (96%) were men. Similar percentage of Malays and non-Malays responded to the follow-up questionnaires. Two patients had retired within the time following discharge from the hospital while the remaining 24 (92%) were still employed; 14 were unskilled labourers.
There were no significant differences in sociodemographic characteristics between patients who responded to the follow-up questionnaires and patients who did not.

5.4.2 Psychometric properties of predictor constructs at Time 1

Eleven constructs were generated from the following six scales: General Self-Efficacy, Global Self-Esteem, Recovery Locus of Control, Hospital Anxiety and Depression and the COPE. For each construct, a mean score was computed by summing up the scores for each item and dividing the sum by the number of items in each construct. In general, the means of the scores were normally distributed with several exceptions. The distribution of scores for self-referent beliefs variables was marginally skewed (Shapiro-Wilk ranging from .73 to .89, df = 22, p = .01). The distributions for God locus of control and turning to God as a way of coping constructs were also slightly skewed (Shapiro-Wilk = .74 and .81, respectively, df = 22, p = .10). The degree of skewness of these constructs was deemed not sufficient to require transformation.

The self-efficacy construct was made up of ten items assessing general self-referent beliefs (i.e. capabilities to perform different difficult tasks); it had a high internal consistency (\(\alpha = .94\)) when used in this particular Malaysian cardiac sample. Similarly, the self-esteem construct, which was made up of eight items, was also highly reliable (\(\alpha = .93\)). As expected, the two constructs were significantly correlated with each other (\(r = .78, p < .001\)). In general, the patterns of means revealed that Malaysian cardiac patients in this sample had high general self-efficacy and even stronger perceptions of self when assessed at the hospital.

The ‘diet efficacy’ and ‘exercise efficacy’ constructs, made up of two items each, assessed perceptions of specific efficacy. The two constructs had a satisfactory internal consistency (\(\alpha = .76\) and \(\alpha = .80\), respectively). The Time 1 means obtained for both constructs show that patients in this sample, when asked while still hospitalised, were strongly confident of their ability to change their diet and to carry out physical exercises. The two constructs were moderately related to each other (\(r = .31, p < .05\)), suggesting that perception of ability
to eat healthily upon discharge was related to perceptions of ability to perform physical activities. As expected, these two constructs were highly related to self-efficacy ($r = .36$, $p < .01$ for diet efficacy and $r = .57$, $p < .001$ for exercise efficacy), thus supporting the validity of these two constructs.

Three loci of control constructs were generated from the revised Recovery Locus of Control scale: self, doctor and God. These constructs assessed specific attributions of control over recovery from CHD. The loci of control constructs had respectable internal consistency ($\alpha = .93$, $\alpha = .88$ and $\alpha = .89$, respectively). Interestingly, cardiac patients in this sample attributed recovery of control most strongly to God and least to the self. The relationships between these constructs yielded the following pattern: attribution of control over recovery to doctors was negatively related to internal locus of control as well as God locus of control. This suggests that the stronger the attribution of illness recovery placed on medical and health professionals, the less attribution of control is placed on the self and God. Unlike the finding for the complete cardiac patients cohort reported in Chapter 4, the internal locus of control was not as highly significantly related to God locus of control in this sample ($r = .22$, $p = .09$). Although only approaching significance, it should be noted that the direction of relationship between these two variables was positive.

The ‘anxiety’ and ‘depression’ constructs generated from the HAD scale were internally consistent ($\alpha = .93$ and $\alpha = .87$, respectively). In general, the levels of anxiety and depression reported by patients at Time 1 in the hospital were quite mild, and comparable to the levels of anxiety and depression reported for the complete cohort of cardiac patients (see Chapter 4). As expected, the two constructs were highly associated ($r = .75$, $p < .001$).

The pessimism construct, which was made up of 10 items from the Helplessness scale, also yielded high internal reliability ($\alpha = .90$). Patients in this sample were not highly pessimistic of their future, consistent with the complete sample (see Chapter 4). As found in earlier (see Chapter 3 and Chapter 4), this pessimism construct was significantly correlated with anxiety ($r = .60$, $p < .001$) as well as depression ($r = .59$, $p < .001$).
finding is not surprising; the items assessing pessimistic views of the future may have also assessed negative affect.

The three coping constructs generated from the modified 14-item COPE scale were moderately internally consistent. Active coping had an alpha coefficient of .66 whilst seeking emotional support had an alpha coefficient of .67; these coefficients are comparable to those obtained previously (see Chapter 3 and Chapter 4). Turning to God as a coping mechanism had the highest internal reliability of the three (α = .88). Of the three coping styles, this sample more often used active coping to cope with their illness, followed by turning to God. Bivariate relationships between the coping constructs show that turning to God as a way of coping was significantly related to seeking emotional support (r = .41, p < .05), implying that patients who sought solace in God as a way of coping with their illness were also more likely to seek emotional support from friends and relatives. Unexpectedly, turning to God as a coping style was not significantly related to God locus of control; neither was active coping and internal locus of control. The psychometric properties of the 13 baseline psychological constructs are summarised in Table 5.1, and the means and standard deviations are presented in Table 5.2.

Table 5.2  Cronbach alpha coefficients for predictor variables at Time 1

<table>
<thead>
<tr>
<th>Variables (Items)</th>
<th>Number of Items</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Efficacy</td>
<td>8</td>
<td>.94</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>8</td>
<td>.93</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>2</td>
<td>.86</td>
</tr>
<tr>
<td>Diet Efficacy</td>
<td>2</td>
<td>.70</td>
</tr>
<tr>
<td>Internal Locus of Control</td>
<td>6</td>
<td>.93</td>
</tr>
<tr>
<td>God Locus of Control</td>
<td>3</td>
<td>.89</td>
</tr>
<tr>
<td>Doctor Locus of Control</td>
<td>3</td>
<td>.88</td>
</tr>
<tr>
<td>Pessimism</td>
<td>10</td>
<td>.90</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>Mean (SD)</td>
<td>Rating Scale</td>
</tr>
<tr>
<td>--------------------------</td>
<td>---------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>3.90 (1.09)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>4.44 (0.68)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>4.23 (0.89)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Diet Efficacy</td>
<td>4.21 (0.86)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Internal locus of Control</td>
<td>3.64 (0.97)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>God Locus of Control</td>
<td>4.37 (0.72)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Doctor Locus of Control</td>
<td>4.02 (1.13)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Active Coping</td>
<td>4.38 (0.79)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Turning to God</td>
<td>4.22 (0.82)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Emotional Support</td>
<td>3.12 (0.89)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Pessimism</td>
<td>1.80 (0.61)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.48 (1.21)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Depression</td>
<td>2.28 (0.77)</td>
<td>(1-5) 5 = always</td>
</tr>
</tbody>
</table>
5.4.3 Psychometric properties of outcome variables at Time 2

Seven constructs were generated from the following four scales: Hospital Anxiety and Depression, Quality of Life and the modified version of the Sickness Impact scale. The constructs generated were 'anxiety', 'depression', 'quality of life' and 'illness impact on physical activity', 'illness impact on energy level' and 'illness impact on social functioning'. For each construct, a mean score was computed by summing up the scores for each item and dividing the sum by the number of items in each construct. In general, the distribution of means for the anxiety, depression, pessimism and quality of life constructs were normal. However, the impact of illness on social functioning construct was slightly skewed, from a normal distribution (Shapiro-Wilk = .84, df = 26, p = .10).

The 'anxiety' and 'depression' constructs at Time 2 consisted of the same items for the 'anxiety' and 'depression' constructs generated at Time 1. The anxiety construct had a respectable internal consistency ($\alpha = .75$). However, unlike the Cronbach coefficient obtained at Time 1, the depression construct at Time 2 yielded a reliability coefficient of only .34. Despite the low reliability coefficient, the construct was retained for further analyses; however, the inferential statistics obtained should be treated with caution. Anxiety and depression were significantly related to each other at Time 2 ($r = .44$, $p < .05$), supporting the validity of the scales.

The internal reliabilities for other variables were respectable, ranging from .71 to .83. The quality of life construct, which was made up of seven items assessing seven aspects of life, had an internal consistency of .80. The three illness impact constructs also showed good internal reliability (see Table 5.4). Bivariate associations revealed that their correlation coefficients ranged from between .48 to .69, thus suggesting the validity of the constructs for this cardiac sample.

In general, the patterns revealed above show that patients reported relatively positive adaptation to their illness between four to six months following their discharge from the hospital. Levels of anxiety as well as depression were moderately low, unlike the levels of
anxiety and depression reported in the Western literature for post-cardiac patients (see Chapter 4). Patients' reported quality of life was moderately satisfactory; they reported that they were quite satisfied about their family, recreational and social life. However, on the illness impact constructs, the patterns were not as positive. Patients reported that the strongest impact of CHD was on their social functioning. Upon discharge from the hospital, patients agreed that they did not attend social functions and/or activities as often as they used to. The results further show that the patterns of illness impact on patients' physical activity levels indicate that the heart disease was somewhat debilitating to their everyday physical functioning. Patients were quite likely to experience difficulties in doing physical work and/or household chores. Impact of CHD on energy level was not as strong, however. Patients did not report increased tiredness and/or sleeping difficulties as a result of having heart disease four to six months following discharge from the hospital. Table 5.4 and Table 5.5 present the internal reliabilities, and the means and standard deviations for these constructs, respectively.

Table 5.4 Cronbach alpha coefficients for outcome variables at Time 2

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of Items</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>7</td>
<td>.75</td>
</tr>
<tr>
<td>Depression</td>
<td>5</td>
<td>.34</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>7</td>
<td>.80</td>
</tr>
<tr>
<td>Impact on Physical Activity</td>
<td>5</td>
<td>.73</td>
</tr>
<tr>
<td>Impact on Social Life</td>
<td>2</td>
<td>.83</td>
</tr>
<tr>
<td>Impact on Energy Level</td>
<td>3</td>
<td>.71</td>
</tr>
</tbody>
</table>
Table 5.5  Means and standard deviations for outcome variables at Time 2

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Mean (SD)</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>2.45 (0.89)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Depression</td>
<td>2.12 (0.45)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>3.44 (0.69)</td>
<td>(1-5) 5 = strongly satisfied</td>
</tr>
<tr>
<td>Impact on Physical Activity</td>
<td>1.03 (0.52)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
<tr>
<td>Impact of Social Life</td>
<td>1.19 (0.76)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
<tr>
<td>Impact on Energy Level</td>
<td>0.71 (0.52)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
</tbody>
</table>

Independent samples t-test revealed that there were no significant differences in baseline psychological characteristics (e.g., self-referent beliefs, coping styles, pessimism, locus of control and emotional status) between patients who responded to the follow-up questionnaires at Time 2 and patients who failed to do so.

5.4.4 Attendance at the CRP: intention and actual behaviour

The following analyses were performed to identify factors that predicted intention to attend CRP as well as actual attendance of CRP. First, sociodemographic characteristics of patients who were willing and unwilling to attend CRP were examined. Next, bivariate associations were performed to identify the directions and strengths of psychological variables and intention to attend CRP. Independent sample t-tests were then conducted to determine whether there were any significant differences in various psychosocial characteristics between those who intended to attend and those who did not. Following from these analyses, logistic regression was performed to predict intention to attend CRP from its significant correlates. Similar sets of analyses were performed for actual attendance at CRP: descriptives, bivariate associations between baseline psychosocial characteristics and attendance at CRP, independent samples t-test and logistic regression to predict actual CRP attendance from its significant correlates. Finally, a series of two-way
analyses of variance (ANOVA) was performed to distinguish patients who did as they intended from those who did not do as they initially intended from baseline psychological characteristics.

Information on patients’ intention to attend CRP was obtained while patients were at the hospital. Of the 67 patients interviewed, 43 (60%) said they had no intention to attend the CRP offered by the hospital while the remaining 24 (40%) expressed an intention to do so.

The mean age of those with intention to attend was 50 years (SD = 60.9) while the mean age of patients without the same intention was 54.1 years (SD = 13.1). Significant differences in working and socioeconomic status were found between those who expressed intention and those who did not. A significantly higher percentage of unskilled laborers expressed no intention to attend CRP compared to semi/skilled professionals. Table 5.5 summarises the sociodemographic characteristics of patients categorised as those with and without intention to attend CRP.

Table 5.6 Differences in baseline demographic and psychological characteristics of patients with intention to attend CRP and patients without

<table>
<thead>
<tr>
<th></th>
<th>Without Intention (n = 43)</th>
<th>With Intention (n = 24)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>41 (61%)</td>
<td>22 (33%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Female</td>
<td>2 (3%)</td>
<td>2 (3%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Age</td>
<td>54.1 (13.1)</td>
<td>50 (60.9)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>21 (31%)</td>
<td>14 (21%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Non-Malay</td>
<td>22 (33%)</td>
<td>10 (15%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>40 (60%)</td>
<td>21 (31%)</td>
<td></td>
</tr>
<tr>
<td>Widowed/Single</td>
<td>3 (4.5%)</td>
<td>3 (4.5%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Working Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired/Non-Employed</td>
<td>11 (16%)</td>
<td>1 (2%)</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Employed</td>
<td>32 (48%)</td>
<td>23 (34%)</td>
<td></td>
</tr>
</tbody>
</table>
Bivariate correlations were then calculated for sociodemographic variables as well as psychological variables and intention to attend CRP. The results show that employed, skilled patients were more likely to express intention to attend CRP ($r = .27$, $p < .05$ and $r = -.38$, $p < .005$). No significant relationship was obtained between gender, ethnicity, marital status and intention to attend cardiac rehabilitation. Similarly, no significant relationship was obtained for medical indices and patients' intention to attend CRP.

Several significant associations were obtained for the following psychological variables: self-efficacy ($r = .59$, $p < .001$), self-esteem ($r = .53$, $p < .001$), exercise efficacy ($r = .52$, $p < .001$), diet efficacy ($r = .32$, $p < .05$), pessimism ($r = -.54$, $p < .001$) and depression ($r = -.34$, $p < .01$). The patterns of relationships suggest that intention to attend CRP was significantly associated with higher self-efficacy and self-esteem, as well as patients' more positive perceptions of their capability to eat a healthy diet and to perform physical activities. Intention was also significantly associated with lower levels of pessimistic views of the future as well as lower negative affects.

Independent samples t-test comparing medical indices as well as psychological characteristics between patients with intention to attend CRP and those without intention to attend CRP were next performed. Significant differences between the two groups of patients were obtained in several psychological characteristics assessed: self-efficacy ($t = -5.27$, $df = 51$, $p < .001$), self-esteem ($t = -4.50$, $df = 51$, $p < .001$), exercise efficacy ($t = -4.31$, $df = 51$, $p < .001$), diet efficacy ($t = -2.43$, $df = 51$, $p < .05$), depression ($t = 2.83$, $df = 60$, $p < .01$) and pessimism ($t = 4.79$, $df = 57$, $p < .001$). The differences between the two groups in depression ($t = 2.83$, $df = 60$, $p < .01$) and diet efficacy ($t = -2.43$, $df = 51$, $p < .05$) were no longer significant when the Bonferroni correction procedure was applied. The pattern of differences suggests that patients who expressed intention to attend CRP were
more likely to have higher self-efficacy, self-esteem, diet efficacy and exercise efficacy compared to those who did not express similar intentions. The former group of patients was also less pessimistic of their future and less depressed during hospitalisation. Table 5.7 summarises the differences in psychological characteristics between patients with and without intention to attend CRP.

Table 5.7 Differences between CRP intenders and non-intenders

<table>
<thead>
<tr>
<th></th>
<th>Without intention (n = 43)</th>
<th>With intention (= 24)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Medical Indices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure (mmHg)</td>
<td>117.3 (19.1)</td>
<td>115.8 (17.3)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Diastolic Blood Pressure (mmHg)</td>
<td>72.8 (13.5)</td>
<td>72.2 (9.4)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Triglyceride Fasting (mmol/l)</td>
<td>1.68 (1.19)</td>
<td>1.89 (1.51)</td>
<td>ns.</td>
</tr>
<tr>
<td>Cholesterol (mmol/l)</td>
<td>5.86 (1.68)</td>
<td>5.60 (1.14)</td>
<td>n.s.</td>
</tr>
<tr>
<td>HDL (mmol/l)</td>
<td>1.27 (0.43)</td>
<td>1.14 (0.36)</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Self-Efficacy</strong></td>
<td>3.37 (1.10)</td>
<td>4.69 (0.34)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Self-Esteem</strong></td>
<td>4.18 (0.72)</td>
<td>4.88 (0.23)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Diet Efficacy</strong></td>
<td>3.98 (0.91)</td>
<td>4.55 (0.67)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Exercise Efficacy</strong></td>
<td>3.86 (0.92)</td>
<td>4.78 (0.43)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Pessimism</strong></td>
<td>2.05 (0.61)</td>
<td>1.38 (0.29)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td><strong>Anxiety</strong></td>
<td>2.64 (1.25)</td>
<td>2.19 (1.08)</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Depression</strong></td>
<td>2.48 (0.73)</td>
<td>1.93 (0.72)</td>
<td>&lt; .01</td>
</tr>
<tr>
<td><strong>Active Coping</strong></td>
<td>4.53 (0.56)</td>
<td>4.26 (0.94)</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Turning to God</strong></td>
<td>4.52 (0.57)</td>
<td>3.96 (0.93)</td>
<td>n.s.</td>
</tr>
<tr>
<td><strong>Seeking Support</strong></td>
<td>3.07 (1.01)</td>
<td>3.17 (0.81)</td>
<td>n.s.</td>
</tr>
</tbody>
</table>
Next, a forward logistic regression was performed to predict intention to attend CRP from its significant correlates at baseline: work status, socio-economic status, self-efficacy, self-esteem, exercise efficacy, diet efficacy, pessimism and depression. Results indicate that self-efficacy and exercise efficacy significantly predicted intention to attend CRP (OR = 5.58, CI = 1.32 - 23.40 and OR = 6.38, CI = 1.24 - 32.74), similar to those found for the complete sample (Study 2, Chapter 4). The Hosmer-Lemeshow goodness of fit test was non-significant ($\chi^2 = 6.98$, df = 8, p > .05), suggesting that the prediction fit the model. These results suggest that patients with high self-efficacy were nearly six times more likely to express intentions to attend CRP. The odds of expressing intention to attend CRP for this sub-sample is slightly higher than the odds reported by the complete sample in Study 2.

Table 5.8 Prediction of intention to attend CRP

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>df</th>
<th>p</th>
<th>ExpB</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self Efficacy</td>
<td>1.72</td>
<td>0.73</td>
<td>1</td>
<td>&lt;.05</td>
<td>5.58</td>
<td>1.32 - 23.40</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>1.85</td>
<td>0.83</td>
<td>1</td>
<td>&lt;.05</td>
<td>6.38</td>
<td>1.24 - 32.74</td>
</tr>
</tbody>
</table>

Following from the analyses of intention to attend CRP, similar patterns of analyses were performed on actual attendance at CRP. Approximately 50% of the data on patients' actual attendance at CRP were obtained from their responses via returned questionnaires. Information on attendance for the remaining 50% of patients was obtained from the CRP nurses up to four months after patients' discharge. Data on patients' self-reported attendance was later verified from the CRP nurses. Of the 67, 36 patients (54%) did not attend the CRP while 19 patients (24%) attended the programme ($\chi^2 = 5.25$, df = 1, p < .05). Data on the remaining 12 patients (18%) were not available.

No significant differences were found in the age of patients who attended CRP and those who did not. The percentages of attendance and non-attendance were also similar for ethnic groups, religious affiliation and marital status. Significant differences in working and socioeconomic status were found, however. All of the patients who participated in the CRP
were employed; 11 (20%) of whom were skilled workers and the remaining 19 (35%) were unskilled. Table 5.9 summarises the baseline psychological characteristics of patients who attended the rehabilitation programme and patients who did not.

<table>
<thead>
<tr>
<th></th>
<th>Non-Attenders (n = 36)</th>
<th>Attenders (n = 19)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>33 (60%)</td>
<td>18 (32.7%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3 (5.5%)</td>
<td>1 (1.8%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Age</td>
<td>53.4 (12.9)</td>
<td>49.0 (7.3)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>13 (23.6%)</td>
<td>12 (21.8%)</td>
<td></td>
</tr>
<tr>
<td>Non-Malay</td>
<td>23 (41.8%)</td>
<td>7 (12.7%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>33 (60%)</td>
<td>18 (32.7%)</td>
<td></td>
</tr>
<tr>
<td>Widowed/Single</td>
<td>3 (5.5%)</td>
<td>1 (1.8%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Working Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retired/Non-Employed</td>
<td>12 (21.8%)</td>
<td>0 (0%)</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Employed</td>
<td>24 (43.6%)</td>
<td>19 (34.5%)</td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skilled</td>
<td>9 (16.3%)</td>
<td>11 (20%)</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Unskilled</td>
<td>27 (49.1%)</td>
<td>19 (34.5%)</td>
<td></td>
</tr>
</tbody>
</table>

Of the 24 patients who expressed intention to attend CRP, 14 (58.3%) did so, while the remaining 10 failed to attend the programme within four months following their discharge. Of the 43 patients who expressed no intention to attend CRP, 28 (65%) did as they intended. The difference in proportions suggests that, compared to those who did intend to attend CRP, patients who did not have any intention to attend CRP were more likely to stick to their intention (OR = 9.8, CI = 2.7 - 35.5).
Table 5.10 Summary of differences between CRP attenders and non-attenders

<table>
<thead>
<tr>
<th></th>
<th>Non-attenders (n = 36)</th>
<th>Attenders (n = 19)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intention to Attend</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>28 (50.9%)</td>
<td>5 (9.1%)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Yes</td>
<td>8 (14.5%)</td>
<td>14 (25.5%)</td>
<td></td>
</tr>
<tr>
<td>Medical Indices</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td>122.12 (18.4)</td>
<td>109.53 (13.9)</td>
<td>&lt;.05</td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td>74.03 (12.9)</td>
<td>70.53 (8.33)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Triglyceride Fasting</td>
<td>2.13 (1.39)</td>
<td>1.72 (1.47)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>5.85 (1.56)</td>
<td>5.59 (1.31)</td>
<td>n.s.</td>
</tr>
<tr>
<td>High Density Lipoprotein</td>
<td>1.13 (0.41)</td>
<td>1.24 (0.43)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>3.69 (1.22)</td>
<td>4.16 (0.88)</td>
<td>= .05</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>4.33 (0.72)</td>
<td>4.56 (0.69)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Diet Efficacy</td>
<td>4.09 (0.98)</td>
<td>4.34 (0.79)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Exercise Efficacy</td>
<td>4.04 (0.95)</td>
<td>4.44 (0.81)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Pessimism</td>
<td>1.88 (0.69)</td>
<td>1.69 (0.46)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.58 (1.26)</td>
<td>2.42 (1.19)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Depression</td>
<td>2.38 (0.79)</td>
<td>2.16 (0.80)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Active Coping</td>
<td>4.36 (1.09)</td>
<td>4.31 (0.48)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Turning to God</td>
<td>4.79 (0.35)</td>
<td>3.61 (0.70)</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>3.53 (0.92)</td>
<td>2.75 (0.71)</td>
<td>&lt; .05</td>
</tr>
</tbody>
</table>

Bivariate analyses revealed that work status and socio-economic status were significant demographic correlates of actual attendance at CRP ($r = .38$, $p < .005$ and $r = -.30$, $p < .05$, respectively), suggesting that employed, unskilled patients were more likely to attend CRP. The only significant medical index correlate of patients' actual attendance at CRP was
systolic blood pressure; patients with high systolic blood pressure at baseline were more likely to attend CRP.

The only highly significant psychological correlate of attendance at CRP was turning to God as a coping style ($r = -.73$, $p < .001$). This relationship suggests that patients who more likely turned to religion to cope with their illness were less likely to attend CRP. Seeking emotional support was also significantly associated with CRP attendance ($r = -.44$, $p < .05$), those who often sought support to cope with their CHD were less likely to attend rehabilitation programmes.

Unlike the significant associations between self-referent beliefs variables and intention to attend CRP, no significant correlation was found between self-esteem, exercise efficacy and diet efficacy variables and attendance at CRP. Only self-efficacy was related to attendance at CRP, although slightly ($r = .20$, $p = .05$). The lack of relationships between self-esteem, perceptions of ability to eat a healthy diet and ability to perform physical activities suggests that self-referent beliefs variables were associated with reported intention to attend CRP but not actual attendance of the programme.

Similarly, neither pessimism nor depression significantly correlated with attendance at CRP ($r = -.15$, n.s. and $r = -.15$, n.s.), although both variables were significant associates of intention to attend the programme. Patients’ pessimistic views and negative affects were associated with their lack intention to attend CRP but not their actual attendance. No significant association was found between diagnosis of CHD and actual attendance at CRP; patients who were diagnosed with AMI or angina were as likely to attend CRP as those who underwent CABG or PTCA. Unsurprisingly, the bivariate analysis shows that patients with intention to attend CRP at baseline were more likely to attend the programme following discharge ($r = .51$, $p < .005$).

Next, a forward conditional logistic regression was performed to predict actual attendance at CRP from its significant bivariate correlates: socio-economic status, self-efficacy, turning to religion as a way of coping, seeking emotional support and intention to attend
CRP. Only turning to religion as a coping style predicted actual attendance at CRP (OR = 0.03, CI = 0.002 - 0.39). Neither socio-economic status nor intention to attend significantly predicted CRP attendance. In other words, patients who often turned to God to cope with their illness were less likely to attend CRP up to four months following discharge. Hosmer-Lemeshow goodness of fit test shows that the prediction fit the model well ($\chi^2 = 5.92, \text{df} = 4, p > .05$). The results indicate an 87.5% correct classification.

It is noted that this logistic regression analysis was based upon a relatively small sample size, thus the generalisability of these inferences are in doubt and would need to be established in further studies with adequate sample sizes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>df</th>
<th>p</th>
<th>ExpB</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turning to God</td>
<td>-3.63</td>
<td>1.37</td>
<td>1</td>
<td>&lt;.01</td>
<td>0.03</td>
<td>.002 - 0.39</td>
</tr>
</tbody>
</table>

The next analysis was performed to test the link between intention and actual behaviour. In other words, it attempted to identify factors that, for instance, might explain why 37% of patients who said they would attend CRP did not do so. Following from the work of Orbell and Sheeran (1998) and subsequently, Rutter (2000), patients were categorised into four groups: intenders who attended CRP were called 'inclined attenders'; intenders who did not attend were called 'inclined abstainers'; non-intenders who attended were called 'disinclined attenders'; and non-intenders who did not attend were called 'disinclined abstainers'. The four groups are shown in Figure 5.2.
A series of two-way analyses of variance (ANOVA) were performed to see if there were any differences between inclined attenders and inclined abstainers and between disinclined attenders and disinclined abstainers (see Figure 5.2), separately for each of the following baseline psychological characteristics: self-efficacy, self-esteem, exercise efficacy, diet efficacy, loci of control variables, coping styles, pessimism and negative affects (i.e. anxiety and depression).

The analyses revealed several main effects of intentions and attendance at CRP. However, no significant interaction effects were obtained for any of the psychological variables. The following graphs depict only the significant main effects of intention and the significant main effects of attendance at CRP. It should be noted that the analyses were based on a relatively small sample size, hence findings should be treated with caution.
For self-efficacy, a main effect for intention to attend CRP was obtained \([F(1,40) = 26.45, p < .001]\); no main effect for attendance was obtained \([F(1,40) = 1.78, \text{n.s.}]\). No significant interaction effect was obtained for intention by attendance \([F(1,40) = 0.61, \text{n.s.}]\).

![Figure 5.4 Differences in self-esteem for intention](image)

The analysis also revealed that for self-esteem, a significant main effect for intention to attend was obtained \([F(1,40) = 21.19, p < .001]\). However, no main effect was obtained for attendance \([F(1,40) = 1.52, \text{n.s.}]\). The interaction between intention and attendance was non-significant \([F(1,40) = 2.10, p = \text{n.s.}]\) (see Figure 5.4).

![Figure 5.5 Differences in exercise efficacy for intention](image)
For exercise efficacy, a significant main effect for intention to attend was obtained [$F(1,40) = 14.74, p < .001$] but not for actual attendance [$F(1,40) = 0.25, \text{n.s.}$]. No interaction effect was obtained for intention by attendance for exercise efficacy [$F(1,40) = 0.00, \text{n.s.}$](see Figure 5.5).

Figure 5.6 Differences in pessimism for intention

For pessimism, a significant main effect for intention to attend was obtained [$F(1,45) = 19.15, p < .001$]. No significant main effect for attendance was obtained [$F(1,45) = 1.39, \text{n.s.}$]. No significant interaction was obtained for intention by attendance [$F(1, 45) = 0.00, \text{n.s.}$].

Figure 5.7 Differences in depression for intention
For depression, a significant main effect was obtained on intention to attend [F(1, 47) = 1.27, p < .05]. No main effect for attendance was obtained [F(1,47) = 0.7, n.s.]. There was also no significant interaction effect for intention by attendance [F(1, 47) = 0.32, n.s.].

Figure 5.8 Differences in turning to God for attendance

For turning to God as a coping strategy, a significant main effect on actual attendance at CRP was found [F(1,40) = 18.77, p < .001]. No main effect for intention to attend CRP was obtained [F(1,40) = 0.55, n.s.], neither was there an interaction effect [F(1,40) = 0.55, n.s.] (see Figure 5.8).

Figure 5.9 Differences in seeking support for attendance
A significant main effect on attendance at CRP was also obtained for seeking emotional support as a coping strategy \( [F(1,40) = 7.44, p < .05] \). No main effect was found for attendance \( [F(1,40) = 2.38, \text{n.s.}] \). No interaction effect was obtained either \( [F(1,40) = 0.03, \text{n.s.}] \).

In general, disinclined abstainers had lower self-efficacy, self-esteem, and exercise efficacy than inclined attenders. Interestingly, however, it was the disinclined attenders who had the lowest scores on the self-referent beliefs variables. This particular result suggests that those who had the lowest self-efficacy were the ones who subsequently attended CRP. Additionally, patients who were most pessimistic were the least likely to express intentions to attend CRP.

More interesting was the difference between the groups in turning to God as a way of coping. Disinclined abstainers and inclined abstainers turned to God significantly more often than inclined attenders and disinclined attenders. This result suggests that patients who most often turned to God to cope with their illness were least likely to attend CRP. A similar pattern of differences was obtained for seeking support as a coping strategy. Patients who most often sought support from family and friends were least likely to attend CRP.

5.4.5 Use of alternative treatment: intention and actual behaviour
First, bivariate associations were assessed for baseline demographic and psychological characteristics and intention to seek alternative treatment. Patterns of relationships show that unskilled workers and non-Malays were more likely to express an intention to seek alternative treatment \( (r = -0.33, p < 0.01 \text{ and } r = 0.29, p < 0.05) \). Unlike findings for attending CRP, two loci of control variables were found to significantly relate to intention to use alternative treatment: God locus of control \( (r = -0.31, p < 0.05) \) and doctor locus of control \( (r = 0.31, p < 0.05) \). Reported intention to seek alternative treatment for CHD was related to stronger attribution of control over recovery to doctors \( (r = 0.42, p < 0.01) \) and less attribution of control over recovery to God \( (r = -0.31, p < 0.05) \).
A forward logistic regression was conducted to predict intention to seek alternative medicine from its significant correlates. Results show that ethnicity significantly accounted for intention to use alternative treatment at baseline; non-Malays were twice more likely to express intentions to seek alternative treatment than Malays. None of the loci of control variables significantly predicted intentions to seek complementary treatment. These results partially support the results obtained for the complete sample in Study 2, whereby ethnicity and work status significantly predicted intention to seek complementary medicine.

Table 5.12 Prediction of intention to seek alternative treatment

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>df</th>
<th>p</th>
<th>Exp(B)</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethnicity (1)</td>
<td>-1.86</td>
<td>0.84</td>
<td>1</td>
<td>.05</td>
<td>0.16</td>
<td>0.03 - 0.81</td>
</tr>
</tbody>
</table>

Next, bivariate relationships were assessed for demographic and psychological characteristics and actual use of alternative treatment. Similar to the findings for intentions, unskilled workers were more likely to use alternative medicine in treating CHD ($r = .39$, $p < .05$). However, unlike the association found for intention, ethnicity was not related to the actual use of alternative treatment.

Interestingly, none of the loci of control variables that significantly predicted intention to seek alternative treatment significantly predicted its actual use. Significant relationships between pessimism and depression and actual use of alternative treatment were found ($r = .43$, $p < .05$ and $r = .39$, $p = .05$, respectively). This pattern of relationship suggests that stronger pessimistic views as well as higher levels of depression are significantly associated with actual use of alternative medicine in treating CHD.

Next, a forward conditional logistic regression was performed to predict actual use of alternative treatment at Time 2 from its significant correlates. Of the correlates entered as predictor variables (i.e. SES, pessimism and depression), only pessimism was shown to
predict actual use of alternative medicine (OR = 5.98, CI = 0.87 - 41.2), albeit marginally. Hosmer-Lemeshow goodness of fit test indicates a modest fit ($\chi^2 = 10.0, df = 7, p > .05$), suggesting that negative affect marginally accounted for patients' actual use of alternative medicine to treat their illness.

Table 5.12 Prediction of actual use of alternative treatment

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>df</th>
<th>p</th>
<th>ExpB</th>
<th>CI(95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pessimism</td>
<td>1.79</td>
<td>0.98</td>
<td>1</td>
<td>.07</td>
<td>5.98</td>
<td>0.87 - 41.2</td>
</tr>
</tbody>
</table>

5.4.6 Differences in levels of anxiety and depression
Firstly, a paired samples t-test was conducted on emotional well-being (i.e. anxiety and depression) to identify whether there were any significant differences in levels of anxiety and depression reported while at the hospital (Time 1) and between four to six months later (Time 2). Results indicate that there were no significant differences in levels of anxiety ($t = -.37, df = 23, n.s.$) and depression ($t = .61, df = 23, n.s.$) reported at Time 1 and Time 2. This result shows that patients did not experience any significant changes in the levels of negative affects up to six months after discharge from the hospital. It must be noted that the levels of anxiety and depression reported both at the hospital and at home were moderately low, compared to the levels of negative affects reported in findings of studies conducted in the West.

5.4.7 Bivariate associations: baseline and outcome variables

5.4.7.1 Anxiety and depression
Next, bivariate correlations were used to identify baseline psychological characteristics that were associated with anxiety and depression at Time 1 and to determine whether these variables would be associated with anxiety and depression at Time 2. Bivariate analyses indicate that the following baseline psychological variables were significantly correlated
with anxiety at Time 1: self-efficacy ($r = -0.52$, $p < 0.001$), self-esteem ($r = -0.44$, $p < 0.001$),
doctor locus of control ($r = -0.27$, $p < 0.05$), pessimism ($r = 0.60$, $p < 0.001$) and depression ($r = 0.75$, $p < 0.001$). The patterns of association suggest that lower self-efficacy and self-esteem were related to higher levels of anxiety while in the hospital. Stronger pessimistic views and higher levels of depression were associated with higher anxiety. Not surprisingly, stronger attribution of control to doctors over recovery was associated with lower levels of anxiety experienced in the hospital.

Similarly, bivariate correlations were assessed for baseline psychological characteristics and depression at Time 1. Self-efficacy ($r = -0.58$, $p < 0.001$), self-esteem ($r = -0.47$, $p < 0.001$), exercise efficacy ($r = -0.39$, $p < 0.01$), doctor locus of control ($r = -0.49$, $p < 0.001$), pessimism ($r = -0.59$, $p < 0.001$) and anxiety ($r = 0.75$, $p < 0.001$) were found to significantly correlate with depressed feelings at the hospital.

Next, analyses were conducted to predict anxiety and depression at Time 2 from demographics and psychological characteristics at Time 1. Partial correlation analyses were conducted, controlling for Time 1 levels of anxiety and depression. None of the psychological characteristics significantly correlated with Time 2 anxiety, when Time 1 anxiety was controlled. For example, pessimism, which has been shown to consistently relate to anxiety was no longer a significant correlate of anxiety in this prospective analysis ($r = -0.12$, n.s.).

A significant relationship was obtained, however, for work status ($r = -0.40$, $p < 0.05$); unemployed/retired patients were more likely to express higher anxiety levels. The use of alternative treatment following discharge from hospital was also related to lower levels of anxiety for patients at follow-up ($r = -0.40$, $p < 0.05$). These results suggest that the effects that survive the partialling out of Time 1 anxiety were direct effects of baseline measures on Time 2 anxiety.

The following variables were shown to significantly correlate with depression at Time 2, controlling for depression at Time 1: self-efficacy ($r = -0.49$, $p < 0.05$), exercise efficacy ($r = -
and active coping ($r = -0.59$, $p < .01$). None of the demographic variables were associated with depression. Neither the use of alternative treatment nor attendance at CRP were significant correlates of depression at Time 2. The patterns of relationship suggest that the stronger the perceptions of general and specific (i.e. to perform exercise) self-abilities during hospitalisation, the lower the depression reported while convalescing at home. The use of an active coping strategy was also related to lower levels of depression. Pessimism, which was highly related to depression at Time 1, was not significantly correlated with depression at Time 2 ($r = .26$, n.s.).

5.4.7.2 Quality of life

Only active coping was found to significantly relate to reported quality of life among patients four to six months following hospital discharge ($r = .45$, $p < .05$). This shows that the use of active coping at Time 1 was directly related to better reported quality of life at Time 2. No other psychological and/or demographic variables at Time 1 significantly correlated with patients’ reported quality of life at Time 2.

5.4.7.3 Impact of illness

Of the psychological variables assessed at Time 1, only seeking emotional support was significantly related to impact of illness; specifically impact of illness on energy level ($r = .55$, $p < .05$). This relationship suggests that the greater the tendency to seek emotional support, the more likely patients’ were to report tiredness and sleepiness as a result of their illness. Non-Malays were more likely to report worse impact of illness on their level of energy ($r = .41$, $p < .05$).

None of the psychological variables significantly correlated with the illness impact on activity levels construct. However, the use of alternative treatment ($r = -0.39$, $p < .05$) was found to significantly correlate with impact on activity functioning. This relationship suggests that patients who reported using alternative medicine to treat their CHD reported less impact of their illness on activity levels. In other words, using complementary medicine to treat CHD was related to patients’ perceptions that they their illness had not debilitated their physical functioning.
5.4.8 Predictions of outcome variables

Next, stepwise multiple regression analyses were performed to predict outcome variables from their respective significant correlates. Given the small sample size at follow-up (n = 26), significant bivariate relationships between independent variables and outcome variables were not easily obtained as seen above. Hence, in addition to significant correlation coefficients (p < .05), bivariate relationships that approached significance (p <= .10) were also selected as predictor variables in the following multiple regression analyses.

5.4.8.1 Predicting emotional well-being

Controlling for anxiety and depression at Time 1, a stepwise multiple regression was performed to predict anxiety at Time 2 from its significant correlates. The predictor variables entered were working status and actual use of alternative treatment. Actual use of alternative treatment significantly predicted anxiety; accounting for 15% of the variance. Patients who sought alternative medicine to treat their illness were less likely to be anxious ($\beta = -.40$, p < .001).

Similarly, a stepwise multiple regression was performed on depression from the following predictor variables: self-efficacy, self-esteem, exercise efficacy, and active coping. Active coping significantly predicted depression ($\beta = -.45$, p < .001), accounting for 21% of the variance. The results suggest that taking direct actions to manage problems related to CHD would be less likely to lead to depression.

5.4.8.2 Predicting quality of life

A stepwise multiple regression was conducted to predict quality of life from the following significant correlates: active coping and seeking support. Both active coping and seeking support significantly predicted quality of life ($\beta = .47$, p < .001 and $\beta = -.26$, p < .05). Both predictors accounted for 29% of the variance. These results suggest that patients who used active coping strategies were more likely to report better quality of life. On the other hand,
patients who sought emotional support in coping with their illness were more likely to report worse quality of life.

5.4.8.3 Predicting impacts of illness

Three separate stepwise multiple regression analyses were performed to predict impacts of illness on activity level and energy level. No regression was performed on illness impact on social activities due to the lack of significant correlates.

Active coping, seeking support and actual use of alternative treatment were entered as predictor variables to predict impact of illness on activity level. Active coping, seeking support as well as actual use of alternative treatment significantly predicted impact of illness on activity level, accounting for 34% of the variance. The results indicate that use of active coping strategies ($\beta = -.34, p < .005$) as well as actual use of alternative medicine to treat CHD ($\beta = -.28, p < .01$) would likely lead to less adverse impact on patients' everyday activity levels. However, seeking support was more likely to lead to more adverse impact on patients' reported activity level ($\beta = .28, p < .01$).

Ethnic group and seeking support were significant predictors of impact of illness on patients' energy level, accounting for 19% of the variance. Non-Malays and patients who sought support to cope with their illness were more likely to report stronger impact of CHD on their energy levels ($\beta = .24, p < .05$ and $\beta = .36, p < .005$, respectively). Table 5.14 provides the findings on the predictions of outcome variables.

Table 5.14 Predictions of outcome variables from baseline characteristics at Time 1

<table>
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<tr>
<th></th>
<th>$\beta$</th>
<th>t</th>
<th>p</th>
<th>R2</th>
<th>Adj. R2</th>
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<td>.15</td>
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<tr>
<td>use of alternative</td>
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<td>-3.54</td>
<td>&lt; .001</td>
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<tr>
<td>treatment</td>
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<tr>
<td>work status</td>
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<td>1.95</td>
<td>n.s.</td>
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Depression

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<td>exercise efficacy</td>
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Quality of Life

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<td></td>
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<td>.27</td>
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<tr>
<td>active coping</td>
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<tr>
<td>seeking support</td>
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<td>-2.45</td>
<td>&lt; .05</td>
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Impact on Activity Level

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<td></td>
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<tr>
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Impact on Energy Level

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<td>&lt; .05</td>
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Mediating analyses were not conducted because none of the relationships met the criteria for mediation. For example, active coping was hypothesised to mediate the relationship between self-referent beliefs and depression. However, neither self-efficacy nor exercise efficacy significantly predicted active coping. Further analysis was, thus, terminated.

5.5 Discussion

The present study which employed a longitudinal design, looked at the relationships between sociodemographic variables and psychological characteristics of patients at baseline and outcomes related to CHD six months post-CHD. It attempted to determine psychological factors that influence patients' emotional well-being, quality of life and illness impacts four to six months after patients' period of hospitalisation. It also looked at
the patterns of relationships between psychological factors and attendance at CRP and the use of alternative treatment following discharge from the hospital. In doing so, the study looked at the roles of behavioural intentions in predicting attendance at CRP and the use of alternative treatment post-CHD period.

5.5.1 Determinants of intentions to and actual attendance at CRP

Initial analyses revealed that employed, skilled patients were more likely to express intentions to attend CRP. Self-referent beliefs were also strongly associated with expressed intentions. Patients with high self-efficacy, both general and specific were more likely to report intentions to attend CRP. Depression reported at the hospital, on the other hand, was associated with the lack of intention to attend CRP. These relationships support those hypothesised by the model (see p. 126). Further analyses revealed that self-efficacy and exercise efficacy significantly predicted intentions to attend; patients with high self-efficacy were nearly six times more likely to express intentions to attend CRP. Similar odds were obtained for patients with high exercise efficacy. This predictive relationship provides some support for the proposition that self-efficacy shapes behavioral intentions (Bandura, 1986; 1994).

The findings of this study support the general pattern of attendance at CRP found in the West. Only 24% of the patients who were assessed in the hospital attended the CRP following their discharge from the hospital; this proportion is comparable to the proportion of CRP uptake found in Western studies. For example, Petrie and Weinman (1997) found in their study that only a third of eligible patients under 65 years old attended cardiac rehabilitation, whilst another study found CRP uptake of as low as 21% in eligible patients (Ades et al., 1996).

A different pattern of relationship emerged between sociodemographic characteristics and actual attendance. The results revealed that work status and socioeconomic status were significantly associated with attendance at CRP among Malaysians in this sample suggesting that employed, unskilled patients were more likely to attend rehabilitation programmes. The difference in percentage of attendance by work status could be attributed
to age; those who were not working were more likely be older than 60 years of age, hence, would have retired. It should be noted, however, that age was not significantly related to attendance at CRP for patients in this study. The difference in attendance by work status could also be due to accessibility; unemployed patients might not have the financial means to travel to and consequently, attend the rehabilitation programme provided by the hospital, although the rehabilitation services provided were free.

Additionally, the results showed that unskilled workers were more likely to attend the programme provided by the hospital. This result may be linked to education status; unskilled patients were more likely to lack prior information regarding the implications of having CHD. Patients might perceive CRP to be a means of obtaining the necessary information for patients to adapt to their illness. In general, these findings provide some support for the sociodemographic patterns of cardiac rehabilitation attendance found in the West. For example, Cooper and colleagues (1999) found that unemployed patients were less likely to attend recommended rehabilitation programmes.

Bivariate analyses further revealed that intention to attend CRP was significantly associated with actual attendance. In other words, patients who expressed an intention to attend CRP were more likely to attend the programme. Other variables found to be significantly associated with attendance at CRP were self-efficacy, turning to God as a coping mechanism and seeking emotional support. The results suggest that patients with high self-efficacy were more likely to attend CRP. This finding supports studies in the West looking at the relationship between self-efficacy and healthy, adaptive behaviors post CHD. Perkins and Jenkins (1998), for example, found that patients who were recovering from PTCA with higher self-efficacy tended to have higher behaviour performance scores (e.g. physical activities and dietary intake). On the other hand, patients who turned to God and those who sought support as ways to cope with their illness were less likely to attend CRP. The associations between self-efficacy, intentions and attendance provide some support for the contention that self-efficacy and intentions are proximal determinants of behavior (Bandura, 1994). As reported earlier, self-efficacy was found to significantly predict
intention to attend; patients with low levels of self-efficacy were less likely to express intention to attend CRP.

The finding that turning to God and seeking support as coping mechanisms to be negatively correlated with attendance at CRP provide support for the differences in illness behaviors in collectivistic pluralistic societies. Collectivistic societies emphasise interdependence with others in the extended family rather than individuals outside the family. Religion also plays an important role in influencing illness-related behaviors in collectivistic societies. This interdependence on family and God plays a significant role in influencing the behaviors carried out, or not carried out. At times, stronger priority is given to in-group processes rather than to personal goals. Patients may perceive the spiritual and emotional support received from family and God is sufficient in assisting their recovery, hence perceiving attendance at CRP unnecessary.

The results of this study further indicate that there was a significant difference in the percentage of patients who expressed willingness to attend and actual attendance (40% vs. 24%, respectively). The results further revealed that 25% of those who intended to attend kept to their intentions, compared to 51% of those who kept to their intentions of not attending. The difference in percentage of intention and actual behaviour is comparable to that found by Cooper and colleagues (1999), showing that the rehabilitation attendance rate of 40% falls short of the 72% of patients who expressed an intention to attend. They further reported that the intention to attend rate in those actually attending cardiac rehabilitation was over 90% versus 58% for those not attending (Cooper et al., 1999). The present study sought to explore the factors that distinguish between patients who kept to their initial intention to attend CRP (inclined attenders) and those who failed to keep to their intention (inclined abstainers) and between who kept their initial intention not to attend CRP (inclined abstainers) and those who attended CRP, despite not expressing the initial intention to do so (disinclined abstainers).

Results revealed that these groups differed in their self-referent beliefs. Disinclined attenders had the lowest self-efficacy, exercise efficacy and diet efficacy. This result shows
two main things: firstly, patients with low self-efficacy were less likely to express intentions to attend CRP. However, they were the ones who subsequently attended CRP. In short, those who had the lowest self-efficacy beliefs were the ones who subsequently attended CRP, regardless of their initial intentions. This latter finding did not support models developed in the West (e.g. self-efficacy model and the TPB).

The analyses also revealed that these groups differed in a dimension of coping. Inclined abstainers and disinclined abstainers were more likely than both disinclined and inclined attenders to cope with their illness by turning to God or religion. The result shows that patients who turned to God most often in dealing with their illness were the ones who subsequently did not attend rehabilitation programmes, regardless of their initial intentions. This finding suggests the important role religion and/or God plays in shaping patients’ intentions and subsequently, behaviors related to the intention; patients who did not attend CRP were patients who had ‘other’ means to help them recover from their illness. The finding lends some support for the mechanisms by which collectivistic societies, such as Malaysia, operate in influencing individuals’ illness-related behaviors.

The significance of turning to God as a possible determinant of behavior was further supported by results of regression analyses. Analyses predicting actual attendance at CRP from its significant correlates revealed that only turning to God as a coping style significantly predicted actual attendance; intentions and self-efficacy were no longer significant predictors of CRP attendance. This finding further lends support to the significance of religion and/or spirituality in determining illness-related behaviors in collectivistic societies such as Malaysia. CRP, a concept originating from individualistic societies in the West which emphasises independence and self-assertion, may not be compatible when applied in collectivistic societies. Within a collectivistic context, illness and illness-related behaviors are viewed as somewhat determined by the dynamics of interpersonal relationships. At times, illness causation and recovery is attributed to fate. Hence, it is not surprising that individuals in collectivistic societies may find a concept which focuses on the individual as an important determinant of illness behaviors and its outcomes, such as the CRP, to be alien. It should be noted, however, that the logistic
regression analyses was based upon a small sample size; thus the reliability of these findings are in doubt. The findings are to be used mainly as references for future research. In short, these results add further weight to the evidence that intention alone is useful but not sufficient to predict future health behaviour.

Different factors could account for the findings on attendance at CRP in this study. For example, this study did not include other measures that may determine whether intentions can get translated into actual behavior, including factors such as time, money, ease of attendance, peer and family support to attend (Davidson, 1995; p. 163). For example, patients who have access to transportation are more likely to attend CRP. More relevant is the finding by Cooper and colleagues (1999); they found that personal beliefs about illness significantly predicted attendance at cardiac rehabilitation. They found that patients who perceived their illness to be beyond their personal control were less likely to attend such programmes.

Social cognition models of health behaviour such as TPB have recently proposed numerous other factors that may intervene between intentions and behavior. For example, they have proposed the need to differentiate between 'goal intention' and 'implementation intention' (Gollwitzer, 1993; Gollwitzer and Brandstatter, 1997) to predict actual behaviour. According to Gollwitzer and colleagues (1997; 1998), intentions are more likely to be translated into behavior if they are transformed into “implementation intentions”, by specifying the circumstances (i.e. when, where and how) in which a particular action is to occur. Implementation intention is the volitional phase of behavior, which may result in the likelihood of the intended action when the behavior is thought to be difficult to accomplish or when contextual distractions are likely to be presented (Gollwitzer and Oettingen, 1998). However, such intervening variables were not measured in this study.

In short, myriad factors are shown to be associated with attendance at CRP in the West. Most of these factors are focus on the self, reflecting the individualistic context in which these studies were conducted. Although these self-related factors play an important role in
influencing behaviors, they may not necessarily be the sole determinants of behavioral outcomes in more collectivistic societies such as Malaysia.

5.5.2 Implications for CRP

The patterns of differences between the four groups have important implications for the development of in-patient as well as out-patient rehabilitation programmes in Malaysia. Psychological assessment should be conducted to identify patients who are suitable for rehabilitation, and any psychological intervention implemented should be based on this assessment. In short, cardiac rehabilitation has to be made available to those who need it, as emphasised by the American Heart Association (1994) in the following statement “that there is a need to identify and focus on patients whose medical and social profiles predict non-compliance, since these patients may benefit most from specific interventions”.

Hence, reliable predictors of attendance behaviour during hospital admission are necessary in order to optimise uptake in those who could benefit the most. This study shows that patients’ self-referent beliefs measured during hospital admission are associated, although modestly, with future cardiac rehabilitation attendance. More important is the implication of the finding that patients with a strong sense of spirituality may deem cardiac rehabilitation unnecessary, therefore declining to attend the recommended programme. Stated differently, patients who did not attend CRP were more likely to be patients who had God to turn to for help in coping with their illness. A possible reason for non-attendance for these patients may be related to the nature of the programme itself. Cardiac rehabilitation programmes offered in Malaysia, to date, are replicas of the ones developed in the West. The types of programmes offered focus mainly on enhancement of physical activities and changes in dietary behaviours. The programmes, as they were then, did not offer specific emotional and/or spiritual input to patients in helping them cope with their illness. Hence, it is important to address patients’ individual beliefs, perceptions and main concerns as well as correcting patients’ misconceptions concerning the goals of rehabilitation throughout their in-hospital stay.
5.5.3 Determinants of intentions to and actual use of alternative treatment

Initial analyses revealed that unskilled workers and non-Malays were more likely to express intentions to seek alternative treatment when assessed at the hospital. Of the psychological variables assessed, only locus of control variables were significantly associated with intentions. Patients who strongly attributed recovery to doctors and less to God were more likely to express intentions to seek complementary medicine to treat their illness. These relationships suggest that intentions to seek alternative or complementary medicine may be a function of patients' belief in all types of healers, both allopathic and alternative. The lack of faith in God's role in determining recovery also seems to influence intentions to seek complementary medicine.

However, further analyses revealed only ethnicity significantly predicted intentions. Non-Malays were more likely than Malays to express intentions to seek complementary medicine. This result may be related to patients' perceptions of the types of alternative treatment represented. Alternative treatment or 'traditional medicine' as they are commonly known in Malaysia often refer to Chinese medicine. It is thus not surprising that non-Malays, namely Chinese, would more likely consult sinsehs or 'Chinese medicine men' and subsequently, use Chinese herbs and medicine to treat the symptoms of their illness.

A different pattern of relationships emerged when actual use of alternative treatment was analysed. Loci of control variables were no longer significant correlates of its actual use. Instead, depression and pessimism were found to be significantly related to use of alternative treatment. Pessimistic patients were six times more likely to actually consult complementary medicine to treat their illness. One interpretation of this finding is that patients who experienced a sense of helplessness after being diagnosed with a heart disease may have consulted complementary medicine to regain control over the uncertainties of living with the illness. The use of complementary medicine may provide hope to pessimistic patients, giving them a sense of security over their prospects of recovery. The finding of this study is consistent with claims in the cancer literature of a need to assess
pessimism among patients and to create and maintain ‘optimism’ in the care of cancer patients (Jarrett and Payne, 1999; Ritvo, et. al., 1999; Truant and Bottorff, 1999).

5.5.4 Relationships between and predictions of baseline psychological constructs and anxiety and depression

An interesting finding of this study is the lack of differences in the levels of anxiety and depression reported by patients at the hospital and at home, up to six months after discharge from the hospital. Unlike many studies conducted on affects or moods related to having a CHD, the study reveals that Malaysian patients experienced low to moderate levels of negative affects while at the hospital, comparatively lower than the levels reported by Western cardiac patients. The low levels of negative affects expressed by patients while at the hospital could be attributed to the way negative affects were assessed; face-to-face interviews may have hindered the expression of negative feelings and thoughts patients might have concerning their illness. Culturally, expression of emotions, particularly negative emotions is not a norm in the East. Thus, a social desirability effect might have influenced the low levels of anxiety and depression reported by the patients interviewed.

However, when patients responded to the questionnaire at Time 2, similar levels of negative affects were found. In other words, there were no significant differences in the levels of anxiety and depression reported by patients four to six months after discharge from the hospital.

Several factors could account for the lack of differences found in the levels of negative emotions reported by patients. Firstly, the low levels of negative affects at Time 2 could be attributed to the passage of time. Six months had passed since patients experienced their heart attack and/or surgery, a period within which they might have emotionally adapted to their illness. Although some studies have shown that anxiety and/or depression are prevalent in up to one third of patients between one to ten years after their heart attack (Frasure-Smith, 1995a; Rahe, 1989), the same pattern appears not to hold true for Malaysian patients in this sample.
Secondly, the measurement used to assess these affects, particularly depression was shown to not be highly reliable (Cronbach alpha coefficient of .34) at Time 2. Although the constructs were valid, as revealed in the bivariate analyses, the lack of internal consistency is of concern. These measures became less reliable when completed as self-report questionnaires. One possible reason that could account for the lack of reliability is response bias, whereby patients systematically fail to answer the questions accurately (Hammond, 1995; p. 198). Patients may have presented themselves as more ‘emotionally healthy’ than they really were. The low reliability could also be a function of the small sample size or it may suggest that the depression construct may not be a highly reliable construct when used in this cardiac patient sample six months following discharge from the hospital. It could be that only those who were not too anxious or depressed were willing to complete the measures at Time 2.

Bivariate analyses revealed interesting patterns of relationships between baseline characteristics and negative affects at Time 1 and similarly, at Time 2. Self-referent beliefs variables, namely self-efficacy and self-esteem were significantly associated with anxiety at Time 1; the stronger patients’ perceptions of their ability to perform difficult tasks and the stronger the self-worth beliefs, the less anxiety patients reported while at the hospital. Additionally, the stronger attribution of control over recovery placed on doctors, the less anxiety reported by patients. Another finding shows that perceptions of pessimism were strongly associated with higher levels of anxiety immediately following the illness. These patterns of relationships are not surprising. Hospitalised patients would naturally depend on doctors and nurses for care; this dependency on trusted health care professionals at a critical period in patients’ life would be a positive influence on their immediate emotional reactions to the illness.

It is interesting to observe though that although doctor locus of control was a significant correlate of emotional well being, it was to God to which control over recovery was most strongly attributed. As discussed in previous chapters, spirituality is an important aspect of life for Malaysians, regardless of their religious orientation. Thus, attributing control over recovery to God is not surprisingly prevalent among patients in this sample.
However, six months following patients' discharge from the hospital, the above relationships no longer held true when anxiety at Time 1 was controlled for. Initial results show that self-referent variables were strongly related with Time 1 anxiety. However, when anxiety for Time 1 was controlled for, self-referent beliefs no longer predicted Time 2 anxiety. Similar results were obtained for depression. The lack of predictive relationship between predictor variables and negative affect at Time 2 suggests that the variance accounted for by self-referent beliefs is associated with that part of Time 2 negative affect that was predicted by Time 1 negative affect.

The use of alternative treatment following discharge from the hospital turned out to be the single determinant of anxiety. Patients who had consulted complementary medicine to treat their illness reported less anxiety at follow-up. The use of complementary treatment may help patients be more optimistic of their recovery, hence feel less anxious about the outcomes of their illness. These patients may also have had positive experiences using complementary medicine, giving them a sense of empowerment in determining their recovery. The use of complementary treatment was also significantly associated with impact of illness on activity level. Patients who reported using complementary medicine were less likely to experience the debilitating effects of their illness on their self-reported physical functioning. One possible reason that could account for this significant relationship is the actual effectiveness of the complementary medicine used. Although there is a lack of scientific evidence on the effectiveness of complementary medicine in treating physical illnesses, there are suggestions that complementary medicine may be useful in temporarily alleviating adverse symptoms related to a physical condition (Sharma, 1992; Smith and Boon, 1999). Placebo or real, the use of alternative medicine was found to be a significant predictor of anxiety and physical functioning among Malaysians in this sample.

The results further indicated that active coping was the only significant predictor of depression; the more often patients used active coping strategies, the less depression reported. Active coping was also a significant predictor of quality of life and impact of illness on activity level, suggesting that planning and actively managing ways to deal with
CHD would more likely lead to improved quality of life. Patients who utilised active coping strategies were also less likely to experience debilitating impact of CHD on their normal everyday activities.

Another form of coping found to be significantly associated with outcomes is seeking support. Patients who often turned to family and friends for support were less likely to report satisfaction with their quality of life. They were also more likely to experience the debilitating impacts of their illness on their activity and energy levels. These findings were not expected. A possible reason for these relationships may be due to the way seeking support was conceptualised. Seeking support was a coping strategy; it was not a measure of social support. Thus, a likely interpretation of these findings is that patients who were not satisfied with the quality of their life and experienced difficulties in carrying out physical activities were more likely to seek support from friends and relatives. A different pattern of relationship may have obtained if actual support received was assessed.

5.6 Limitations and Suggestions for Future Research

As with many other prospective, longitudinal studies, a main weakness of the present study is its lack of statistical power. Because of the small number of patients, potentially important effects of psychological characteristics (e.g. self-efficacy, locus of control, coping strategies) on attendance at CRP and psychological outcomes were probably missed. Secondly, the baseline psychological variables used in this study failed to include variables that may be more reliable predictors of actual performance of an intended behaviour. For instance, it did not include perceived behavioural control, an important component of TPB, which has been consistently shown to be related to intentions and subsequently, affect behavioural outcomes. Intention was also vaguely defined. Thirdly, the study did not address the issue of changes in the levels of the various cognitive and emotional constructs. Comparisons in levels of negative affects may not be a reliable indication of the true state of emotions for convalescing patients. The study should also have included psychological characteristics used at baseline in the follow-up phase. The
inclusion of the variables used at Time 1 at Time 2 would be valuable in gauging changes in self-referent beliefs and pessimistic views (i.e. whether self-efficacy was enhanced or pessimistic views ameliorated) during the six months of recovery period.

It is noted that the sample size at follow-up is small; hence, the generalisability of these inferences are in doubt possible from the analyses are of limited in value and should be treated with caution. The rationale for conducting these analyses, then lies essentially with the pattern of results. The results obtained would be useful references for future research conducted in this area.

Whilst acknowledging the limitations of the present study, it has several strengths that could be taken into account for future research. The study attempted to test the possible direct relationships between self-referent beliefs, locus of control and coping strategies and attendance at rehabilitation, by-passing intentions. Although most data obtained were self-report, actual attendance at CRP was an objective; verification of attendance was obtained from CRP nurses. Hence, the reliability and validity of the outcome measure, CRP attendance specifically could be established. Lastly, this study is the first of its kind in Malaysia, hence may prove useful for other researchers interested in conducting research in the same area. The findings may also be useful to health care professionals involved in developing cardiac rehabilitation programmes; the main issue to be considered is the need to develop programmes, both in-hospital and out-patient rehabilitation programmes that cater to the specific needs of Malaysian patients. Failure to do so may lead to their lack of success in recruiting patients to attend their programmes and subsequently, to their ineffectiveness in improving the quality of life of their patients.
CHAPTER 6

STUDY 4

PSYCHOLOGICAL ASPECTS OF POST-CORONARY PATIENTS

Aims and Overview

An original aim of this research was to study recovery from CHD longitudinally. To this end, a prospective study was conducted (see Chapter 5), but the attrition was such that the findings from the small sample of patients who completed the study could only be treated as suggestive rather than definitive. Given this major limitation of the longitudinal study, a new sample of patients (n = 51) was assessed at post-hospitalisation only, at approximately the same in recovery as the Time 2 assessment of the 26 patients who completed the longitudinal study. The aims of this study were to examine the concurrent relationships among the variables in the model of CHD recovery post-hospitalisation and compare this with the cross-sectional study of in-patients (Study 2, Chapter 4), which would give an indication of how patients differ immediately after their illness versus six to nine months later. The major limitation of this design is the patients comprising the two samples at the two times of measurement were different, except for the 26 patients who completed the longitudinal study.

The three specific aims of this study were to: (1) examine the cross-sectional relationships proposed in the model of recovery from CHD at post-hospitalisation using a combined sample (N = 77) assessed between three months (n = 26) up to nine months (n = 51) after hospitalisation for their cardiac event; (2) compare the outcomes of patients who attended CRP versus those who did not and compare the outcomes of those who used complementary medicine and those who did not; and (3) to compare the scores of the in-hospital cohort (Chapter 4) and the 51 patients recruited at post-hospitalisation in this study across all variables.
Relating to the aim (1), it was hypothesised that the cross-sectional relationships in the model at post-hospitalisation would be broadly comparable to those obtained in hospital. However, it was predicted that the role of active coping would be more important in the post-hospital sample because of the greater opportunity at this stage in CHD recovery to use and benefit from active coping strategies. Relating to aim (2), it was hypothesised that those attending CRP and those obtaining alternative treatment would have better psychological outcomes. Relating to aim (3), it was hypothesised that the post-hospital cohort (n = 51) would show evidence of better psychological adjustment across a range of measures than the in-hospital cohort (N = 97).

6.0 Model and Research Questions

A modified version of the model examined in Chapter 4 was evaluated on post-hospital cohort. The main difference between the model developed for this study and the previous one was the removal of self-referent belief and pessimism constructs. These variables were conceptualised as predictors of outcomes over time. Thus, they were not deemed relevant in this study because this study assessed concurrent relationships. Another different feature of the modified model is the addition of past smoking behavior as a predictor variable. Assessment of change in smoking history was not possible until now. The reason for including past smoking variable in this study was because it is an important risk factor for CHD relapse which may subsequently influence illness outcomes.

The model (see Figure 6.1) postulated the concurrent relationships between sociodemographic variables, behavioral variables (i.e. health-related lifestyle variables, attendance at CRP, use of alternative treatment, coping styles) and psychological outcome variables and return to work. Broadly, the model proposes that sociodemographic characteristics are related to behavioral variables such as coping styles, health-related lifestyle variables, sleeping patterns, attendance at CRP and the use of alternative treatment following discharge from hospital. These behavioral variables are associated
with psychological outcome variables assessed up to nine months post illness. The psychological outcomes were negative affect (i.e. anxiety and depression), impact of illness on activity, energy and social functioning, quality of life and return to work.

According to the model, sociodemographic characteristics are related to behavioral variables. For example, older patients are less likely to exercise regularly following their discharge from hospital (Cooper et al., 1999) and are less likely to attend CRP. Women are also less likely to exercise after discharge. Malays are expected to consult complementary medicine to treat their illness after hospital discharge (see Chapter 5).

The model further proposes that several behavioral variables following discharge from the hospital are related to each other. For example, active coping strategies are hypothesised to be associated with exercise and eating a healthy diet. Healthy lifestyle variables are also more likely to be positively related to healthy sleeping patterns. Patients who attend CRP following discharge from hospital are also more likely to be the ones who exercise regularly, eat healthily and quit smoking. No relationship, however, is expected between healthy lifestyles, attendance at CRP and the use of complementary medicine.

The model further proposes that psychological outcome variables are related to each other. Negative affect is positively associated with impact of illness on functioning status, and negatively related to satisfaction with quality of life and return to work.

Lastly, the model proposes that behavioral variables following discharge from hospital are related to psychological outcome variables (e.g. negative affect, functioning status, quality of life, and return to work). For example, attendance at CRP is more likely to be negatively associated with negative affect, impact of illness on functioning status and to be negatively related to quality of life and return to work. Sleeping patterns are more likely to be positively associated with quality of life. Patients who lead healthy lifestyles are more likely to return to work. According to the model, behavioral variables following discharge from the hospital may mediate the relationships between sociodemographic characteristics and psychological outcome variables.
The following research questions were formulated for this study:

1) Will sociodemographics (and smoking history) be significantly related to behavioral variables such as coping styles, health-related lifestyles, attendance at CRP, use of alternative treatment and sleeping patterns?

2) Will sociodemographic variables (and smoking history) predict psychological outcome variables (i.e. affective status, quality of life, impact of illness on functioning status and return to work)?
3) Will behavioral variables predict psychological outcome variables?
4) Will behavioral variables mediate the relationship between sociodemographic variables and psychological outcome variables?
6) Is attendance at CRP associated with better outcomes at up to nine months post-CHD?
7) Is the use of alternative treatment associated with better outcomes at up to nine months post-CHD?
8) Do in-hospital cohort differ from post-hospital cohort on any constructs?

6.1 Methods

6.1.1 Participants
Patients’ names were obtained from the CCU/CRW list of the third hospital (see Chapter 5). Inclusion criteria were a diagnosis of MI (acute, interior or anterior) or angina pectoris, being hospitalised up to six months prior to the conduct of the study. Approximately 120 questionnaires were mailed to patients in stamped self-addressed envelopes. Responses up to three months after the initial posting of the questionnaires were accepted. Of the 120 questionnaires posted, 51 people responded (42% return rate). The data of the remaining 26 participants were obtained from the questionnaires completed by patients assessed at follow-up in the longitudinal study (see Chapter 5).

6.1.2 Measures
The questionnaire, which was similar to the follow-up questionnaire (Study 3, Time 2), consisted of five measures, three of which were previously used at Time 1 (Study 2). The measures were the Hospital Anxiety and Depression scale (Zigmond and Snaith, 1983), the Helplessness scale (Beck et. al., 1974) and the COPE scale (Carver et. al., 1989). Other scales were the Sickness Impact Profile (Bergner, 1981) and the Quality of Life scale (Chibnall, 1990); see Chapter 4 and Chapter 5 for descriptions of these measures. The instrument also contained sections on sociodemographic information and items on changes in lifestyles and cardiac rehabilitation attendance. All items were backtranslated by two bilingual Malaysian translators.
6.2 Analyses

Demographic characteristics of patients were first assessed. Patients who had been previously assessed at the hospital (n = 26) were compared to patients who had not (n = 51). Bivariate associations between demographic characteristics and behavioral variables, between demographic characteristics and psychological outcomes and between behavioral variables and psychological outcomes were then assessed. Stepwise multiple regression analyses were then performed to predict psychological outcomes from their respective significant correlates. Mediation analyses were conducted to determine whether behavioral variables mediate the relationship between sociodemographic characteristics and psychological outcomes. A forward logistic regression was performed to predict return to work from its significant correlates. Next, two separate independent samples t-tests were performed to determine whether there were any significant differences between CRP attenders and non-attenders and between complementary medicine users and non-users. Independent samples t-tests were also performed to determine whether there were any significant differences in all behavioral and psychological constructs between the in-hospital cohort (N = 97) and the post-hospital cohort (n = 51). The 26 patients who participated in the longitudinal study (Study 3) were not included in this analysis. The Bonferroni correction procedure was applied to the independent samples t-test where applicable to control for Type I error.

6.3 Results

6.3.1 Demographic characteristics

There were no significant differences in demographic characteristics between patients who had been previously assessed at the hospital (n = 26) and patients who were recruited six months post-hospitalisation (n = 51). Of the 77 participants, 72 (94%) were men. A similar percentage was married. More than two-thirds were Malays. Thirty-seven (48%) were skilled workers while the remaining 40 (52%) were manual labourers. The mean age of participants were 51.8 years (SD = 8.7). Table 6.1 summarises patients' demographic characteristics.
Table 6.1 Demographic characteristics of post-CHD patient cohort (N = 77)

<table>
<thead>
<tr>
<th>Sociodemographic Variables</th>
<th>Mean (SD) of Frequencies (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>51.8 (8.68)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>72 (94%)</td>
</tr>
<tr>
<td>Female</td>
<td>5 (6%)</td>
</tr>
<tr>
<td>Ethnic Group</td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>51 (66%)</td>
</tr>
<tr>
<td>Other</td>
<td>26 (34%)</td>
</tr>
<tr>
<td>Religious Affiliation</td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>60 (78%)</td>
</tr>
<tr>
<td>Other</td>
<td>17 (22%)</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>75 (97%)</td>
</tr>
<tr>
<td>Widowed/Single</td>
<td>2 (3%)</td>
</tr>
<tr>
<td>Work Status</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>58 (75%)</td>
</tr>
<tr>
<td>Not employed/Retired</td>
<td>19 (25%)</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td></td>
</tr>
<tr>
<td>Skilled Workers</td>
<td>37 (48%)</td>
</tr>
<tr>
<td>Unskilled Workers</td>
<td>40 (52%)</td>
</tr>
</tbody>
</table>

6.3.2 Psychometric properties of constructs

Seven constructs were generated as outcome measures from the following five measures: Hospital Anxiety and Depression scale, the Helplessness scale, Quality of Life and the Sickness Impact of scale. Five constructs were generated for the COPE scale. Cronbach alpha coefficient was obtained for each construct and scores were computed by summing up the scores for each item and dividing the sum by the number of items in each construct. The psychometric properties of each scale are summarised in Table 6.2.
The anxiety and depression constructs generated from the HAD scale were internally consistent, albeit moderately for depression ($\alpha = .77$ and $\alpha = .64$, respectively). The Kolmogorov-Smirnov test of normal distribution was used instead of the Shapiro-Wilk as used in previous studies because the sample size here was larger than 50 (SPSS, version 9.0). The distribution of scores for anxiety was skewed in the low direction ($\text{Kolmogorov-Smirnov} = .11$, df = 77, p <.05). In general, the levels of anxiety as well as depression up to nine months following discharge from hospital were quite mild, comparable to the levels of anxiety and depression reported for the in-patients. For example, the mean for anxiety in-hospital patients was 2.55 (SD = 1.06; see Chapter 4) while the mean at Time 2 was 2.45 (SD = 0.89; see Chapter 5). As expected, the two constructs were highly associated ($r = .48$, p <.001), although less so than the relationships found in the earlier studies (see Chapter 4 and Chapter 5).

Three of the five coping constructs generated from the modified 24-item COPE scale were internally consistent. 'Active coping' had an alpha coefficient of .64 whilst 'seeking emotional support' had alpha coefficient of .60 and 'giving up', .72. The Cronbach alpha coefficient yielded for four-item 'denial' was relatively low ($\alpha = .53$). 'Turning to God' as a way of coping had a low Cronbach alpha coefficient ($\alpha = .48$), unlike findings of earlier studies (see Chapter 4 and Chapter 5), in which the alpha coefficients for this construct ranged from .81 to .88. Despite the low reliability coefficients for 'denial' and 'turning to God', these constructs were retained for further analyses; however, the results are treated with caution.

Of the five coping constructs, patients most often turned to God to cope with their illness, followed by actively coping with their condition. Patients quite often sought emotional support from friends and relatives. The mean for denial was the lowest of all coping styles assessed. The distribution of scores for these coping constructs revealed that only the distribution for turning to God was skewed in the higher direction (Kolmogorov-Smirnov = .27, df = 51, p <.01).
The internal reliabilities for illness impacts constructs were respectable, ranging from .67 to .82. The distribution of scores revealed that the distribution of illness impact on social functioning construct was skewed in the higher direction (Kolmogorov-Smirnov = .20, df = 77, p < .01). Bivariate associations showed that these constructs were highly correlated, suggesting their validity when used on this patient cohort. The ‘quality of life’ construct had a respectable internal consistency (α = .82), replicating the reliability coefficient of earlier finding (see Chapter 5). Table 6.2 lists the Cronbach alpha coefficients of each construct and Table 6.3 summarises their respective means and standard deviations.

Table 6.2 Cronbach alpha coefficients for all constructs

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number of Items</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Coping</td>
<td>6</td>
<td>.64</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>4</td>
<td>.60</td>
</tr>
<tr>
<td>Turning to God</td>
<td>3</td>
<td>.48</td>
</tr>
<tr>
<td>Giving Up</td>
<td>3</td>
<td>.72</td>
</tr>
<tr>
<td>Denial</td>
<td>4</td>
<td>.53</td>
</tr>
<tr>
<td>Anxiety</td>
<td>6</td>
<td>.77</td>
</tr>
<tr>
<td>Depression</td>
<td>6</td>
<td>.64</td>
</tr>
<tr>
<td>Impact on Physical Activity</td>
<td>9</td>
<td>.81</td>
</tr>
<tr>
<td>Impact on Social Life</td>
<td>2</td>
<td>.78</td>
</tr>
<tr>
<td>Impact on Energy Level</td>
<td>5</td>
<td>.67</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>7</td>
<td>.82</td>
</tr>
</tbody>
</table>
Table 6.3 Means and standard deviations for predictor variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Means (SD)</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Coping</td>
<td>3.65 (0.80)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>3.26 (0.98)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Turning to God</td>
<td>4.68 (0.55)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Giving Up</td>
<td>2.49 (1.05)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Denial</td>
<td>2.43 (0.89)</td>
<td>(1-5) 5 = always</td>
</tr>
</tbody>
</table>

Table 6.4 Means and standard deviations for outcome variables

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Mean (SD)</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>2.45 (0.92)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Depression</td>
<td>2.11 (0.55)</td>
<td>(1-5) 5 = always</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>3.43 (0.73)</td>
<td>(1-5) 5 = strongly agree</td>
</tr>
<tr>
<td>Impact on Physical Activity</td>
<td>0.91 (0.52)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
<tr>
<td>Impact of Social Life</td>
<td>1.08 (0.76)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
<tr>
<td>Impact on Energy Level</td>
<td>0.72 (0.51)</td>
<td>(0-2) 0 = untrue, 2 = true</td>
</tr>
</tbody>
</table>

6.3.2.1 Behavioral variables

Of the 77 participants assessed, 60 (78%) reported to perform some form of exercise after discharge from hospital. Of the 60 who exercised, 28% did so at least three times per week. Sixty-one (79%) of patients reported eating a healthy diet and 34 (44%) never smoked. Of the 43 (56%) who smoked before the onset of their illness, 30 (39%) had quit...
smoking after discharge from hospital. More than one-third of patients (35%) reported to have trouble sleeping at night, with 26% sleeping less than four hours every night. A majority of patients (69%) attended CRP after discharge. Only a quarter patients (25%) sought any form of complementary medicine to treat their illness. Table 6.5 provides descriptives of behavioral variables.

Table 6.5 Descriptives of behavioral variables

<table>
<thead>
<tr>
<th>Behavioral Variables</th>
<th>Frequencies (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>17 (22.1)</td>
</tr>
<tr>
<td>Yes</td>
<td>60 (77.9)</td>
</tr>
<tr>
<td>Diet</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>16 (20.8)</td>
</tr>
<tr>
<td>Yes</td>
<td>61 (79.2)</td>
</tr>
<tr>
<td>Still Smoking</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13 (16.9)</td>
</tr>
<tr>
<td>No</td>
<td>30 (39.0)</td>
</tr>
<tr>
<td>Never smoked</td>
<td>34 (44.1)</td>
</tr>
<tr>
<td>Sleeping Patterns</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>27 (35.1)</td>
</tr>
<tr>
<td>Yes</td>
<td>50 (64.9)</td>
</tr>
<tr>
<td>Attendance at CRP</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>24 (31.2)</td>
</tr>
<tr>
<td>Yes</td>
<td>53 (68.8)</td>
</tr>
<tr>
<td>Alternative treatment</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>58 (75.3)</td>
</tr>
<tr>
<td>Yes</td>
<td>19 (24.7%)</td>
</tr>
</tbody>
</table>
6.3.3 Bivariate associations

Bivariate analyses were performed to determine the directions and strengths of relationships between variables used in this study. In general, the patterns of associations replicated those found in Study 2 and Study 3.

6.3.3.1 Demographics and smoking history

Ethnicity ($r = .30, p < .01$) and religious affiliation ($r = .28, p < .05$) were significantly correlated with smoking history. Malays and Muslims were more likely to have smoked before their CHD. Results also revealed that age was associated with history of smoking ($r = .23, p < .05$); older people were more likely to have smoked before their illness.

6.3.3.2 Demographics, smoking history and behavioral variables

6.3.3.2.1 Health-related lifestyles variables

Bivariate analyses were performed to assess relationships between sociodemographic variables (i.e. gender, ethnicity, religious affiliation, marital status, work status, socioeconomic status), smoking history and health-related lifestyles variables (i.e. exercise, diet, past and current smoking behaviours).

Results show that gender was not significantly related to any of the lifestyle variables. Ethnicity was significantly associated changes in smoking behaviour ($r = .45, p < .01$). Malays were more likely to have quit smoking after their illness. No significant relationships were obtained for ethnicity and dietary behaviors or exercise.

Marital status was not significantly related to any of the health-related lifestyle variables. Results further show that patients who had retired and/or were unemployed were more likely to have changed their diet ($r = -.29, p < .01$). No other significant relationships were obtained for working status. Socio-economic status was significantly associated with exercise, with skilled workers being more likely to carry out physical activities such as jogging and walking ($r = -.26, p < .05$).

Expectedly, history of smoking was significantly associated with current smoking status ($r = 1.00, p < .001$); patients who had smoked before were more likely to be the ones who
still smoked after discharge from the hospital. Smoking history was not related with other health-related lifestyle variables.

6.3.3.2.2 Sleeping patterns
Bivariate analyses indicate that only ethnicity was significantly associated with sleeping patterns, with non-Malays reported being less likely to sleep well at night ($r = -0.22, p < 0.05$).

6.3.3.2.3 Attendance at CRP
Patients classified as professionals/semi-professionals (i.e. skilled workers) were more likely to have attended CRP than unskilled workers ($r = -0.25, p < 0.05$). No other significant associations were obtained between demographic variables and attendance of CRP.

6.3.3.2.4 Use of alternative treatment
Ethnicity and religious affiliation were found to be significantly related to the use of alternative treatment ($r = -0.28, p < 0.05$ and $r = -0.23, p < 0.05$), suggesting that Malay and Muslim patients were more likely to seek alternative medicine to treat their CHD. No significant relationship between socio-economic status and seeking alternative treatment was obtained.

Smoking history was also associated with use of complementary treatment ($r = -0.39, p < 0.005$); patients who were smokers before the onset of illness were more likely to have sought complementary medicine to treat their illness after discharge from the hospital.

6.3.3.2.5 Coping styles
Ethnicity and religious affiliation were found to be significantly associated with turning to God as a coping style ($r = -0.22, p < 0.05$ and $r = -0.30, p < 0.01$). The pattern of association suggests that Malay and Muslim patients were more likely to seek help from God as a way to cope with their illness. Socioeconomic status was significantly associated with active coping ($r = -0.23, p < 0.05$); professionals or skilled workers were more likely to adopt active coping strategies in dealing with their illness.
Smoking history was associated with seeking support \( (r = .24, p < .05) \). Patients who smoked before the onset of their illness were less likely to seek emotional support from their family and friends.

6.3.3.3 Behavioral variables
No significant association was found between exercise and dietary behavior and between smoking and dietary behavior. Smoking was marginally related to exercise \( (r = .27, p = .05) \); patients who were still smoking at the time of assessment were less likely to exercise regularly after discharge from hospital.

Interestingly, attendance at CRP was not associated with exercise nor dietary behavior. It was significantly associated with smoking \( (r = .31, p < .05) \); patients who attended CRP were more likely to have quit smoking after discharge from hospital. Similarly, the use of alternative treatment was significantly related to smoking \( (r = .39, p < .01) \), and not to diet or exercise. Patients who sought alternative treatment were more likely to be non-smokers.

Active coping was found to be significantly related to exercise \( (r = .32, p < .01) \), with patients who actively solve complications related to CHD being more likely to exercise. Active coping was also found to be significantly associated with current smoking behaviour \( (r = .32, p < .05) \); those who use active coping styles were more likely to have quit smoking after discharge from the hospital.

Attendance at CRP was significantly associated with seeking emotional support as a form of coping mechanism \( (r = .22, p < .05) \). Patients who attended CRP were also more likely to be those who turned to friends and relatives for support in order to cope with their illness.

6.3.3.4 Psychological outcome variables
As expected, anxiety and depression were positively correlated \( (r = .48, p < .001) \). A significant relationship was obtained between anxiety and quality of life \( (r = - .28, p < .05) \).
The association between depression and quality and life was stronger \((r = -.55, p < .001)\). These patterns of relationships suggest that the higher the levels of negative affects, the worse is the quality of life for post cardiac patients.

Anxiety was significantly associated with impact of illness on activity levels \((r = .52, p < .001)\) and energy levels \((r = .40, p < .001)\). Depression was significantly related with all impacts of illness constructs: activity levels \((r = .51, p < .001)\), energy levels \((r = .57, p < .001)\) and social functioning \((r = .49, p < .001)\). These relationships suggest that patients who experienced high levels of negative affect were more likely to experience debilitating effects of illness on their functioning levels.

6.3.3.5 Demographics and psychological outcome variables

Bivariate analyses show that gender was significantly associated with only one outcome variable: anxiety \((r = .28, p < .05)\), suggesting that women were more likely to be anxious following discharge from the hospital. Ethnicity was associated with impact of illness on energy level \((r = .29, p < .05)\), with non-Malays more likely to experience tiredness as an impact of having CHD. Results also suggest that non-Muslims were more likely to be anxious up to up to nine months after their period of hospitalisation \((r = .22, p < .05)\). Significant relationships were also obtained for socio-economic status and impact of illness on social functioning \((r = .29, p < .05)\) and quality of life \((r = -.25, p < .05)\). These patterns of associations suggest that skilled or professional workers were more likely to adopt active coping styles to deal with their illness; they were also more likely to report more positive quality of life. Unskilled workers were more likely to report more negative impact of their illness on their social functioning. No significant association was obtained for marital status and work status.

6.3.3.6 Behavioral variables and psychological outcome variables

6.3.3.6.1 Health-related lifestyles

Bivariate analyses showed a small number of significant associations between health-related lifestyles variables and psychological variables. Both exercise and diet were significantly associated with depression \((r = -.24, p < .05)\) and \(r = -.22, p < .05)\),
respectively) but not with anxiety. No other significant associations were obtained for health-related lifestyle variables and psychological outcomes.

6.3.3.6.2 Sleeping patterns
Sleeping pattern was significantly associated with both anxiety and depression ($r = -0.30, p < 0.01$ and $r = -0.41, p < 0.01$), suggesting that higher levels of anxiety as well as depression were related to worse sleeping patterns at night. Sleeping was also related to impact of illness on energy level ($r = -0.46, p < 0.001$) and quality of life ($r = 0.33, p < 0.01$). The former association implies that sleeping well at night is associated with less impact of illness on energy level but not on activity levels. The results also suggest that sleeping well is associated with more satisfaction with quality of life.

6.3.3.6.3 Attendance of CRP
Interestingly, no significant association was found between attendance at CRP and psychological outcome variables.

6.3.3.6.4 Use of alternative treatment
The use of complementary medicine was not associated with any of the psychological outcome variables.

6.3.3.6.5 Coping styles
Several significant associations were obtained between coping styles and negative affect, impacts of illness on functioning and quality of life. Active coping was significantly correlated with depression ($r = -0.28, p < 0.05$) but not anxiety ($r = -0.05, n.s.$). Giving up was associated with anxiety ($r = 0.49, < 0.001$) and depression ($r = 0.54, p < 0.001$). These patterns of associations suggest that patients who adopted active coping style in dealing with illness were less likely to feel unhappy while those who adopted behavioural disengagement coping style were more likely to be both depressed and anxious. Patients who disengaged themselves from performing behaviours that may help them improve their illness conditions were more likely to report experiencing negative mood up to nine months following discharge from hospital.
Active coping was also a significant correlate of quality of life \(r = .30, p < .01\), suggesting that the use of positive coping is linked with better reported quality of life. Negative significant associations were obtained for active coping and impacts of illness on activity levels and social functioning \(r = -.29, p < .05\) and \(r = -.27, p < .05\), implying that the use of active approach to cope with CHD is associated with less negative impact on patients' behavioural as well as social functioning. Seeking support as a form of coping style was associated with anxiety \(r = .31, p < .01\), but not depression.

Seeking support was significantly related to impact of illness on patients' activity level \(r = .38, p < .005\). Giving up was associated with the following outcome variables: anxiety \(r = .41, p < .005\), impact of illness on activity level \(r = .48, p < .001\) and impact of illness on social functioning \(r = .45, p < .005\). These patterns of relationships suggest that giving up in dealing with complications related to CHD was associated with higher anxiety level, stronger negative impact on patients' physical activities and more debilitating effects on social functioning. Turning to religion as a coping style, and denial, were not significant correlates of any variables. The lack of relationship may be due to the low internal reliability of these coping constructs (see Table 6.2 above).

6.3.3.7 Demographics, behavioral variables and return to work

6.3.3.7.1 Demographics

Only socioeconomic status was significantly associated with return to work \(r = .32, p < .05\). Unskilled labourers were more likely to have returned to work up to nine months following discharge from hospital.

6.3.3.7.2 Behavioral variables

Exercise was significantly correlated with return to work \(r = .37, p < .01\). Patients led a physically active life after discharge from hospital were more likely to have returned to work. No other health-related lifestyle variables were associated with return to work. Neither attendance nor use of complementary medicine was associated with return to work.
Of the five styles of coping, only active coping was significantly associated with return to work ($r = .46, p < .001$); patients who actively dealt with their illness were more likely to return to work between the period of discharge and assessment (see Appendix 8 for correlations among post-hospital psychological constructs).

6.3.4 Predictions of psychological outcome variables
6.3.4.1 Anxiety and depression
A stepwise multiple regression was performed to predict anxiety from its significant correlates: gender, ethnicity, religion, seeking support and giving up as a coping style. Results show that both coping styles (i.e. seeking support and giving up) significantly predicted anxiety (see Table 6.6). None of the demographic variables significantly predicted anxiety. Together, seeking support and giving up accounted for 18% of the variance. The results suggest those who sought social support and gave up in dealing with their illness were likely to be more anxious six to up to nine months after discharge from the hospital.

Two significant correlates of depression were entered as its predictors: socio-economic status and active coping. Only active coping significantly predicted depression, accounting for 8% of the variance. The result suggests that the use of active coping were less likely to lead to feelings of depression post CHD.

6.3.4.2 Quality of life
Only active coping ($\beta = .30, p < .01$), significantly predicted quality of life up to nine months post discharge from hospital, accounting for 10% of its variance. None of the other correlates (i.e. socio-economic status, exercise, change of diet and active coping) predicted quality of life for these former patients. This implies that people who actively dealt with their illness were more likely to report positive quality of life after nine months following discharge from hospital.
6.3.4.3 Illness impacts on functioning

Three separate stepwise multiple regressions were performed to predict impact of illness on activity levels, energy levels and social functioning. Only significant correlates of the respective areas of impact of illness were entered as predictors.

Active coping ($\beta = -.29$, $p = .01$) alone significantly predicted impact of CHD on activity levels, accounting for only 8% of the variance. The use of active coping strategies was predictive of less debilitating effects of CHD on activity functioning. Gender, socioeconomic status and past smoking behaviour did not significantly predict activity levels up to nine months post hospital discharge.

Two variables were found to be significant predictors of impact of illness on energy levels: sleeping patterns and past smoking behaviour ($\beta = -.46$, $p < .001$ and $\beta = .30$, $p < .005$, respectively). Together, these variables accounted for 31% of the variance. Patients who could not sleep well and those who had smoked previous to their illness were more likely to experience reduced energy levels.

Lastly, giving up, socioeconomic status and past smoking behaviour significantly predicted impact of illness on social functioning ($\beta = .31$, $p < .005$, $\beta = .27$, $p = .01$ and $\beta = .26$, $p < .05$), accounting for 27% of the variance. The results suggest that unskilled labourers and those who had smoked prior to their illness were quite likely to experience debilitating impact of their illness on their social activities. Patients who gave up in dealing with their illness were also more likely to experience deterioration in their social functioning.
Table 6.6  Prediction of outcome variables from demographics and behavioral correlates

<table>
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<tr>
<th></th>
<th>$\beta$</th>
<th>t</th>
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<th>R²</th>
<th>Adj. R²</th>
<th>F</th>
<th>p</th>
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<td>n.s.</td>
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</table>
marital status  -0.16  1.69  n.s.
work status   -0.15  1.60  n.s.

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<th>.23</th>
<th>8.78</th>
<th>&lt;.001</th>
</tr>
</thead>
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<td>&lt;.005</td>
<td></td>
</tr>
<tr>
<td>ses</td>
<td>.27</td>
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</tr>
<tr>
<td>past smoking</td>
<td>.26</td>
<td>2.56</td>
<td>&lt;.05</td>
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<tr>
<td>active coping</td>
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<td>-1.45</td>
<td>n.s.</td>
<td></td>
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6.3.5 Mediating relationship
Based on the findings above, a series of stepwise multiple regression were performed on behavioral variables thought to mediate the relationship between sociodemographic variables and psychological outcome variables, separately for anxiety, depression, quality of life and illness impacts on activity, energy and social functioning.

Only one significant mediating relationship was obtained. Active coping was found to mediate the relationship between socioeconomic status and quality of life, accounting for 9% of the variance ($F_{(1, 76)} = 7.70, p < .01$). Socioeconomic status significantly predicted active coping ($\beta = -0.23, p < .05$) and quality of life ($\beta = -0.25, p < .05$). When socioeconomic status and active coping were entered together as predictor variables, only active coping significantly predicted quality of life ($\beta = 0.30, p < .01$); the prediction by socioeconomic status was no longer significant ($\beta = -0.19, n.s.$).

6.3.6 Prediction of return to work
A forward logistic regression was performed to predict return to work from its significant correlates: socioeconomic status, exercise and active coping. Only active coping was found to significantly predict return to work, with a 75% correct classification. Patients who used active coping strategies to deal with their illness were 4.5 times more likely to return to work ($OR = 4.52, CI = 1.78 - 11.46$).
Table 6.7  Prediction of return to work

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>df</th>
<th>p</th>
<th>ExpB</th>
<th>CI (95%)</th>
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</thead>
<tbody>
<tr>
<td>Active coping</td>
<td>1.51</td>
<td>0.47</td>
<td>1</td>
<td>&lt;.005</td>
<td>4.52</td>
<td>1.78 - 11.46</td>
</tr>
</tbody>
</table>

6.3.7 Differences in psychological outcomes between CRP attenders and non-attenders
An independent samples t-test was performed to determine whether there were any significant differences in the psychological outcome characteristics between patients who attended CRP (n = 53) and patients who did not (n = 24). Results indicated that there were no significant differences between the two groups in terms of their emotional well-being, quality of life and functioning levels up to nine months post-discharge.

6.3.8 Differences between participants who used alternative treatment and those who did not
An independent samples t-test was performed to determine whether there were any differences in psychological outcomes between patients who reported using alternative treatment and those who did not. No significant differences were found between the two groups, implying that patients who used complementary medicine were similar in their emotional well-being, quality of life and functioning nine months post illness.

6.3.9 Differences between in-hospital cohort and post-hospital patients
An independent samples t-test was performed to determine whether there were differences in negative affect and coping strategies employed between the in-hospital cohort (N = 97) and the post-hospital cohort (N = 51). The two cohorts of patients were significantly different in two of the coping strategies adopted: giving up and seeking support. The post-hospital cohort more often gave up in coping with their illness (t = -2.96, df = 110, p < .005) and they also sought less support than the in-hospital cohort (t = 2.89, df = 110, p < .005). These differences remained significant after applying the
Bonferroni correction procedure. The in-hospital cohort and the post-hospital cohort were similar in their reported levels of negative affect, active coping, turning to God and denial.

Table 6.8 Differences between in-hospital and post-hospital cohorts in all psychological constructs

<table>
<thead>
<tr>
<th>Variable</th>
<th>In-hospital Mean (SD)</th>
<th>Post-hospital Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>2.55 (1.06)</td>
<td>2.45 (0.94)</td>
</tr>
<tr>
<td>Depression</td>
<td>1.97 (0.73)</td>
<td>2.11 (0.60)</td>
</tr>
<tr>
<td>Active Coping</td>
<td>4.08 (0.77)</td>
<td>4.03 (0.65)</td>
</tr>
<tr>
<td>Giving Up</td>
<td>1.93 (0.93)</td>
<td>2.49 (1.05)</td>
</tr>
<tr>
<td>Turning to God</td>
<td>4.74 (0.52)</td>
<td>4.65 (0.53)</td>
</tr>
<tr>
<td>Denial</td>
<td>2.23 (0.99)</td>
<td>2.43 (0.89)</td>
</tr>
<tr>
<td>Seeking Support</td>
<td>3.70 (0.81)</td>
<td>3.22 (0.98)</td>
</tr>
</tbody>
</table>

6.4 Discussion

The present study looked at the psychological outcomes of patients recovering from CHD in Malaysia. Based on the modified version of the hospitalised patient cohort model (see Chapter 5), this study examined the relationships between sociodemographic variables, coping styles and other health-related variables and the following outcome variables: anxiety and depression, quality of life, illness impacts on activity, energy and social functioning. Additionally, the study identified relationships between these predictor variables and return to work. It also attempted to determine the relationships between attendance at CRP, the use of alternative treatment, behavioral variables and psychological outcome variables. Differences between those who attended CRP and those who did not and those who consulted alternative treatment and those who did not were
determined. Lastly, differences between in-hospital patients (N = 97) and post-hospital patients (n = 51) were compared on all constructs.

6.4.1 Relationships between demographics and behavioral variables
Bivariate associations between sociodemographic characteristics and health-related lifestyles indicate that Malays were more likely to have smoked prior to their illness. The percentage of Malays who smoked is comparable to the ratio of smokers of the three main ethnic groups in Malaysia. According to the report by the Statistics Department (Ministry of Health, 1996), the ratio of Malay smokers to Chinese and Indian is 3:2:2. Malays in this study were also found to be more likely to quit smoking after their illness, compared to the non-Malays.

Patients who worked in the professional or semi-professional sectors were more likely than unskilled labourers to exercise (e.g. walking and jogging) after discharge from the hospital. This is not surprising as the former were more likely to have access to the either sporting facilities and/or time to perform regular exercises.

The only significant correlates of the use of alternative treatment were ethnicity and religion; Malays and Muslims were more likely to have used complementary medicine in treating their illness. Although it was expected that Chinese would also seek alternative treatment, a possible reason for this particular finding is the perceptions of what constituted alternative treatment. Whilst the non-Malays might have viewed Chinese herbs as the only form of alternative medication, Malays might have perceived other treatments as complementary (e.g. massage, reflexology and spiritual healing); hence, a bias in the report of the usage of alternative treatment may have occurred. This finding provides some support for the findings on intention to use alternative treatment obtained in Study 3 (see Chapter 5). In study 3, Malays were more likely to express intentions to seek complementary medicine to treat their illness, although ethnicity failed to predict its actual use. These findings highlight the need for further exploration of the use of complementary medicine in medically pluralistic societies such as Malaysia.
6.4.2 Relationships between predictor variables and psychological outcome variables

The findings revealed that coping strategies were stronger predictors of psychological outcome variables, over and above sociodemographic characteristics and other health-related lifestyle variables. The present study found that the use of active coping was predictive of low negative affect, suggesting that patients who actively dealt with their illness were less likely to experience debilitating feelings up to nine months following discharge from hospital. Active coping was also a significant predictor of better quality of life. Patients who coped with their illness by taking direct actions were more likely to be satisfied with their personal, social and professional relationships and achievements.

Active coping was predictive of impact of illness on activity functioning, implying that patients who used active coping strategies were less likely to experience debilitating impact of CHD on their daily activities such as walking, doing household chores and the like. The role of active coping strategies in predicting affective status and functioning post-illness confirms the preliminary findings in the longitudinal study, where active coping was predictive of better outcomes (see Chapter 5). These findings for the post-hospitalization samples contradict those for the in-hospital sample (Chapter 4) where no associations were found between active coping and positive affect.

The pattern of findings is consistent with the patterns of relationships between coping strategies and psychological outcomes in the West (e.g. van-Elderen et. al., 1999). Their study revealed that different relationships exist between coping strategies and illness outcomes in cross-sectional vs. longitudinal studies (see Chapter 2). Active coping was found to be a significant predictor of anxiety at three and nine months post illness, but not at the time of hospitalisation. These findings suggest the need to look at the role different coping strategies play in affecting psychological outcomes at different times during the convalescing period.

Active coping was also associated with return to work. Returning to work after discharge from hospital might be perceived as a direct way of dealing with the illness itself. The only demographic characteristic associated with return to work was socioeconomic status; unskilled workers were more likely than skilled workers to return to work after discharge from the hospital. The former may have returned to work early for financial and economic
reasons. It should be noted that the study took place at a time when the Malaysian economy was slow due to the regional economic problems that lasted from end 1997 to middle of 1999. Redundancy was prevalent and the employment market was competitive; patients who did not hold a financially stable job were more likely to return to work earlier for fear of potentially losing their source of incomes.

The significant positive relationships between active coping and healthy, adaptive outcomes among Malaysians in this study are similar to the findings obtained in the West, reflecting the individualistic component of Malaysian society.

The findings of the study further show that Malay patients, who were affiliated with Islam, more so than the non-Malays and non-Muslims, were more likely to seek solace from God in managing stresses related to their illness. This is not surprising because Muslims, in general, are perceived to be more ‘religious’ and/or ‘spiritual’ in their perceptions as well as behaviours in their daily lives, compared to other religious groups in Malaysia. For example, as part of their religion, a Muslim performs prayers five times daily. Utoyo-Lubis (1984; c.f. Marsella and Dash-Scheuer, 1988, p. 174) reported in their study that Muslims in Indonesia were more likely to pray to God to cope with different stressful conditions, particularly in circumstances related to illnesses. The relationship between being Muslims and turning to God replicated the findings of earlier studies (see Chapter 4 and Chapter 5). The finding provides further support on the importance of including ‘religious’ variables in coping with illness in different cultural settings.

Unlike previous studies, turning to God as a coping style did not play any role in predicting psychological outcomes for patients nine months after discharge from hospital. The lack of significant associations between turning to God and psychological outcomes may be due to patients coming to terms with and adapted to their illness. They may deem it no longer necessary to turn to God as a way to cope with their illness, though they may continue praying as a daily ritual. The failure of ‘turning to God’ in predicting outcomes could also be attributed to its lack of internal consistency. The lack of association between this coping style and outcome variables may be due to the lack of reliability of this construct in this study (see Table 6.2).
Several reasons could have accounted for the lack of reliability of this construct. There is
evidence in the literature that assessment of 'religiosity' and 'spirituality' should take into
account the category of religion being assessed: what is spiritual or religious in one
religion group may not be the same for another (King, Speck and Thomas, 1994; 1999).
For example, in Islam, where praying five times daily is a ritual and indicates
'spirituality', the same cannot be said for Buddhists or Hindus whereby the latter perform
religious rituals (e.g. going to the temple) less often. Hence, items such as 'I pray more
often than usual' would not be relevant to a Buddhist. Recent studies have shown the need
to include spirituality in studies of illness behaviours, particularly in terms of coping and
emotional adjustment, for this variable may account for findings unaccounted for in many
earlier studies (e.g. King et. al., 1999). In doing so, careful attention is needed in
formulating measures that are reliable, valid and most importantly, culturally specific as
well as sensitive.

The study further revealed that seeking support from friends and relatives was positively
related to anxiety, suggesting that stronger emotional support sought was associated with
higher levels of anxiety. Nevertheless, this relationship should be interpreted with caution
for the association is cross-sectional. The relationship could suggest, inversely, that the
higher levels of anxiety experienced, the more likely emotional support is sought from
friends and relatives to cope with the illness. Secondly, the low levels of negative affect
reported in this study could be attributed to difficulties with using the HADS in a
Malaysian context where admitting to negative affect is socially undesirable. This may
have led to a lack of sensitivity and unreliability of this measure Malaysian patient samples
to ascertain its validity and reliability when used in a different cultural setting.

6.4.3 Attendance at CRP
The findings show that there was a low percentage of patients who failed to attend CRP
up to nine months following discharge from the hospital. The rate of attendance is
comparable to the rate of attendance found in many studies conducted in the West (e.g.
Ades et. al., 1996; Petrie et. al., 1997). One possible factor that may have led to the low
rate of attendance at the CRP is accessibility. Attending CRP involved transportation. Some patients lived in the rural areas where transportation is not easily accessible.

Quite surprisingly, attendance at CRP was not associated with better outcomes for these patients. CRP did not have any beneficial effects on patients' emotional well-being, reported quality of life nor did it improve patients' activity and energy levels. Attendance at CRP was also not related to return to work. These findings failed to replicate the findings of many studies that have shown the beneficial effects of attending CRP on patients' psychological and behavioural well-being. For instance, Oldridge and colleagues (1988, 1991; 1993) have conducted randomised control studies showing the beneficial effects CRP on outcomes of CHD, ranging from enhancement of self-efficacy, fitness levels and rate of return to work. Studies on CRP have also shown the positive impacts of attendance on psychological well-being (e.g. Oldridge and Rogowski, 1991; Conn et. al., 1992) Digenio and Joughin's (1997) review concluded that evidence in support of CRP is overwhelming; they brought about substantial benefits in risk factor profiles and psychosocial well-being. Lewin et al. (1995) found in a randomised trial that the angina management programme showed reductions in angina, disability, anxiety and depression amongst patients in whom medical treatment had failed. Others have reported that exercise programmes reduce anxiety and depression, independently of changes in aerobic fitness (Byrne and Byrne, 1993).

Despite these positive findings, many other studies have shown that rehabilitation programmes do not impact on patients' physical and psychological well-being (see Lane et. al, 1999 for review). For example, in a controlled study of men and women who participated in the Montreal Heart Attack Readjustment Trial (Taylor et. al., 1997), the authors found that there were no significant differences in depression scores from baseline to 12 months between the intervention group and those receiving routine care.

It has to be noted that the present study was not a randomised controlled trial. It did not specifically assess the impact of attendance at CRP on psychological well-being among Malaysian patients. The relationships among variables should not be treated as causal.
The findings are to be treated as pilot findings and only to be used as guidelines for future research.

6.4.4 The use of alternative/complementary medicine

The lack of significant findings for the use of complementary medicine was also unexpected. The longitudinal study (Study 3, Chapter 5) indicated that the use of complementary medicine was associated with less anxiety. Several factors could account for the lack of associations between the use of complementary medicine and psychological outcome variables in this study. Firstly, assessment of the use of complementary treatment was based on only one item ("Did you use complementary medicine to treat your illness after discharge from hospital"). The study did not assess the type and/or the duration in which complementary medicine was used. The use of complementary medicine may also be better associated with outcomes in the short-term such as between 3-6 months. Lastly, the use of alternative treatment may be better associated with other psychological outcomes not assessed in this study such as physical health status. It has been suggested in the literature that complementary treatment should incorporate more objective outcomes such as increased survival time (Hilsden and Verhoef, 1999), rather than depending solely on subjective, self-report measures.

Psychological research on the use of alternative medicine as a variable is still in its infancy. More studies should be conducted, using better measurements of usage of alternative treatment. Psychological constructs found to be associated with the use of complementary medicine such as representations of illness (Bishop, 1998; Tan and Bishop, 1996), maintenance of hope and control (Truant and Bottorff, 1999) should be included in future studies.

It has to be noted again that this study was not a randomised controlled trial. It did not assess effects of complementary treatment use on psychological outcomes. Any finding should be treated as guidelines for future research.

6.4.5 Comparisons between in-hospital patients and post-hospital patients
The findings of the present study revealed some interesting patterns of relationships between sociodemographic variables and psychological outcomes, some of which replicated the findings obtained for in-patients (see Chapter 4 and Chapter 5).

Replicating the findings of earlier studies (Study 2 and Study 3), the levels of anxiety and depression reported by in-hospital and post-hospital patients were similar. The low levels of negative affect could probably be attributed to the culture in which these assessments took place. Expression of emotion is not common among people of Eastern cultures, especially expression of negative emotions (see Chapter 4 and Chapter 5 for further discussion). Although the identities of most patients, namely the 51 who were not assessed previously at the hospital, were confidential, a social desirability effect might still have occurred, whereby patients responded to the questionnaires the way they perceived to be socially acceptable.

Several other reasons could also have accounted for the lack of negative emotions found among Malaysian cardiac patients, either immediately following a heart attack and/or surgery or at home, while convalescing. One reason for the former cohort may be the quality of care given by the doctors and nurses in the ward. There is evidence in the literature that patients hospitalised for various acute and chronic conditions reported positive emotional well-being due to the quality of care received from nurses and doctors (Rahe, 1989). Patients were also less anxious and/or depressed about their illness when in the hospital due to the immediate availability of facilities needed in cases of emergency. Patients' adaptation to their illness condition could explain the low levels of negative affect reported up to up to nine months after discharge. Although there have been reports that up to 20% patients continue experiencing negative emotions up to a year after their heart attack (Sullivan et al., 1999; Trewlany-Ross et al., 1987), the same levels of negative emotions were not found in this sample of cardiac patients.

The low levels of anxiety reported in this study may have been mediated by other factors such as actual social support received, which was not assessed in this study. As found by previous studies done in the West, social support acts as a buffer to negative emotions
Social support has been found to be related to lower levels of emotional distress and worries in patients recovering from various chronic conditions. The type of coping strategy most often used by post-hospital patients was turning to God, followed by active coping and seeking support. Denial was the least used coping strategy for post-hospital patients. Similarly, in-hospital patients also turned to God most often, followed by active coping and seeking support. However, unlike for the post-hospital cohort, giving up was the least used coping strategy.

Analyses revealed that post-hospital differed from in-hospital patients in two of the coping strategies employed. In-hospital patients less often gave up in dealing with their illness. They also sought more support from their family and friends compared to in-hospital patients. Several explanations could account for the differences in the level of coping strategies employed. In-hospital patients may have felt the need to stay alive, after experiencing a traumatic event. Patients may have perceived that giving up immediately after a heart attack or surgery would have led to detrimental effects on physical and emotional health. It is also possible that patients needed to feel that there would be hope for long-term survival. On the other hand, post-hospital patients may have come to terms with their condition nine months after discharge from hospital; hence, the stronger tendency to accept their illness status.

In-hospital patients also sought support more often than post-hospital patients. Given the circumstances, it is expected that in-hospital patients would resort to significant others to help alleviate the distress associated with the trauma of having a heart condition. The availability of support network (e.g. visiting family and friends, doctors) whilst in the hospital further enabled patients to seek support from them in dealing with their illness.

**6.5 Limitations**

A limitation of the present study was that the time of assessment of patients in the post-hospital sample ranged from four to nine months after they had been hospitalised for their
cardiac illness. It is possible that outcomes can change significantly from four to nine months and by combining these patients into one group, such changes were not studied. However, in order to achieve an adequate sample size, it was necessary to combine patients assessed across these five months of recovery.

Another limitation of this study was its design. Patients comprising the two samples at the two times of measurements (in-hospital vs. post-hospital) were compared. The two cohorts of patients may systematically differ in their psychological characteristics. Any differences and/or similarities in the patterns of findings between the two cohorts may have been exaggerated and/or masked by other psychological variables not assessed in this study.
CHAPTER 7

STUDY 5
PERCEPTIONS OF ILLNESS AMONG HEALTHY MALAYSIANS

Aims and Overview

A major aim of this research was to study psychological factors that affect recovery from CHD among Malaysians. To this end, three different studies have been conducted to determine factors that are associated with CHD in Malaysia. The first study on cardiac patients (Study 2, Chapter 4) assessed concurrent relationships among variables for in-hospital patients. The second study (Study 3, Chapter 5) was a prospective study, assessing the predictive relationships between psychological constructs and outcomes up to six months post-hospitalisation. The third study (Study 4, Chapter 6) examined the concurrent relationships among variables for patients four to nine months post-hospitalisation. The findings of these studies supported the model of CHD recovery developed for this research (see Figure 2.1) only to some extent. Several expected predictive relationships were not obtained in these studies. For example, self-referent beliefs failed to predict long-term psychological adjustment. Loci of control constructs played a negligible role in predicting outcomes, whilst the role of coping strategies in influencing psychological outcomes was mixed. These findings suggest that social cognitive variables alone were not sufficient in predicting psychological and behavioral outcomes of CHD.

The lack of support for the relationships proposed by the model developed for this research led to the proposition that other psychological factors may play a more significant role in predicting recovery from CHD. Recent literature suggests that perceptions of illness consistently predict behavioral psychological outcomes from CHD, at least in the West (see Petrie and Weinman, 1996). Hence, identification of Malaysians’ perceptions of illness may be useful in explaining the factors involved in predicting outcomes from CHD.
The aim of this last study was to assess representations of illness among Malaysians. Given the constraints of time and accessibility, a study assessing patients' perceptions of illness was not feasible. A major aim of this study was to act as an impetus for future studies in this area. Knowledge of healthy peoples' perceptions of illness (i.e., people who may one day become patients themselves) is helpful for understanding the psychological impact of future illness and predicting future patterns of help-seeking behaviors.

This cross-sectional study assessed Malaysians' perceptions of two illnesses, CHD and the flu, and the relationships between illness perceptions, lifestyles and beliefs about alternative medicine. CHD and the flu were chosen because they differ significantly on the dimensions of seriousness and contagiousness. Using these two illnesses, this study examined whether the model of illness perception developed in the West would generalise to Malaysia, a medically pluralistic society. In addition, this study investigated whether illness dimensions were related to perceptions of alternative treatment and practices of health-related lifestyles. It was predicted that the way Malaysians conceptualise illness would be qualitatively different from the Western model and that these illness representations, over and above sociodemographic factors, would be significant predictors of perceptions of alternative treatment and healthy lifestyles.

7.0 Background and Significance

Much of the early research on lay representations of health and illness focused on Caucasian and Anglo-Saxon populations in Western societies where biomedicine originated and flourished (Baumann, Cameron, Zimmerman and Leventhal, 1989; Lau, Bernard and Hartman, 1989; Leventhal, Nerenz and Steele, 1984). In recent years, however, more attention has been paid to the cultural relativity of concepts of health and illness (Bishop, 1998; Currer and Stacey, 1993; Dasen, Berry and Sartorius, 1988; Radley, 1993), and to lay people's interest in alternatives to biomedical approaches to treatment (Furnham and Bhagrath, 1993; Furnham and Smith, 1988; Quah and Bishop, 1996). In the application of
Western medicine to medically pluralistic developing countries, cultural variations in illness representations and treatment preferences need to be taken into account.

A variety of theories have been put forward on what constitutes illness from the lay perspective. Herzlich (1973), for example, distinguished three ways in which people represent illness: as destructive, as liberator and as occupation. Each of these conceptualisations has its own distinct meaning, influencing specific reactions and behaviours towards the illness. Studies of representation of illness among the Caucasian and Anglo-Saxons populations have consistently found that the concept of illness is widely seen as an ‘occupation’ (c.f. Stacey, 1993, p. 22). This concept involves an admission of the state of illness, recourse to professional advice and, critically, the involvement of the individual in achieving the desired goal of recovery. This concept of illness has become the standard by which one’s illness status is perceived and measured in the Western world. Health is viewed as being the individual’s responsibility and adopting healthy lifestyles as prescribed by health care professionals is seen as requisites for good health. When illness occurs, it is attributed primarily to bodily pathology and lifestyle (e.g., diet, smoking, lack of exercise, and stress).

Studies of illness representation have yielded several distinct components or dimensions: identity, time line, consequences, cause and cure (Lau, Bernard and Hartman, 1989; Leventhal, Nerenz and Steele, 1984; Petrie and Weinman, 1997; Weinman, Petrie, Moss-Morris and Horne, 1996). Lau et al. (1989) found these five components to be stable over time and across different illness episodes, including the flu; different components were found to predict different illness-related behaviours. For example, people who held strong identity and cure beliefs were more likely to visit a doctor both when feeling ill and for asymptomatic check-ups. Variations on the five components have been found for a variety of chronic conditions, for example, Addisons disease (Heijmans and de Ridder, 1998), arthritis (Hampson, Glasgow, and Zeiss, 1994), chronic fatigue syndrome (Heijmans and de Ridder, 1998), and diabetes (Hampson, Glasgow, and Toobert, 1990). In addition, Bishop (1991) reported that illness behaviours among people in the West are influenced by the dimensions of contagiousness and life-threatening. Together, these studies demonstrate that
the way people think about illness affects their use of professional health care, their self-management of illness, and has important consequences for their health and well-being.

Studies conducted in the West on illness representations in relation to CHD show relationships between beliefs about cause and seriousness and health behaviour. For instance, Petrie and Weinman (1997) found that patients' belief that their MI was caused by a faulty lifestyle was significantly related to overall improvements in diet and to an increase in the frequency of strenuous exercise. However, no association was found between attributions related to stress or heredity to later changes in health behaviour. They also found that patients' perceived seriousness of their illness significantly predicted return to work; the less serious the perceptions of MI consequences, the more likely they returned to work. Belief in controllability and cure of MI significantly predicted attendance of rehabilitation programmes; the stronger the belief, the more likely they attended cardiac rehabilitation programmes. In short, Western models of illness representations of CHD are very much shaped by patients' perceived causes, duration, consequences and curability of the illness, which in turn predict future health and illness-related outcomes.

Westerners' illness representations reflect a largely biomedical model that may not predominate in other cultures. Kleinman (1993) defined illness as the way in which an individual interprets his or her own experience with the use of cultural norms and relations. Even among people in the West, cultural diversity in the way illness is represented and attributed has been found (Furnham, 1994a; 1994b; Landrine and Klonoff, 1994; Matsumoto, Pun, Nakatani et. al., 1995; Turner, 1996). For instance, when Caucasian Americans and African-Americans judged natural and supernatural causes of illnesses, African-Americans rated supernatural causes as significantly more important (Landrine and Klonoff, 1994). Matsumoto and colleagues (1995) found that beliefs about osteoporosis were significantly different between first and second generation Japanese Americans. Whereas the first generation was more likely to attribute causes of illness to fate and luck, the second was more likely to believe in diet as a cause. Moreover, the second generation viewed osteoporosis in terms of its practical impact and had a more pragmatic view of treatment compared to the older generation. These findings highlight the significance of
sociocultural factors in lay representations of illness, particularly for non-Western cultures or subcultures.

Different conceptualisations of illness imply different notions of healing and health. For instance, in the Chinese culture, perceptions of illness are built upon the concepts of the balance between yin and yang and that of the qi (Tan and Bishop, 1996). Yin and yang focuses on maintaining a balance between the mind and body, whilst qi is the source of life which is important in maintaining good health. If the body falls ill, it is because an imbalance has occurred between yin and yang or the energy flow of qi is blocked. In some societies, illness is seen as a result of an invasion of the person by supernatural forces (Chen, 1975; Murdock, 1980). Illness can also be perceived as being a result of disharmony inside the individual, either mentally or spiritually. It has also been seen as a result of disturbance in the environment of the individual. This disturbance can take the form of material or social disruption (Easthope, 1986). Whereas biomedicine concentrates predominantly on the malfunction of the physical or organic substrates, many alternative treatments focus on the psychological or spiritual aspects of the individual as well (or instead), reflecting lay beliefs about causes and treatment of illness.

Over the last decade, a growing number of researchers have begun to look at the alternative ways people conceptualise their health and illness status and the kinds of treatments being sought (Furnham, 1994; Furnham and Bhagrath, 1996; Furnham, Akande and Baguma, 1999; Kleinman, 1993; Sharma, 1992; Tan and Bishop, 1996; Quah and Bishop, 1996). This stems, in part, from the increasing popularity of complementary and alternative medicine in the West. Many of these treatments, however, have been widely utilised in non-Western countries for centuries and are still commonly practiced. A number of questions concerning the use of alternative medicine arise including whether the choice of treatment system is a reflection of cultural identity, and whether these preferences are based on perceptions of the aetiology and recovery process for the particular illness.

One way to answer such questions is to conduct research in medically pluralistic cultures where modern biomedicine coexists with folk and popular medicine. Such studies are less
common in health psychology than in medical anthropology and sociology (e.g., Currer and Stacey, 1993; Kleinman, 1993; Radley, 1993). However, Bishop and colleagues (Quah and Bishop, 1996; Tan and Bishop, 1996) found that more than five dimensions exist in illness perceptions among Chinese Singaporeans, that orientation towards ethnicity predicted use of illness concepts and the use of illness concepts predicted use of alternative treatments. They also found that beliefs about the seriousness of the illness was an important determinant of the choice of treatment; the more life-threatening the illness, the more likely they were to visit a Western-style doctor and consequently, the less likely they were to seek help from a sinseh (a healer). Other research has shown that it is quite usual for individuals to consult allopathic medical practitioners as well as alternative healers for the same ailment (Ho, Lun and Ng, 1984).

In a recent study on beliefs about health and illness among British, South Africans and Ugandans (n = 500), Furnham, Akande and Baguma (1999) found that factors concerning the provision and efficacy of western orthodox (allopathic) medicine appeared to discriminate most between the three national groups. These findings indicate the role individual representations of illness, which are shaped by cultural beliefs, values and idioms, play in influencing treatment-seeking behaviours, and subsequently illness outcomes. More studies are needed that examine the role of culture in influencing individual differences in the perceptions of illness and treatment preferences.

The present study focuses on Malaysia, a multicultural and medically pluralistic neighbour of Singapore. In addition to modern allopathic medicine, various alternative treatments are available and widely utilised (for a review of the medical systems in Malaysia, see Chen, 1975). Religion and spirituality are important aspects of life in Malaysia and are likely to influence health and illness-related behaviours among many Malaysians. Knowledge about healthy people's illness representations is helpful for understanding the psychological impact of future illness, and predicting future patterns of help-seeking behaviours and adherence to treatment advice.

The present study explored perceptions of illness among Malaysians, looking at two
illnesses: coronary heart disease (CHD) and influenza (the flu). These conditions were chosen because they differ significantly on the dimensions of seriousness and contagiousness. The biomedical model views CHD as a life-threatening, non-contagious condition strongly associated with lifestyle whereas flu is considered a less serious, contagious condition with little relation to lifestyle. Using these two illnesses, this study examined whether the model of illness perception developed in the West would generalise to Malaysia. In addition, it was predicted that the way Malaysians conceptualise illness would be qualitatively different from the Western model and that these illness representations would be significant predictors of self-reported healthy lifestyles and beliefs in the effectiveness of alternative treatments.

7.1 Methods

7.1.1 Participants
Participants were recruited from various settings in two states; academic (60%), industrial (32.7%) and the public sector (7.3%). All participants were healthy at the time of the survey. A research assistant hand-distributed 350 questionnaires. Participants were given a week to return their questionnaires to the research assistant. Of the 350 distributed, 300 were returned (85.7% return rate). Participation was voluntary.

7.1.2 Measures
The questionnaire used in the study consisted of 5 sections: perceptions of illness in relation to both CHD and the flu, health-related lifestyles, perceptions of alternative treatment and sociodemographic background information. The former two sections used existing structured psychological scales while items on health-related lifestyles and alternative medicine were developed specifically for this study and included both semi-structured and open-ended responses. The questionnaire is reproduced in Appendix (9).

7.1.2.1 The Illness Perception Questionnaire (IPQ)
The IPQ assesses the five components of illness representations: illness identity (symptoms of illness), cause, time-line, consequences and treatment (Weinman et. al., 1995). Studies
conducted on different samples of both healthy and patient populations have shown the IPQ to be valid and reliable. Psychometric properties of the IPQ yielded high test-retest reliability, concurrent validity, discriminant validity and predictive validity between the different components. The Cronbach alpha of these constructs range from .73 for time-line, .82 for consequences and .73 for control and cure (Weinman et. al, 1996). Although more typically used with people currently experiencing an illness, it was used here to assess people’s representation of an illness they might experience in the future (CHD) as well as one which there were very likely to have already experienced (the flu).

For this study, four of the original illness constructs were utilised: the causal component, time-line, consequences and control/cure. The illness identity (symptoms) questions were removed because participants were healthy when they completed the questionnaire, and this study was primarily concerned with people’s beliefs about causes and treatment of illness.

Items were carefully considered before they were included in the new questionnaire. The criteria on which item selection was based were relevance and cultural-sensitivity. The IPQ has specific core items but allows the user to add items for particular illnesses or health threats (Weinman et. al., 1996). Hence, new items were formulated and included in the modified IPQ. These items were relevant in assessing the causes and treatment process of CHD and the flu. The modified IPQ consisted of 30 items on CHD and 26 items on the flu. Twenty-three items of the original IPQ were retained and seven new items were added for CHD. For the flu, 22 items of the original IPQ were retained and four new items were added. For CHD, Cause was assessed by eight items from the original IPQ and three new items for CHD. The new items were “CHD is caused by the will of God”, “Smoking plays a large role in causing CHD” and “Lack of exercise can cause CHD”. For the flu, Cause was assessed by seven items from the original IPQ and one new item (“The flu is caused by the will of God”). Time-line for both illnesses was assessed by the three items from the original IPQ. All seven Consequence items from the original IPQ were retained for CHD. Only six of the Consequence items from the original IPQ were retained for the flu. Lastly, Control/Cure was assessed by six items from the original IPQ and three new items for both illnesses (“Recovery from CHD/the flu is dependent on the will of God”, “Alternative
medicine can be used to treat CHD/the flu” and “There is nothing I can do to recover from CHD/the flu”). All items were rated on a 5-point rating scale, where 1 = “strongly agree” and 5 = “strongly disagree”. All the questions on CHD came first followed by the flu.

7.1.2.2 Healthful lifestyles
Items assessing respondents’ current health-related lifestyles made up the third section of the questionnaire. Brief measures of three aspects of current health behaviour were included: smoking (3 items), exercise (4 items) and diet (2 items). Responses were dichotomous (Yes/No) or open-ended. The questions on smoking were “Do you smoke?”, “If ‘Yes’, how long have you smoked?” and “If ‘Yes’, how many cigarettes per day do you smoke?”. Items assessing exercise were “Do you exercise?” If ‘Yes’, what kind(s) of exercise do you do?”, “How often do you exercise?” and “How long does each exercise session last?”. Items on diet asked the following: “Do you try to eat a healthy diet?”, “If so, what kinds of foods do you try to avoid?”

7.1.2.3 Perceptions of alternative treatment
This section contained 3 items on respondents’ perceptions of alternative medicine. The items asked for respondents’ perception of whether alternative medicine is effective in treating CHD and the flu. Respondents were also asked to list the illnesses they perceived could be effectively treated using folk medicine.

7.1.3 Translation
All items were backtranslated by two bilingual Malaysian translators. Both the English and Malay versions were provided in the questionnaire to give participants the choice of reading either language.

7.2 Analyses
Descriptive statistics for all participants were obtained. Two-tailed Pearson correlation coefficients were computed to identify the strengths and directions of relationships among
all items assessing illness perceptions. Paired samples t-tests were conducted to determine differences in participants' perceptions of CHD and their perceptions of the flu.

Two different methods were used to determine the components underlying representations of illness among the sample: empirically by use of factor extraction and factor specification, and conceptually by forming scales based on theoretical constructs. Principal components (PC) analysis and oblique rotation (Oblimin) were used to examine the factor structure of the modified IPQ, separately for CHD and for the flu. Solutions for different numbers of factors (4 - 10) were examined. In the first set of analyses, components were retained contingent upon an eigenvalue equal to or more than 1. Four components were specified in the factor specification analyses. The aim of specifying the number of components was to determine whether the factors extracted would be consistent with the four theoretical constructs supposedly measured by the IPQ.

Next, perceptions of illness constructs were formulated conceptually. This was performed by comparing the newly derived constructs to those found from other studies on illness perceptions, in both Western and non-Western countries. Cronbach alpha reliability coefficient for each construct was obtained and compared.

Paired samples t-test was performed to compare the mean differences between the newly derived CHD and the flu constructs. Differences in perceptions of illness between groups defined by healthy lifestyles and perceptions of alternative treatment were obtained using one-way ANOVA. Bivariate analyses were performed to assess concurrent relationships among illness perception constructs.

Next, a forward logistic regression was performed to predict perceptions of the effectiveness of alternative treatment from demographics and illness perception constructs, separately for CHD and the flu. Associations among health-related lifestyle variables were then examined. Another forward logistic regression was performed to predict health-related lifestyles, separately for CHD and the flu. Lastly, a stepwise multiple regression was used to predict healthful lifestyles from demographic variables and illness perception constructs.
7.3 Results

7.3.1 Demographic characteristics

The sociodemographic characteristics of participants are summarised in Table 1. Of the 300 participants, 131 (44%) were men and 169 (56%) were women. They were relatively young (mean age = 27.3 years; SD = 6.87) with an age range of 18 to 65 years. The 14% non-Malay belonged to the other chief ethnic communities in Malaysia (Chinese, Indian, Eurasian). The majority of participants (92%) reported affiliation with Islam while the remaining 8% were Buddhist, Hindu or Christian. Nearly two thirds of participants had completed tertiary education (64%), about three-quarters were employed (72%), and over a quarter were students (28%). Participants represented professionals and unskilled occupations about equally.

Table 7.1 Demographic characteristics of participants (N = 300)

<table>
<thead>
<tr>
<th>Sociodemographic Variables</th>
<th>Mean (SD) or Frequencies (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>27.3 years (SD = 6.87)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>131 (44%)</td>
</tr>
<tr>
<td>Female</td>
<td>169 (56%)</td>
</tr>
<tr>
<td>Ethnic group</td>
<td></td>
</tr>
<tr>
<td>Malay</td>
<td>257 (86%)</td>
</tr>
<tr>
<td>Other</td>
<td>43 (14%)</td>
</tr>
<tr>
<td>Religious affiliation</td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>276 (92%)</td>
</tr>
<tr>
<td>Other</td>
<td>24 (8%)</td>
</tr>
<tr>
<td>Education status</td>
<td></td>
</tr>
<tr>
<td>Primary/secondary</td>
<td>109 (36%)</td>
</tr>
<tr>
<td>Tertiary</td>
<td>191 (64%)</td>
</tr>
<tr>
<td>Work status</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>215 (72%)</td>
</tr>
<tr>
<td>Not employed/studying</td>
<td>85 (28%)</td>
</tr>
</tbody>
</table>
Occupation

| Professional/semi-professional | 115 (38%) |
| Unskilled                      | 101 (34%) |

7.3.2 Differences between CHD and the flu (item-level analyses)

7.3.2.1 Causes

Means ratings for each causal item assessing CHD and the flu were obtained. For CHD, "diet" was strongly perceived as a major cause (mean = 4.22, SD = .905) with 86.7% of the participants scoring "4 or above" on the item. This was followed by "poor medical care" (mean = 4.10, SD = .909) with 84% of the participants scoring "4" or "5" and "smoking" (mean = 4.09, SD = .925) with 80.3% of the participants either agreed or strongly agreed with the statement. For the flu, "poor medical care" has the highest mean (mean = 3.78, SD = .947), followed by "germ/virus" (mean = 3.67, SD = .971) and "chance" (mean = 3.37, SD = .968). Table 7.2 summarises the mean and standard deviation for each item assessing the causes of CHD and the flu.

Table 7.2  Means and standard deviations of causes of CHD and the Flu

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean(SD) for CHD</th>
<th>Mean(SD) for the Flu ¹</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;virus&quot;</td>
<td>2.41(1.12)</td>
<td>3.67(.97)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;diet&quot;</td>
<td>4.22(.91)</td>
<td>2.87(.95)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;God's will&quot;</td>
<td>3.29(1.31)</td>
<td>3.34(1.25)</td>
<td>n.s.</td>
</tr>
<tr>
<td>&quot;heredity&quot;</td>
<td>2.89(1.12)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>&quot;chance&quot;</td>
<td>2.82(1.14)</td>
<td>3.37(.97)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;stress&quot;</td>
<td>3.97(1.88)</td>
<td>2.89(.96)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;other people&quot;</td>
<td>2.65(1.13)</td>
<td>2.45(.93)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;poor medical care&quot;</td>
<td>4.10(0.91)</td>
<td>3.78(.95)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;state of mind&quot;</td>
<td>3.54(0.98)</td>
<td>3.10(.98)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&quot;smoking&quot;</td>
<td>4.09(.92)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>&quot;lack of exercise&quot;</td>
<td>3.89(.90)</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

¹ Missing data for causes not asked with respect to the flu.

Paired samples t-tests were conducted to determine the significance of mean differences between corresponding items assessing CHD and the flu. Results show that the differences
found between all causal items in relation to CHD and the flu were significant, except for “God’s will” (mean = 3.29 and mean = 3.34 respectively).

7.3.2.2 Perceptions of Time-Line, Consequences and Controllability/Curability

Mean differences between items assessing perceptions of time-line, consequences and controllability in relation to CHD and the flu were compared, using paired-samples t-tests. Significant differences were found between perceptions of Time-line in relation to CHD and the flu. CHD was perceived to last a longer time (mean = 3.76 and mean = 2.88, p < .001, respectively) and was perceived to be more permanent (mean = 3.67 and mean = 2.40, p < .001, respectively). The pattern of mean differences between CHD and the flu across the time-line items is consistent with the differences in the duration of these illnesses.

Significant differences were also found in three of the Consequences items. CHD was perceived to have more major consequences (mean = 4.22 and mean = 3.17, p < .001, respectively) and was perceived to be more serious (mean = 4.59 and mean = 3.66, p < .001, respectively). The flu, on the other hand, was perceived to have less effect on life (mean = 2.30 for the flu and mean = 1.81 for CHD, p < .001). No significant difference was found for item on “CHD/The flu is easy to live with”. The pattern of mean differences between CHD and the flu across items assessing consequences is consistent with the differences in the effects of CHD and the flu.

A different pattern of mean differences between CHD and the flu emerged for items assessing control/cure. The flu was perceived as more curable (mean = 4.02 for the flu and mean = 3.60 for CHD, p < .001) and was perceived more treatable using alternative medicine (mean = 3.74 for the flu and mean = 3.39 for CHD, p < .001, respectively). CHD, on the other hand, was perceived as less likely to improve in time (mean = 2.79 and mean = 2.26, p < .001). However, CHD was perceived as more controllable in terms of its symptoms (mean = 4.13 for CHD and mean = 3.97 for the flu, p < .005). No significant differences were obtained in terms perceptions of fate and God’s will in the process of recovery from either illness. The patterns of mean differences of the cure/control items are
less clear-cut. The differences provide evidence on the complexity of treatment and help-seeking process, particularly for healthy individuals.

7.3.3 Constructs of Malaysian illness representations for CHD and flu  
7.3.3.1 Derivation of constructs of IPQ  
The aim of this analysis was to derive constructs that would be used as independent variables for future analyses. Two different approaches were utilised to derive constructs from the IPQ: empirically-derived and conceptually derived.

7.3.3.1.1 Empirically derived constructs  
Factor extraction  
The first method used was factor extraction using principal components and Direct Oblimin rotation. The purpose of this analysis was to determine the number and patterns of constructs extracted empirically and to compare these constructs with those originally developed.

The analysis yielded 10 factors for CHD and 9 factors for the flu with eigenvalues greater than 1, accounting for 59.4% of the variance for CHD and 64.2% of the variance for the flu. None of the 10 factors extracted for CHD were consistent with the original 4 constructs, although several were interpretable. Similar patterns of factors were obtained for the flu. Many items did not load on the factors as predicted. The only factor extracted that was interpretable and consistent across both illnesses was "Religious or Spiritual Beliefs". Derivation of constructs by PC extraction was terminated for its lack of interpretability, reliability and validity.

Factor specification  
Factor analysis was performed using the Direct Oblimin rotation in which four factors were extracted. The four factors extracted in relation to CHD and the flu accounted for 34.8% and 40.4% of the variance, respectively. Results show that although some of these factors were generally interpretable, many of the items did not belong conceptually to the factors on which they loaded. For instance, factor 3, which could be labeled as "consequences", 
contained item 1, “A germ or virus causes CHD” and item 5, “It is just by chance that one gets CHD.” Table 7.3 and Table 7.4 summarise the four factors specified with their respective items with loadings greater than .30. However, the lack of clear, interpretable factors led to the use of a conceptual approach.

Table 7.3  Summary of four factor solution for CHD

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;CHD-Health Related Beliefs&quot;</td>
<td>CHD is caused by poor medical care</td>
<td>.67</td>
</tr>
<tr>
<td></td>
<td>CHD strongly affects the way patient sees her/himself</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>CHD has serious economic and financial consequences</td>
<td>.53</td>
</tr>
<tr>
<td></td>
<td>There is a lot a patient can do to control her/his symptoms</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>Diet plays a major role in causing CHD</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>CHD can be caused by a lack of exercise</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>What a patient does can determine whether he/she gets better</td>
<td>.49</td>
</tr>
<tr>
<td>&quot;Seriousness&quot;</td>
<td>There is little that can be done to improve the condition of CHD</td>
<td>.69</td>
</tr>
<tr>
<td></td>
<td>CHD is likely to be permanent rather than temporary</td>
<td>.61</td>
</tr>
<tr>
<td></td>
<td>There is not much that can be done to improve from CHD</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td>CHD will last a long time</td>
<td>.55</td>
</tr>
<tr>
<td></td>
<td>CHD can be treated</td>
<td>.49 (R)</td>
</tr>
<tr>
<td></td>
<td>CHD can be cured in time</td>
<td>.49 (R)</td>
</tr>
<tr>
<td>&quot;Causal and Consequences&quot;</td>
<td>CHD does not affect life much</td>
<td>.49</td>
</tr>
<tr>
<td></td>
<td>CHD has major consequences in one’s life</td>
<td>.48 (R)</td>
</tr>
<tr>
<td></td>
<td>CHD is easy to live with</td>
<td>.46</td>
</tr>
<tr>
<td></td>
<td>It is just by chance that one gets CHD</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>CHD will last a short time</td>
<td>.42</td>
</tr>
<tr>
<td></td>
<td>Other people play a large role in causing CHD</td>
<td>.42</td>
</tr>
<tr>
<td></td>
<td>A germ/virus causes CHD</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>CHD is a serious condition</td>
<td>.39 (R)</td>
</tr>
<tr>
<td>&quot;External control health beliefs&quot;</td>
<td>Recovery from CHD depends on the will of God</td>
<td>.81 (R)</td>
</tr>
<tr>
<td></td>
<td>Recovery from CHD depends on chance/fate</td>
<td>.77 (R)</td>
</tr>
<tr>
<td></td>
<td>Alternative medicine can be used to treat CHD</td>
<td>.75 (R)</td>
</tr>
<tr>
<td></td>
<td>CHD is hereditary-it runs in the family</td>
<td>.39 (R)</td>
</tr>
<tr>
<td></td>
<td>(R) Reverse scoring</td>
<td></td>
</tr>
</tbody>
</table>

(R) Reverse scoring
Table 7.4  Summary of four-factor solution for the flu

<table>
<thead>
<tr>
<th>Constructs</th>
<th>Items</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Serious&quot; vs. Non-Serious</td>
<td>There is little that can be done to improve from the flu</td>
<td>.66 (R)</td>
</tr>
<tr>
<td>Factors</td>
<td>There is not much that can be done to recover from the flu</td>
<td>.62 (R)</td>
</tr>
<tr>
<td></td>
<td>The flu can be cured in time</td>
<td>.61</td>
</tr>
<tr>
<td></td>
<td>There is a lot that a patient can do to control his/her symptoms</td>
<td>.60</td>
</tr>
<tr>
<td></td>
<td>The flu is likely to be permanent rather than temporary</td>
<td>.58</td>
</tr>
<tr>
<td></td>
<td>What the patient does can determine whether he/she gets better or worse</td>
<td>.48 (R)</td>
</tr>
<tr>
<td></td>
<td>The flu will last a short time</td>
<td>.43</td>
</tr>
<tr>
<td></td>
<td>The flu will last a long time</td>
<td>.32 (R)</td>
</tr>
<tr>
<td>&quot;Religious Health Beliefs&quot;</td>
<td>Recovery from the flu depends on God’s will</td>
<td>.87</td>
</tr>
<tr>
<td></td>
<td>Recovery from the flu depends on chance/fate</td>
<td>.86</td>
</tr>
<tr>
<td></td>
<td>The flu is caused by God’s will</td>
<td>.85</td>
</tr>
<tr>
<td>&quot;Consequences&quot;</td>
<td>The flu has major consequences in a patient’s life</td>
<td>.79 (R)</td>
</tr>
<tr>
<td></td>
<td>The flu does not affect one’s life much</td>
<td>.76</td>
</tr>
<tr>
<td></td>
<td>The flu is easy to live with</td>
<td>.72</td>
</tr>
<tr>
<td></td>
<td>The flu is a serious condition</td>
<td>.70 (R)</td>
</tr>
<tr>
<td>&quot;Different Health Beliefs&quot;</td>
<td>One’s state of mind plays a large part in causing the flu</td>
<td>.71</td>
</tr>
<tr>
<td></td>
<td>Other people play a large role in causing the flu</td>
<td>.60</td>
</tr>
<tr>
<td></td>
<td>Stress is a major factor in causing the flu</td>
<td>.54</td>
</tr>
<tr>
<td></td>
<td>Diet plays a major role in causing the flu</td>
<td>.52</td>
</tr>
<tr>
<td></td>
<td>Alternative medicine can be used to treat the flu</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>The flu is caused by poor medical care</td>
<td>.36</td>
</tr>
<tr>
<td></td>
<td>The flu affects the way the patient sees him/herself</td>
<td>.34</td>
</tr>
<tr>
<td></td>
<td>The flu is caused by chance</td>
<td>.33</td>
</tr>
</tbody>
</table>

(R) Reverse scoring
7.3.3.1.2 Conceptually derived constructs

Accordingly, a more conceptual approach to identifying the illness constructs was taken, based on the author’s expertise in Malaysian culture, with the goal of identifying dimensions that would apply to representations of both CHD and the flu. The criteria guiding the derivation of constructs included the following: salience, relevance, illness specificity and cultural-specificity. The constructs derived were similar for both CHD and the flu. These constructs were Spiritual Beliefs, Personal Responsibility, Seriousness/Treatability of illness and consequences.

For CHD, Spiritual Beliefs was composed of items such as “CHD is caused by the will of God” and “Recovery from CHD depends on the will of God” and assessed the extent to which a person believed in a spiritual dimension to illness. A very similar dimension emerged for the flu consisting of items such as “The flu is caused by the will of God” and “Recovery from the flu is dependent on the will of God”. It was composed primarily of new items developed for this version of the IPQ, but also included original IPQ items (e.g. “Recovery from CHD is largely dependent on fate or chance” for CHD, “Recovery from the flu is largely dependent on fate or chance” for flu). For both illnesses, this scale had good internal reliability (see Table 7.7). Personal Responsibility, in relation to both CHD and the flu was composed of several items from the original IPQ Cause dimension (e.g. “Diet plays a major role in causing CHD/the flu” and “CHD/The flu can be caused by poor medical care”). For CHD, two new Cause items were included, “Smoking plays a large role in causing CHD” and “CHD can be caused by lack of exercise”. In addition, it included “There is a lot a patient can do to control his symptoms” and “What the patient does can determine whether he gets better or worse”. As for the flu, the only other item that made up Personal Responsibility was “The flu is caused by poor medical care”. The version of this scale for the flu had low internal reliability (see Table 7.7).

Consequences for CHD was composed of items such as “CHD has major consequences on patient’s life” and “CHD is easy to live with” and for the flu items such as “The flu has major consequences on the patient’s life” and “The flu does not affect the patient’s life much”. This scale was more reliable for the flu than for CHD (see Table 7.7). Seriousness
was composed of items such as “CHD is a serious condition” and “CHD can be cured in time” for CHD and “The flu will last a long time” and “There is very little that can be done to improve the flu” for the flu, acceptably reliable for both.

Table 7.5 Summary of conceptually-derived constructs and constituent items for CHD

<table>
<thead>
<tr>
<th>Construct for CHD</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spiritual Beliefs</strong></td>
<td>CHD is caused by will of God</td>
</tr>
<tr>
<td></td>
<td>Recovery from CHD is dependent on fate</td>
</tr>
<tr>
<td></td>
<td>Recovery from CHD depends on the will of God</td>
</tr>
<tr>
<td></td>
<td>Alternative medicine can be used to treat CHD</td>
</tr>
<tr>
<td><strong>Personal Responsibility</strong></td>
<td>Diet plays a major role in causing CHD</td>
</tr>
<tr>
<td></td>
<td>Stress is a major factor in causing CHD</td>
</tr>
<tr>
<td></td>
<td>CHD is caused by poor medical care</td>
</tr>
<tr>
<td></td>
<td>Smoking plays a large role in causing CHD</td>
</tr>
<tr>
<td></td>
<td>CHD can be caused by a lack of exercise</td>
</tr>
<tr>
<td></td>
<td>There is a lot patient can do to control his/her symptoms</td>
</tr>
<tr>
<td></td>
<td>What the patient does can determine whether she gets better or worse</td>
</tr>
<tr>
<td><strong>Consequences</strong></td>
<td>CHD has major consequences on the patient’s life</td>
</tr>
<tr>
<td></td>
<td>CHD is easy to live with (R)</td>
</tr>
<tr>
<td></td>
<td>CHD does not affect the patient’s life much (R)</td>
</tr>
<tr>
<td></td>
<td>CHD has serious economic and financial circumstances</td>
</tr>
<tr>
<td></td>
<td>CHD affects the way others see the patient</td>
</tr>
<tr>
<td></td>
<td>CHD affects the way patient see himself</td>
</tr>
<tr>
<td><strong>Seriousness/Treatability</strong></td>
<td>CHD is a serious condition</td>
</tr>
<tr>
<td></td>
<td>CHD is likely to be permanent rather than temporary</td>
</tr>
<tr>
<td></td>
<td>CHD will last a long time</td>
</tr>
<tr>
<td></td>
<td>CHD can be cured in time (R)</td>
</tr>
<tr>
<td></td>
<td>There is little that can be done to improve condition of CHD</td>
</tr>
<tr>
<td></td>
<td>CHD can be treated (R)</td>
</tr>
<tr>
<td></td>
<td>There is not much that can be done to recover from CHD</td>
</tr>
</tbody>
</table>

(R) Reversed scoring
Table 7.6  Summary of conceptually-derived constructs and constituent items for the flu

<table>
<thead>
<tr>
<th>Constructs for the flu</th>
<th>Items</th>
</tr>
</thead>
</table>
| Spiritual Beliefs     | The flu is caused by will of God  
|                       | Recovery from the flu is dependent on fate  
|                       | Recovery from the flu depends on the will of God  
|                       | Alternative medicine can be used to treat the flu |
| Personal Responsibility | Diet plays a major role in causing the flu (R)  
|                       | Stress is a major factor in causing the flu (R)  
|                       | The flu is caused by poor medical care (R) |
| Consequences          | The flu has major consequences on the patient's life  
|                       | The flu is easy to live with (R)  
|                       | The flu does not affect the patient's life much (R)  
|                       | The flu affects the way others see the patient  
|                       | The flu affects the way patient see himself |
| Seriousness/Treatability | The flu is a serious condition  
|                       | The flu is likely to be permanent rather than temporary  
|                       | The flu will last a long time  
|                       | The flu can be cured in time (R)  
|                       | There is little that can be done to improve condition of the flu  
|                       | The flu can be treated (R)  
|                       | There is not much that can be done to recover from the flu |

(R) Reversed scoring

7.3.4 Reliability of Constructs
Cronbach alpha coefficients were obtained for the conceptually derived constructs.
Table 7.7 reports the Cronbach alpha coefficients for each CHD and the Flu constructs, respectively.
Table 7.7  Summary of Cronbach alpha coefficients for conceptually-derived constructs

<table>
<thead>
<tr>
<th>Constructs with items</th>
<th>CHD</th>
<th>Flu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Beliefs</td>
<td>.77</td>
<td>.78</td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>.63</td>
<td>.36</td>
</tr>
<tr>
<td>Consequences</td>
<td>.55</td>
<td>.68</td>
</tr>
<tr>
<td>Seriousness or Treatability</td>
<td>.63</td>
<td>.67</td>
</tr>
</tbody>
</table>

A comparison of reliability coefficients was made between the above constructs, derived conceptually, and the original 4 constructs scored using Weinman et al.'s (1996) original data. The Cronbach alpha coefficients for the original IPQ constructs are summarised in Table 7.8.

Table 7.8  Summary of Cronbach alpha coefficients of the original IPQ constructs

<table>
<thead>
<tr>
<th>Constructs</th>
<th>CHD</th>
<th>Flu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause</td>
<td>.48</td>
<td>.52</td>
</tr>
<tr>
<td>Time-Line</td>
<td>.35</td>
<td>.42</td>
</tr>
<tr>
<td>Consequences</td>
<td>.55</td>
<td>.68</td>
</tr>
<tr>
<td>Treatment Efficacy</td>
<td>.45</td>
<td>.64</td>
</tr>
</tbody>
</table>

The criterion on which constructs were selected was a Cronbach alpha coefficient of .55 or more. Reliability analyses indicate that 7 of the 8 constructs derived conceptually met the above criterion: Spiritual Beliefs for CHD and the flu, Seriousness and Consequences for CHD and the flu and finally, Personal Responsibility for CHD. On the other hand, the Cronbach alpha coefficients for the original constructs of the IPQ were not as high; ranging from .35 to .55 for CHD and .42 to .68 for the flu. Hence, constructs which were conceptually derived were selected as variables to be used for further analyses in this study.
The Cronbach alpha coefficient for the “consequences” construct for CHD is less than the “consequences” Cronbach alpha for the flu (.55 and .68, respectively). The difference may be attributed to the demographics of the respondents of this study, who were healthy individuals and reported to have not been diagnosed with CHD. On the other hand, they were more aware of the consequences of the flu because they were more likely to have had the flu before. Meanwhile, the low Cronbach alpha value for “causes” component of the flu can be accounted by the lack of the different types of causes for the flu included in the questionnaire. Due to its lack of reliability this construct was dropped from further analyses.

7.3.5 Descriptives of the modified illness perception constructs

For each construct derived, a mean score was computed by summing the items and dividing the sum by the number of items in each construct. Table 7.9 summarises the descriptive statistics of the newly derived illness perception constructs in relation to CHD and the flu.

Table 7.9  Means and standard deviations of the modified illness perception constructs

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>CHD</th>
<th>The Flu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Beliefs^®(SB)</td>
<td>3.27 (0.85)</td>
<td>3.36 (0.86)</td>
</tr>
<tr>
<td>Personal Responsibility^®(PR)</td>
<td>4.02 (0.49)</td>
<td>3.18 (0.63)</td>
</tr>
<tr>
<td>Consequences^®(CON)</td>
<td>3.71 (0.54)</td>
<td>3.45 (0.63)</td>
</tr>
<tr>
<td>Seriousness^®(SER)</td>
<td>3.15 (0.48)</td>
<td>2.78 (0.51)</td>
</tr>
</tbody>
</table>

Note: Constructs marked with the superscript ^® were rated significantly differently for CHD versus the flu as assessed by related t-test, p < .05.
7.3.6 Differences between illness perception constructs

Using a paired-samples t test, means of all scales (Spiritual Beliefs, Personal Responsibility, Consequences and Seriousness) were compared to see whether the differences in perceptions of the two illnesses were significant. The results show that CHD was on average seen as more serious than the flu ($t = 9.74, \text{df} = 297, p < .001$). CHD was also seen as having more dire consequences than the flu ($t = 6.38, \text{df} = 298, p < .001$) and was more associated with personal responsibility ($t = 22.04, \text{df} = 299, p < .001$). The flu, on the other hand, was perceived as more strongly associated to spiritual beliefs than CHD ($t = -2.58, \text{df} = 297, p < .05$). The pattern of mean differences between CHD and the flu across all constructs is consistent with the differences in aetiology, seriousness and consequences between these two illnesses and therefore provides evidence of the validity of these conceptually generated constructs.

7.3.6.1 Demographic differences in illness perceptions

No significant gender differences were found in illness perceptions in relation to both CHD and the flu. Significant education differences were found, however, in spiritual beliefs ($F = 11.3, \text{df} = 1, p < .005$), personal responsibility ($F = 7.5, \text{df} = 1, p < .01$) and perceptions of
consequences ($F = 7.2$, df = 1, $p < .01$) in relation to CHD. Tertiary educated participants had stronger spiritual beliefs, personal responsibility beliefs and perceived CHD as more dire compared to secondary-educated participants. For the flu, significant differences were found in spiritual beliefs ($F = 7.8$, df = 1, $p < .01$), perceptions of seriousness ($F = 23.6$, df = 1, $p < .001$) as well as perceptions of consequences ($F = 4.6$, df = 1, $p < .05$). Secondary-educated participants perceived flu to be more serious and more dire.

**Figure 7.2** Differences in spiritual beliefs by education

**Figure 7.3** Differences in personal responsibility by education
7.3.7 Bivariate relationships among illness perceptions constructs
For CHD constructs, correlations ranged between $r = 0.14$ to $r = 0.36$. The correlation between Spiritual Beliefs and Seriousness was $r = 0.14$ ($p<0.05$), Personal Responsibility and Consequences ($r = 0.36$, $p<0.001$) and Seriousness and Consequences ($r = 0.14$, $p<0.05$). The
constructs correlated in the predicted directions, providing evidence of the validity of these conceptually generated constructs. For the flu constructs, correlations ranged from $r = -0.01$ to $r = 0.24$. The largest correlation was between Personal Responsibility and Spiritual Beliefs ($p < 0.01$).

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CON_CHD</strong></td>
<td>.36**</td>
<td>.14*</td>
<td>.09</td>
<td>.25**</td>
<td>.10</td>
<td>-13*</td>
<td>.12*</td>
</tr>
<tr>
<td><strong>PR_CHD</strong></td>
<td>-1.1</td>
<td>.06</td>
<td>.18**</td>
<td>.32**</td>
<td>-.23**</td>
<td>.18**</td>
<td></td>
</tr>
<tr>
<td><strong>SER_CHD</strong></td>
<td>.14*</td>
<td>.02</td>
<td>-.02</td>
<td>.13*</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SB_CHD</strong></td>
<td>.06</td>
<td>.19**</td>
<td>.04</td>
<td>.77*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CON_Flu</strong></td>
<td>.20**</td>
<td>.10</td>
<td>.09</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PR_Flu</strong></td>
<td>-.09</td>
<td>.24**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SER_Flu</strong></td>
<td>.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CON = Consequences, SER = Seriousness, PR = Personal Responsibility, SB = Spiritual Beliefs**

Figure 7.6 Correlations among illness perception constructs

### 7.3.8 Perceptions of alternative treatment effectiveness

For CHD, a significantly higher percentage of respondents (66%) perceived alternative medicine to be ineffective in treating CHD ($\chi^2 = 30.72, df = 1, p < .001$). For the flu, a significantly higher percentage of respondents (62%) perceived alternative medicine to be effective in treating the illness ($\chi^2 = 17.28, df = 1, p < .001$). This response pattern suggests that confidence in alternative medicine for the more serious condition (CHD) was less than for the flu.

Analysis of the open-ended question on illnesses treatable using alternative medicine showed that the most frequently mentioned illnesses were ‘spiritual’ (15%), ‘sprains’ (10%) and ‘fever’ (10%). A further 10% of the participants stated that ‘all illness types’ were treatable using alternative medicine. In general, the above illnesses are relatively minor/resistant to conventional allopathic medicine.
Table 7.10 Perceived effectiveness of alternative treatment

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequencies (Percentages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Is alternative medicine effective for treating CHD?&quot;</td>
<td>No = 198 (66%), Yes = 102 (34%)</td>
</tr>
<tr>
<td>&quot;Is alternative medicine effective for treating the flu?&quot;</td>
<td>No = 114 (38%), Yes = 186 (62%)</td>
</tr>
</tbody>
</table>

7.3.8.1 Predicting beliefs in alternative treatment for CHD and flu from demographics and illness perceptions

A forward stepwise logistic regression was performed to predict perceptions of the effectiveness of complementary medicine in treating illnesses, separately for CHD and the flu. For CHD, socioeconomic status, Spiritual Beliefs and Seriousness significantly predicted perceived effectiveness of alternative medicine in treating the illness. Those with higher socioeconomic status were twice more likely to believe in the effectiveness of alternative medicine in treating CHD. People who endorsed strong spiritual beliefs were nearly twice more likely to believe the same. However, those who strongly believe that CHD to be a serious condition were 0.5 times less likely to perceive alternative treatment to be effective in treating CHD.

For the flu, Education, Spiritual Beliefs and Personal Responsibility significantly predicted perceived effectiveness of alternative treatment for the flu (B = -0.60, df = 1, p < .05; B = 0.31, df = 1, p < .05 and B = 0.61, df = 1, p < .05, respectively). The results revealed that those with lower education were 0.5 times more likely to perceive the effectiveness of complementary medicine in treating the flu. Those who endorsed stronger spiritual beliefs were 1.36 time more likely to perceive alternative medicine to be effective in treating the flu. In addition, those with a strong sense of personal responsibility were nearly two times more likely to believe in the effectiveness of alternative treatment (Table 7.11).
Table 7.11: Prediction of perceived effectiveness of alternative treatment with regards to CHD and the flu from demographics and illness perception constructs

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>df</th>
<th>p</th>
<th>Exp(B)</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Alternative Treatment for CHD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic Status</td>
<td>0.76</td>
<td>1</td>
<td>&lt;.05</td>
<td>2.14</td>
<td>1.16 - 3.95</td>
</tr>
<tr>
<td>Spiritual Beliefs</td>
<td>0.59</td>
<td>1</td>
<td>&lt;.001</td>
<td>1.81</td>
<td>1.30 - 2.53</td>
</tr>
<tr>
<td>Seriousness</td>
<td>-0.81</td>
<td>1</td>
<td>&lt;.01</td>
<td>0.45</td>
<td>0.26 - 0.78</td>
</tr>
<tr>
<td><strong>Alternative Treatment for the Flu</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-0.60</td>
<td>1</td>
<td>&lt;.05</td>
<td>0.55</td>
<td>0.33 - 0.90</td>
</tr>
<tr>
<td>Spiritual Beliefs</td>
<td>0.31</td>
<td>1</td>
<td>&lt;.05</td>
<td>1.36</td>
<td>1.02 - 1.83</td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>0.61</td>
<td>1</td>
<td>&lt;.01</td>
<td>1.84</td>
<td>1.11 - 3.05</td>
</tr>
</tbody>
</table>

7.3.9 Healthful behaviours

Participants reported high levels of healthy behaviours with 82% claiming that they ate a healthy diet ($\chi^2 = 125.45, \text{df} = 1, p < .001$), 70% that they exercised ($\chi^2 = 48.0, \text{df} = 1, p < .001$) and 87% that they were non-smokers ($\chi^2 = 161.3, \text{df} = 1, p < .001$).

Table 7.12: Percentages of respondents in different health-related lifestyles

<table>
<thead>
<tr>
<th>Variables</th>
<th>Frequencies (Percentages) and Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Do you try to eat a healthy diet?”</td>
<td>No = 53 (17.7%); Yes = 247 (82.3%)</td>
</tr>
<tr>
<td>“Do you exercise?”</td>
<td>No = 90 (30%); Yes = 210 (70%)</td>
</tr>
<tr>
<td>“Do you smoke?”</td>
<td>No = 260 (86.7%); Yes = 40 (13.3%)</td>
</tr>
</tbody>
</table>
7.3.9.1 Relationships among health behaviour variables

Significant relationships between diet and exercise \( (r = .17, \ p < .005) \) and diet and smoking \( (r = .13, \ p < .05) \) were obtained. There was no significant relationship between smoking and exercise \( (r = -.02, \ n.s.) \). These results indicate that people who reported eating healthily were also more likely to exercise regularly. They were also less likely to smoke. That is, people who eat a healthy diet are more likely to exercise and not smoke. Table 7.13a to Table 7.13b summarise the percentages of participants in each of the above category.

Table 7.13a Association between diet and exercise

<table>
<thead>
<tr>
<th>Diet</th>
<th>Exercise</th>
<th>Total</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>25 (8.3%)</td>
<td>28 (9.3%)</td>
<td>53 (17.7%)</td>
</tr>
<tr>
<td>Yes</td>
<td>65 (21.7%)</td>
<td>182 (60.7%)</td>
<td>247 (82.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>90 (30%)</td>
<td>210 (70%)</td>
<td>300 (100%)</td>
</tr>
</tbody>
</table>

Table 7.13b Association between diet and smoking

<table>
<thead>
<tr>
<th>Diet</th>
<th>Smoke</th>
<th>Total</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>12 (4.0%)</td>
<td>41 (13.7%)</td>
<td>53 (17.7%)</td>
</tr>
<tr>
<td>Yes</td>
<td>28 (9.3%)</td>
<td>219 (73.0%)</td>
<td>247 (82.3%)</td>
</tr>
<tr>
<td>Total</td>
<td>40 (13.3%)</td>
<td>260 (86.7%)</td>
<td>300 (100%)</td>
</tr>
</tbody>
</table>

Table 7.13c Association between exercise and smoking

<table>
<thead>
<tr>
<th>Exercise</th>
<th>Smoke</th>
<th>Total</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>11 (3.7%)</td>
<td>79 (26.3%)</td>
<td>90 (30.0%)</td>
</tr>
<tr>
<td>Yes</td>
<td>29 (9.7%)</td>
<td>181 (60.3%)</td>
<td>210 (70%)</td>
</tr>
<tr>
<td>Total</td>
<td>40 (13.3%)</td>
<td>260 (86.7%)</td>
<td>300 (100%)</td>
</tr>
</tbody>
</table>

7.3.9.2 Prediction of health behaviours

A forward stepwise logistic regression was performed to predict health behaviours (exercise, followed by diet and smoking) from demographics and illness perceptions, separately for CHD and the flu. For exercise, Personal Responsibility in relation to CHD was the only significant predictor ($B = .59$, df = 1, $p < .05$). People who have strong personal responsibility beliefs of CHD were nearly two times more likely to exercise than people with less perceptions of personal responsibility.

Similarly, only Personal Responsibility in relation to CHD significantly predicted eating a healthy diet ($B = .89$, df = 1, $p < .01$). People with strong beliefs in personal responsibility with regards to CHD were more than two times likely to report eating a healthy diet.

Spiritual Beliefs in relation to CHD, as well as gender were significant predictors of smoking ($B = -0.55$, df = 1, $p < .05$ and $B = -3.51$, df = 1, $p < .001$, respectively). People with strong spiritual beliefs with regards to CHD were 0.5 times less likely to smoke. Men were 0.03 times more likely to smoke than women in this sample.

For the flu, none of the variables entered significantly predicted exercise. Meanwhile, Personal Responsibility in relation to the flu significantly predicted eating a healthy diet ($B = 0.68$, df = 1, $p < .05$). People with strong personal responsibility beliefs with regards to the flu were two times more likely to eat healthily. Lastly, only gender significantly predicted smoking ($B = -3.53$, df = 1, $p < .001$), with men being 0.3 times more likely to smoke than women. Table 7.14 summarises the findings on the predictions of health-related lifestyles.
Table 7.14  Prediction of health-related lifestyles from demographics and illness perceptions constructs for CHD

<table>
<thead>
<tr>
<th>Lifestyle Variables</th>
<th>B</th>
<th>df</th>
<th>p</th>
<th>Exp (B)</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>0.59</td>
<td>1</td>
<td>&lt;.05</td>
<td>1.80</td>
<td>1.08 - 2.99</td>
</tr>
<tr>
<td><strong>Diet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>0.88</td>
<td>1</td>
<td>&lt;.005</td>
<td>2.41</td>
<td>1.31 - 4.41</td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-3.51</td>
<td>1</td>
<td>&lt;.001</td>
<td>.03</td>
<td>0.01 - 0.13</td>
</tr>
<tr>
<td>Spiritual Beliefs</td>
<td>-0.55</td>
<td>1</td>
<td>&lt;.05</td>
<td>0.57</td>
<td>0.38 - 0.89</td>
</tr>
</tbody>
</table>

Table 7.15  Prediction of health-related lifestyles from demographics and illness perceptions constructs for the flu

<table>
<thead>
<tr>
<th>Lifestyle Variables</th>
<th>B</th>
<th>df</th>
<th>p</th>
<th>Exp (B)</th>
<th>CI (95%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exercise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diet</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>0.68</td>
<td>1</td>
<td>&lt;.05</td>
<td>1.98</td>
<td>1.14 - 3.42</td>
</tr>
<tr>
<td><strong>Smoking</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-3.53</td>
<td>1</td>
<td>&lt;.001</td>
<td>.03</td>
<td>0.01 - 0.12</td>
</tr>
</tbody>
</table>

* no significant predictors were found for exercise

7.3.9.3 Healthful lifestyle index

Next, for each participant, an index of healthful lifestyle was constructed by scoring 1 for each healthy behaviour endorsed. Thus this index ranged from 0 - 3 (0 = ‘not healthful’ to 3 = ‘very healthful’). The mean for the sample was 2.39 (SD = .75), with 160 (53%) participants leading ‘very healthy’ lifestyles.
7.3.9.4 Relationships between healthful lifestyle index and illness perception constructs
Significant correlations were obtained between Healthful Lifestyles and Personal Responsibility in relation to CHD and Personal Responsibility in relation to the flu ($r = .18$, $p < .005$ and $r = .17$, $p < .005$, respectively). These relationships indicate that the stronger the perceptions of personal responsibility of CHD, as well as perceptions of personal responsibility of the flu, the healthier the reported lifestyles. No significant relationships were obtained between other illness perceptions constructs and healthy lifestyles.

7.3.9.5 Predicting healthful lifestyle from demographics and illness perceptions
Two separate stepwise multiple regressions were performed to predict healthful lifestyle from demographics and illness representations of CHD, and from demographics and illness representations of the flu. Gender and personal responsibility in relation to CHD significantly predicted healthful lifestyle, accounting for 7% of the variance. Stronger perceptions of personal responsibility in relation to CHD ($\beta = .19$, $p < .005$) and being women ($\beta = .19$, $p < .005$) predicted the likelihood of leading healthful lifestyles. For the flu, Gender and Personal Responsibility in relation to the flu significantly predicted healthful lifestyles ($\beta = .18$, $p < .005$ and $\beta = .16$, $p < .01$). Although significant, this result should be treated with caution given the low internal reliability of the Personal Responsibility construct (Table 7.16)

### Table 7.16 Prediction of healthful lifestyles from demographic and illness perceptions

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
<th>$R^2$</th>
<th>Adj $R^2$</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Healthful Lifestyles by CHD Beliefs</strong></td>
<td>.07</td>
<td>.06</td>
<td></td>
<td>10.95</td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>.19</td>
<td>3.40</td>
<td>&lt;.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>.19</td>
<td>3.39</td>
<td>&lt;.005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-.07</td>
<td>-1.13</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-.02</td>
<td>0.28</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>-.05</td>
<td>-0.82</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>-.07</td>
<td>-1.26</td>
<td>n.s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
239

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spiritual Beliefs</td>
<td>-.01</td>
<td>-.21</td>
<td>n.s.</td>
</tr>
<tr>
<td>Consequences</td>
<td>.04</td>
<td>.72</td>
<td>n.s.</td>
</tr>
<tr>
<td>Seriousness</td>
<td>.02</td>
<td>.44</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

Healthful Lifestyles by Flu Beliefs

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>.18</td>
<td>3.16</td>
<td>&lt;.005</td>
</tr>
<tr>
<td>Personal Responsibility</td>
<td>.15</td>
<td>2.78</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.57</td>
<td>-0.99</td>
<td>n.s.</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>-0.00</td>
<td>-0.66</td>
<td>n.s.</td>
</tr>
<tr>
<td>Education</td>
<td>-0.03</td>
<td>-0.59</td>
<td>n.s.</td>
</tr>
<tr>
<td>Socioeconomic status</td>
<td>-0.06</td>
<td>-1.01</td>
<td>n.s.</td>
</tr>
<tr>
<td>Spiritual Beliefs</td>
<td>0.01</td>
<td>0.09</td>
<td>n.s.</td>
</tr>
<tr>
<td>Consequences</td>
<td>-0.53</td>
<td>-0.92</td>
<td>n.s.</td>
</tr>
<tr>
<td>Seriousness</td>
<td>0.03</td>
<td>0.47</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

7.4 Discussion

This study examined the illness representations of CHD and the flu among Malaysians and related these perceptions to beliefs about the effectiveness of alternative medicine for these conditions and to self-reported healthful lifestyle. The findings indicated that Malaysians' representations of illness were somewhat different from dimensions of illness perceptions found in previous studies, and that these perceptions were predictive of other health beliefs and behaviours.

7.4.1 Constructs of illness perceptions among Malaysians

The modified IPQ (Weinman et al., 1996) used in this study contained items assessing the Western components of Cause, Timeline, Consequences and Control/Cure as well as several new items specific to CHD and the flu and designed for the Malaysian culture. Factor analysis did not produce factors comparable to the Western components for either CHD or the flu. Instead, based on a conceptual analysis, four variants on the Western components were formed that were applicable to both CHD and to the flu. Of these, three were conceptually similar to the Western concepts. Personal Responsibility is one aspect of
Cause and is also composed of items of the original Control/Cure construct. Consequences is similar to the Western version of Consequences, and Seriousness/treatability is composed of items from the Western components of Timeline and Control/Cure. The fourth construct, Spiritual Beliefs is unlike any of the Western components.

This combination of Western illness concepts and a culturally specific concept applied to both CHD and the flu reflects the complexity of Malaysian culture. The understanding of illness is shaped by cultural context (Bishop, 1998, Kleinman, 1993, Radley, 1993). Malaysia is a multicultural society where cultural and spiritual beliefs are an important aspect of life for many, and these religious and culturally specific behaviours are widely respected and practiced. At the same time, Malaysia, a former British colony, is going through modernisation; social changes are taking place rapidly. Modern lifestyles and behaviours are now widely embraced. These modern lifestyles, however, do not necessarily replace traditional values. Although distinct, both norms coexist in the Malaysian society and influence the ways people conceptualise their world, including their experience of health and illness.

In Malaysia, allopathic medicine is the predominant, government-supported medical system. At the same time, traditional or folk medicine is widely available and practiced. Malaysians are socialised to value both folk medicine and allopathic medicine (Chen, 1975), as the present findings regarding beliefs in the effectiveness of alternative medicine indicate. It is therefore consistent that Malaysians’ representations of illness should include both ‘modern’ concepts and ‘traditional concepts’. These findings for Malaysia are also consistent with those of neighbouring Singapore where illness dimensions have been found to include both Western and non-Western elements (Tan and Bishop, 1996).

Previous research in the West has produced conflicting findings about the universal nature of the components of illness representation. The early work indicated that there were five components that are applicable to all illness (e.g., Lau et al., 1989; Leventhal et al., 1984). However, more recently, differences in the nature and structure of illness constructs between diseases have been observed (e.g., Hampson, 1997; Heijmans and de Ridder,
An aim of this study was to evaluate the extent to which the model of Western illness perceptions is applicable in Malaysia. Using the IPQ, this study demonstrated that the emic illness components identified in the West did not map precisely onto the emic components identified here (Berry, 1969). However, the attempt to identify a culturally specific set of generic constructs equally applicable to two very different illnesses was only partially successful given the weakness of the Personal Responsibility construct when applied to the flu compared to CHD. A limitation of the study that could account for the failure to obtain the original factor structure of the IPQ is the exclusion of several of its original items, as well as the inclusion of new items into the modified version of the IPQ used. The exclusion of items may have resulted in the failure to produce an interpretable and more consistent structure of constructs, which in turn would yield more reliable illness perception constructs. An alternative approach would have been to identify the best fitting constructs for each illness independently, and would be appropriate when using a more open-ended assessment technique such as an interview rather than a structured method such as the IPQ.

7.4.2 Perceptions of alternative treatment

The significance of the emic component of Spiritual Beliefs was confirmed by its importance for predicting perceptions of the effectiveness of alternative medicine. This construct was a significant predictor of perceived effectiveness of alternative medicine in treating both CHD and the flu. This finding is comparable with that reported by Bishop (1998); spiritual causation of illness consistently comes up in the medical traditions of all main ethnic groups in Singapore. This implies that beliefs about the role of supernatural causes in the aetiology of and recovery from CHD and the flu may play an important role in influencing treatment-seeking behaviours among Malaysians. This finding is comparable to Quah and Bishop's (1996) study on help-seeking behaviours among Singaporeans. They showed that cultural orientation through illness cognition among Singaporeans played a significant role in the choice of traditional versus allopathic medical care; the greater the person's Chinese culture orientation, the more likely he or she is to seek help from a sinseh.
Perceptions of seriousness were found to have a significant influence on predicting perceived effectiveness of alternative treatment treating CHD, but not in treating the flu. Moreover, whereas most participants did not know whether alternative medicine was effective for CHD, most participants were confident that alternative medicine was effective for the flu. This pattern is consistent with research that shows treatment-seeking behaviour to be a function of the seriousness of an illness. For example, Tan and Bishop (1996) found that Singaporeans were more likely to seek a sinseh or home remedy for less serious diseases, but would be more likely to use allopathic medicine for more serious conditions such as a heart attack.

Education was also a significant predictor of perceived effectiveness of alternative medicine for both CHD and the flu, with higher education levels being associated with stronger beliefs in the efficacy of alternative medicine. Bishop (1998) also reported that Singaporeans of higher education background tended to have stronger perceptions of the effectiveness of alternative medicines than those with lower education background.

7.4.3 Health behaviours among Malaysians

The majority of Malaysians in this study reported leading a relatively healthy lifestyle: eating healthily, exercising regularly and not smoking. These findings contradict official reports on the patterns of lifestyles led by Malaysians. For example, the Malaysian Ministry of Health (1996) reported that 45% of Malaysians smoke cigarettes, 36% of whom smoke more than 20 cigarettes per day. The finding on cigarette smoking could largely be attributed to approximately half the sample being female. The incidence of smoking is much lower for women than men: the proportion of female smokers to male smokers in Malaysia is 1:10 (Ministry of Health, Malaysia, 1996).

The more positive health picture painted in this study may be attributable to a significant number of the participants being students. They may be more health conscious and have more time to be involved in various physical activities. However, the use of self-report and
the brevity of the measures may have led to inaccuracies. There may have been implicit demand effects to respond positively. Open-ended responses regarding 'exercise' revealed that many people viewed 'walking to campus' and 'doing household chores' as forms of exercise, hence explaining the significant difference in the number of people who exercised than those who did not. The lack of definition of 'exercise' and 'healthy diet' may have produced the differences between the present study and official statistics.

The finding that Personal Responsibility associated with CHD significantly predicted healthy lifestyles is consistent with the biomedical model of CHD. It suggests that Malaysians' perceptions of the effects of personal lifestyle factors such as smoking, exercising and eating a healthy diet on the aetiology of CHD are similar to those of Westerners, perhaps due to the influence of allopathic medicine.

A major limitation of the present study was the lack of ethnic and religious diversity of the sample. The sample had an over-representation of younger, better-educated Malay and Muslim participants. A majority of them came from urban areas, as opposed to rural areas. Moreover, these data are only cross-sectional and self-report and so do not necessarily reflect actual health practices.

Despite the limitations, this is the first study of illness representations in Malaysia and provides some valuable preliminary data on healthy Malaysians beliefs about CHD and flu. The findings should be useful in the design of health promotion, illness intervention and rehabilitation programmes, particularly for cardiac-related illness. Based on the findings of this study, health care authorities in Malaysia could develop health promotion programmes that move away from an exclusively biomedical model of health and illness. Although the findings suggest that Malaysians believe in the importance of a healthy lifestyle, more holistic and comprehensive education programmes that include both the biomedical model as well as cultural specific beliefs and values may prove to be more effective. For example, in addition to providing information about the physical benefits of leading healthy lifestyles, health promotion programmes could include messages that appeal to the emotional and spiritual aspects of eating healthily, exercising and not smoking. Moreover, secondary
prevention programmes such as cardiac rehabilitation programmes could incorporate spiritual and/or religious counselling to patients who show symptoms of anxiety and/or depression. Provision of information on the benefits as well as the hazards of specific alternative medicines in treating various illnesses may prove helpful to patients recovering in hospitals. The findings from this study endorse the recent proposal from the Malaysian Ministry of Health (1996) that alternative medical systems be incorporated into the formal health services to provide patients with the opportunity to complement the allopathic treatment.
CHAPTER 8

GENERAL DISCUSSION

Aim and Overview

The aim of this chapter is to discuss the principal findings of the studies, drawing together the implications across the series of studies on psychological aspects of recovery from CHD in Malaysia. The chapter is divided into three sections: (1) summary of principal findings, (2) implications of main findings and (3) conceptual and methodological issues.

8.1 Discussion of Principal Findings: Study by Study

The studies conducted in the course of this research project revealed several interesting findings that may be beneficial to researchers interested in further exploring cardiac psychology in Malaysia. Some of the findings obtained replicated those found in the West, whilst some did not. The findings highlight the potential difficulties involved in conducting psychological studies in collectivistic and medically pluralistic societies such as Malaysia.

8.1.1 Study 1: Derivation of measures

The aim of Study 1 was to derive measures to be included in the questionnaire for use on Malaysian patients. The original measures were developed in the West and have been validated in different samples; both patients and non-patients. No published information was available at the time of the empirical programme on whether attempts have been made to validate these measures on Malaysian samples.

A principal finding of Study 1 was that, in general, the measures used demonstrated validity and reliability to some extent. The constructs derived (with the exception of the MHLC) had moderate to good reliability, with Cronbach coefficients ranging from .64 to .81. The constructs were related to each other in the expected degree and directions. For example, self-efficacy and self-esteem were positively significantly related to each other. Interestingly,
active coping was positively associated with turning to God as a coping strategy. This relationship implied that Malaysians in this study may have perceived turning to God as a direct and active way of managing a stressful situation. Another interesting finding in this study was the lack of relationship between anxiety and depression. It was initially expected that these constructs would correlate highly. This suggested that anxiety and depression may be two distinct constructs when applied in the Malaysian context, supporting other findings reported in the literature (e.g. Moorey et al., 1991). However, it was noted that the findings with the HAD scale on this healthy sample, from which anxiety and depression constructs were derived, might not generalise when applied on hospitalised patients.

In general, the findings of this study provided preliminary support for the translated measures when used in the Malaysian setting. The newly derived constructs had moderate to good reliability and demonstrated some level of face validity by their pattern of inter-correlations. The applicability of these measures were further validated in Studies 2, 3 and 4.

8.1.2 Study 2: Psychological aspects of CHD among in-hospital patients - a cross-sectional analysis

The aim of Study 2 was to determine whether a model based on findings in the West on psychological adjustment to CHD would be applicable in Malaysia. The study looked at the relationships between self-referent beliefs, interpersonal constructs and emotional adjustment to CHD among patients immediately after their cardiac event. The study also assessed the relationships between self-referent beliefs, interpersonal constructs and behavioral intentions - namely, intention to attend CRP and intention to seek complementary medicine.

The findings of this study were mixed, with some supporting the hypothesised relationships presented in the model (see Figure 4.1) whilst others not. For example, supporting the proposed relationship hypothesised in Chapter 4 (p. 87), age was significantly correlated with exercise efficacy, with older patients reporting lower levels of exercise efficacy. There was also support for the hypothesised relationships between self-referent beliefs and interpersonal psychological constructs such as pessimism and locus of control variables. As suggested by
the model, self-referent beliefs acted as direct predictors of intention to attend CRP. However, self-referent beliefs were not significantly related with affective status.

One of the principal findings of this study was the low levels of negative affect reported by Malaysians immediately after their cardiac event. The lack of negative affect manifested by patients in Malaysia may be reflective of the Eastern culture in general, and the Malaysian culture, specifically. Expression of negative emotions is minimal and often repressed. The low levels of negative affect could also be attributed to the quality of care given by the doctors and nurses in the hospital. Patients may not feel highly anxious or depressed because support (tangible and emotional) from hospital staff is accessible.

Another principal finding of this study is the dualistic nature of coping strategies employed by Malaysians in this sample. Patients most often reported turning to God to cope with their illness; they also often employed active coping strategies to deal with stressful events.

Similar to findings in the West, self-referent beliefs (e.g. self-efficacy and exercise efficacy) significantly predicted intention to attend CRP. Patients who reported strong self-efficacy and exercise efficacy were more likely to express intention to attend CRP following discharge from hospital. Interestingly, only demographic variables (e.g. ethnicity and employment status) significantly predicted intentions to seek complementary medicine, with unemployed, retired Malays being more likely to report their intention to use complementary medicine to treat their illness. None of the psychological variables played an important role in predicting intention to use complementary medicine.

Another principal finding of this study was the relatively small number of significant associations in the prediction of affective status at the time of hospitalisation. Unlike those predicted, none of the self-referent beliefs and coping strategies significantly accounted for patients' affective status. One possible explanation that could account for the lack of significant relationships could be the cross-sectional design of the study. Several studies conducted in the West showed that longitudinal analyses may reveal a different pattern of relationships for the same variables (van-Elderen et. al., 1999). Another explanation could be
due to the lack of variance on negative affect. In light of this, Study 3 was conducted to assess longitudinal relationships between these predictor variables and psychological outcomes up to six months following discharge from hospital.

8.1.3 Study 3: Predictors of psychological outcomes of CHD among Malaysians

The aim of Study 3 was to assess longitudinal relationships between predictor variables and psychological outcomes such as negative affect, quality of life and functioning status six months post-hospitalisation. The study also assessed relationships between intentions assessed at the time of hospitalisation and actual behaviors.

The findings of this study were mixed; some relationships supported those suggested by the model developed for this study (Figure 5.1) whilst others did not. For example, supporting the hypothesised relationship (1) in Chapter 5 (p. 130), anxiety and depression were significantly associated with worse quality of life and functioning status. Support for the hypothesised relationships between self-referent beliefs and affective status was also obtained; patients with high self-ratings when assessed at the time of hospitalisation were less likely to report negative affect several months following discharge from hospital. However, none of the self-referent beliefs were significantly associated with quality of life and functioning status post-hospitalisation. The hypothesised relationship between coping strategies and psychological outcomes post-hospitalisation was partially supported. Whilst different coping strategies were significantly associated with quality of life and functioning status, they were not associated with affective status. Patients who used active coping strategies were more likely to report better quality of life and better functioning status whereas patients who sought emotional support from friends and relatives while in the hospital were more likely to report worse quality of life and functioning status. In other words, active coping was associated with better long-term outcomes whilst seeking support was associated with more maladaptive long-term outcomes.

Another important finding of this study was the failure of self-referent beliefs to predict attendance at CRP, although they were significantly associated with intentions to do so. Turning to God as a coping strategy was the sole significant predictor of attendance; patients
who turned to God to deal with their illness were less likely to attend CRP. An implication of this finding is that Malaysians, at least in this sample, deemed CRP unnecessary as they had God to turn to help them recover from their illness.

Lastly, it was interesting to note that the levels of negative affect reported by patients up to six months following discharge from hospital were similar to the levels reported while in the hospital. A possible explanation that could account for the lack of negative affect at this stage could be that patients may have adapted to their illness.

A major methodological limitation of this study was its lack of statistical power in predicting psychological outcomes. Because of the small sample size, potentially important effects of psychological characteristics such as self-referent beliefs and loci of control variables on psychological outcomes were probably missed. The inferences made from the multiple regression analyses are, thus, limited in generalisability and should be treated with caution.

8.1.4 Study 4: Psychological aspects of post-coronary patients
An original aim of this research project was to study recovery from CHD longitudinally. However, the attrition rate was such that the findings from the small sample size at follow-up could only be treated as suggestive rather than definitive. Given the major limitation of Study 3, Study 4 was conducted to assess psychological characteristics of patients at post-hospitalisation only. Among the aims of this study were to examine the cross-sectional relationships among variables proposed in the model (see Figure 6.1) and to compare the scores of the in-hospital cohort of the earlier study (Study 2) and the newly recruited patients at post-hospitalisation across all variables.

The hypothesised relationships proposed by the model developed for this study were supported to some extent. For example, the hypothesised relationship between demographic characteristics and health-related lifestyle variables was supported. Ethnicity was associated with changes in smoking behavior while socioeconomic status was significantly associated with changes in dietary behavior. There was also support for the proposed relationship between behavioral variables and psychological outcomes. For instance, active coping was
significantly correlated with depression, quality of life and functioning status. However, it was not significantly associated with anxiety. Similar patterns of relationships were obtained between health-related lifestyle variables and these psychological outcomes.

One of the principal findings of this study was the significant role different coping strategies played in predicting psychological outcomes. Similar to the findings obtained in the longitudinal study, active coping was significantly predictive of adaptive psychological outcomes post-hospitalisation. As expected, patients who reported utilising active coping strategies to manage their illness were less likely to be depressed, reported better quality of life and functioning status. On the other hand, seeking support was significantly related to maladaptive outcomes; patients who sought emotional support were more likely to report higher levels of anxiety post-hospitalisation.

The finding of this study also showed that the two cohorts of patients; in-hospital cohort and post-hospital cohort did not significantly differ in the reported levels of negative affect. Several reasons that could account for the lack of negative emotions found among Malaysian cardiac patients, either immediately following a cardiac event or at home, while convalescing. One reason for the in-hospital cohort to report low levels of negative emotions may be due to the quality of care given by the staffs in the hospital. Meanwhile, patients' adaptation to their illness could be a factor for the lack of negative affect for the post-hospital cohort.

Significant differences were obtained in two of the coping strategies employed between the two cohorts of patients. Post-hospital cohort more often gave up in coping with their illness and they also sought less support than the in-hospital cohort. Given the circumstances, it is expected that in-hospital patients would resort to significant others to help alleviate the distress associated with the trauma of having a heart condition. The availability of support network whilst in the hospital further enabled patients to seek support from others in dealing with their illness. However, it is acknowledged that the assessing two different samples at the two times of measurement was a methodological limitation. Any differences or similarities in the patients' psychological characteristics may have been due to systematic differences between the two cohorts.
8.1.5 Perceptions of illness among Malaysians

The lack of support for the relationships proposed by the model developed for the study of psychological aspects of recovery from CHD among Malaysians led to the development of Study 5. This study was conducted to explore other possible psychological factors that may play a more important role in predicting recovery from CHD. It assessed perceptions of two illnesses among Malaysians; CHD and the flu. Identification of Malaysians’ perceptions of illness may be useful in predicting illness outcomes. However, due to the constraints of time and accessibility, a study of patients’ perceptions was not feasible. Knowledge of healthy Malaysians’ perceptions of illness (i.e. people who might become patients themselves) may be helpful for understanding the psychological impact of future illness.

This study suggests that Malaysians’ perceptions of illness were comprised of a combination of Western, allopathic-based constructs and a culturally specific construct (i.e. spiritual beliefs). This finding supported those obtained by Bishop and colleagues (Bishop, 1998; Quah and Bishop, 1996; Tan and Bishop, 1996) on illness representations among Singaporeans. The combination of Western illness concepts and a culturally specific concept applied to both CHD and the flu reflects the collectivistic nature of Malaysian culture where allopathic and folk medicine are widely practiced and used.

Another significant finding of this study was the differential roles different illness perception constructs play in predicting different outcomes. Personal Responsibility construct significantly predicted healthy lifestyles whilst Spiritual Beliefs construct significantly predicted the use of complementary medicine. These findings suggest that illness perceptions among Malaysian play specific roles in predicting different illness outcomes and behaviors.

The findings of this study provide preliminary support for the importance of including illness representation constructs in the model predicting recovery from CHD among Malaysians (see Figure 5.1).
8.2 Implications of Main Findings

The second section will discuss the implications of the main findings of the research in general. The findings from this project will be discussed in terms of (1) the psychometric issues of using constructs developed in the West to assess psychological constructs in another culture, namely Malaysia, (2) the similarities and differences in the psychological model of recovery derived in the West and as applied to Malaysians, (3) the differences between results obtained in cross-sectional studies versus the longitudinal study, and finally, (4) the implications for developing cardiac rehabilitation in Malaysia.

8.2.1 Measurement issues

Firstly, analyses of the psychometric properties of constructs developed in the West revealed a generally consistent pattern of reliability when used on Malaysian samples, both patients and non-patients (Study 1). Results of bivariate analyses provided further support of the validity of these measures. These findings provide evidence of the utility of the translated measures, suggesting that some measures in the West may generalise well to non-Western contexts.

However, there were problems of internal consistency for several psychological constructs in some of the studies conducted. The lack of internal consistency of these constructs could be attributed to the relatively small number of items used to measure each construct. The internal reliability of a test measured by coefficient alpha is partially dependent on the number of items in the test; the more the items the greater the reliability (Hammond, 1995). It is thus not surprising that turning to God construct in Study 4 was not highly reliable because the construct was made up of only three items. Another possible reason could be due to its lack of variability.

However, the same reason may not applicable in accounting for the lack of internal consistency for the depression construct at Time 2 in Study 3. The depression construct consisted of five items and was shown to be highly reliable in other studies (Cronbach alpha
The lack of internal reliability for this construct at Time 2 may be a chance effect, due to the response patterns of this particular group of patients.

The findings also revealed that patients’ levels of negative affect were relatively low, both during hospitalisation and up to nine months post discharge from hospital. The lack of negative affect reported by patients may have been due to several reasons. One plausible explanation is the social desirability effect. Patients may have presented themselves in a positive light when responding to items assessing negative emotions. To counter problems associated with biases in responses, additional items could be included elsewhere in the questionnaire to test for consistency in reporting negative affect (Fife-Shaw, 1995; p. 185).

Finally, the assessment tool used to assess negative affect may have accounted for the low levels of negative affect reported. Although the HAD scale has been shown to be valid and reliable when used in different patient samples in Western societies, its utility in assessing anxiety and depression among Malaysians needs further validation. The correlations among the anxiety and depression constructs in these studies provide initial support for their validity when used in Malaysia.

8.2.2 Conceptual issues: Recovery from CHD in Malaysia versus the West - similarities and differences

One notable feature of these findings is that patients in these studies appeared to be emotionally well-adjusted to their illness, during hospitalisation, and at home, six to nine months following discharge from hospital. Levels of anxiety and depression were relatively lower than those reported on patients in the West (e.g. Crowe, 1996; Trelawny-Ross and Russell, 1987). As mentioned previously, the low levels of negative affect reported by Malaysian in-patients and out-patients could be due to a social desirability effect. Expression of negative affect is not a norm in many collectivistic, far Eastern societies (Chiou et. al., 1997). Negative emotions are often repressed and/or denied, more so during interviews. Alternatively, patients’ seeming lack of negative affect assessed at hospital may be due to the care and support provided by staff in the wards which may have helped alleviate the distress.
associated with a diagnosis of heart disease. The lack of negative affect at six and nine months post CHD suggests that patients may have actually adapted to their illness.

Turning to God assessed at the hospital played a significant role in predicting non-attendance at CRP following discharge from hospital. Patients who turned to God most often in coping with their illness were less likely to attend CRP. However, this coping strategy was not predictive of any other outcomes, both in concurrent and predictive analyses. It is interesting to note that although turning to God was not predictive of outcomes assessed at the hospital, attribution of recovery to God was. These findings illustrate the importance of assessing religious and/or spirituality-related constructs in determining Malaysian patients’ immediate reaction to their illness, which may subsequently influence their long-term behavioral and psychological outcomes. Comparable findings have not been found in the West.

It is interesting to note that seeking emotional support from family and friends was also prevalent among Malaysians. Like active coping, seeking support turned out to be a significant predictor of psychological outcomes after the period of hospitalisation, though it played a marginal role at the hospital assessment. However, these two coping styles differ in their nature of relationships with psychological outcomes. Whilst active coping was associated with healthy psychological outcomes, seeking emotional support was associated with maladaptive psychological outcomes. This is not what would be expected from findings in the West, where typically using social support is associated with better outcomes.

The prevalence in the use of active coping, turning to God and seeking support highlight the dualistic nature of collectivistic societies such as Malaysia, in contrast to the West. On the one hand, the individual possesses some level of control over his/her own illness-related behaviors and illness outcomes. On the other hand, there exists a sense of interdependence with God and others in the ways people attribute recovery from and coping with their illness. For instance, these studies found that patients mostly attributed their recovery to God and doctors and the least to themselves. This indicates that at times, stronger priority is given to in-group processes rather than personal control and goals. This is supported by the finding that turning to God was the sole predictor of actual attendance at CRP. These patients may have perceived
that the spiritual and emotional support sought from family and God to be sufficient in assisting their recovery, hence perceiving attendance at CRP unnecessary. These findings highlight the importance of studying culturally specific aspects of health and illness behaviors in medically pluralistic, collectivistic societies. In addition to individual constructs, studies conducted in Malaysia, particularly, need to take into account other ‘environmental’ and ‘social’ factors. Together, the individualistic and collectivistic-type constructs may better predict psychological and behavioral outcomes from CHD.

Models developed in the West, upon which the models of these studies were based, assume individuals to be rational decision-makers. Individuals are assumed to be able to systematically prepare and volitionally act upon a certain course of action. The actions taken are most probably those that result in the highest subjective expected utility and maximum benefits (Conner and Norman, 1998).

However, as the findings of these studies revealed, this notion may not be entirely true when applied in collectivistic, non-Western societies. The processes by which decisions are made differ from those mainly adopted in the West. Interdependence with others in the group play a significant role in influencing the choice and adoption of behaviors. Obtaining maximum personal benefits and highest subjective utility is not perceived to be the strongest priority. In-group processes may override subjective interests and goals. Faith in God and affiliation with a religion play a significant role in influencing the adoption or non-adoption of a particular behaviour.

Finally, the findings of the last study (Study 5) revealed the importance of including constructs such as perceptions of illness and cultural-specific beliefs in studying recovery from CHD among Malaysians. For example, the study found that beliefs about the role of supernatural causes in the aetiology of and recovery from CHD played an important role in influencing treatment-seeking behaviours among Malaysians; the stronger the person’s belief in supernatural causes of illness, the more confident he or she is in the effectiveness of complementary treatment in treating CHD. These findings suggest the need to include psychological constructs such as patients’ perceptions of the causes, severity and treatability
of CHD in future research in predicting treatment-seeking behaviours and psychological adjustment among Malaysian patients.

8.2.3 Differences between cross-sectional and longitudinal analyses

Another interesting feature of the findings is the different patterns of associations between self-referent beliefs and outcomes that emerged in the concurrent and predictive analyses. Generally, strong associations for self-referent beliefs and outcomes were obtained in concurrent analyses but not in predictive analyses. Self-efficacy, for instance, significantly predicted negative affect assessed at the hospital. Self-efficacy was also predictive of behavioral intentions (i.e. intention to attend CRP) assessed at the hospital. Intention to attend, in turn, was significantly associated with actual attendance. However, self-efficacy no longer predicted negative affect six months after initial assessment. It was also not predictive of behavioral intentions nor actual attendance at CRP in prospective analyses. These findings suggest that measures of self-efficacy were useful predictors of short-term adjustment, but not necessarily so in the long-run. These findings also suggest that self-efficacy may have changed considerably over the post-hospitalization period. The experience of living with CHD during the recovery period may not correspond to patients' expectations of their abilities to carry out the tasks associated with having a CHD.

The studies also found that behavioral intention was significantly related to actual attendance at CRP six months after in-hospital assessment, although it failed to predict actual attendance in regression analyses, supporting the lack of relationships between intentions and actual behaviors in the West (e.g. Abraham et. al., 1998). The failure to translate intentions into actual behaviors may be due to the way intentions were assessed. It has been pointed out earlier of the need to differentiate between goal intentions and implementation intentions, the latter being more likely to be predictive of actual behavior (Gollwitzer, 1991; Sheeran and Orbell, 1998).

Another notable finding is that turning to God and active coping were the most frequently used coping strategies among Malaysian cardiac patients and appear to be stable across time. This finding is consistent with the notion of coping being a multifaceted approach to the
different difficulties associated with illness (Folkman, 1984). It also suggests that Malaysian patients appear to adopt both direct behavioral measures and indirect ones in dealing with their illness. The prevalence of both turning to God and active coping as forms of dealing with illness reflects the collectivistic nature of Malaysian society, a society that is going through rapid modernisation and social changes. At the same time, ‘traditional’ values such as religious rituals and practices continue to play a large and important role in Malaysians’ everyday life.

Analyses further revealed that turning to God and active coping have differential functions in predicting outcomes of CHD among Malaysian cardiac samples. Whilst active coping seems to be predictive of psychological outcomes such as depression and quality of life, turning to God was predictive of behavioral outcome, namely attendance at CRP. This pattern of finding contradicts the conceptual Western notion that active coping is directed towards situations which are modifiable whereas turning to God is more relevant in circumstances which are not modifiable.

Time of assessment also seems to be an important factor in determining whether these coping styles play a significant role in predicting outcomes. Active coping was predictive of psychological outcomes in both post-hospital assessments, at six months and at nine months after discharge from hospital. However, active coping did not play any role in predicting outcomes assessed at hospital following diagnosis of CHD. A possible explanation for this findings is that active coping was not possible and/or relevant in hospital. This pattern of findings suggests that active coping may not be functional in predicting short-term outcomes but appears to play a more significant role in influencing long-term outcomes.

8.2.4 Implications for developing cardiac rehabilitation in Malaysia

The findings of this research have important implications for the development of in-patient as well as out-patient cardiac rehabilitation that caters specifically for Malaysian patients. To date, cardiac rehabilitation programmes offered in Malaysia are replicas of the ones developed in the West. These programmes focus mainly on education pertaining to changes in dietary behaviours and uptake of physical activities. To date, CRPs in Malaysia do not
provide systematic programmes that include emotional and spiritual input to patients in helping them cope with their illness. As revealed in this research, patients who turned to God to cope with their illness were less likely to attend CRPs. These patients might have deemed cardiac rehabilitation unnecessary, therefore, declining to attend the recommended programme.

As recommended in the West, psychological assessment should form a part of the routine assessment of all patients who are suitable for in-hospital and post-hospital rehabilitation in Malaysia, and any psychological intervention should be based on this assessment. Factors such as patients’ self-referent beliefs, perceptions of illness, coping styles and emotional status should be assessed at the period of hospitalisation to identify patients who need immediate psychological intervention. These psychological assessments would also help the CRP team to identify patients who would most likely benefit from post-hospital rehabilitation.

In short, CRP in Malaysia should 1) conduct psychological screening procedures before patient discharge from hospital to verify those who would potentially benefit most from the type of offered, 2) develop programmes that cater for the specific needs of individual patients and 3) offer programmes that take into account specific cultural factors such as spiritual beliefs to help patients cope better with their illness.

### 8.3 Conceptual and Methodological Issues

This section will address several conceptual and methodological issues that arose in the process of completing this research project. It will review the decisions and choices that were made at different stages of the empirical research. In doing so, the section will attempt to consider the success of the choices made and whether, upon completion of the research project, alternative decisions might be made in the preparation of future work.

#### 8.3.1 Development of model

The first conceptual issue relates to the main model proposed in this thesis (see Figure 2.1). Among the issues that will be discussed include the rationale for developing a new model for
the study of recovery from CHD among Malaysians, rather than testing a specific model that has been widely used and validated in the West. The discussion will include the criteria involved in the selection and inclusion of variables as presented in the model. The section will also present suggestions for future work using the model developed for this research.

The rationale for developing a new model for this research project was to explore potential relationships among a combination of social cognitive variables such as self-referent beliefs and self-regulatory variables such as coping strategies. Together, these variables were thought to best predict recovery from CHD among Malaysian patients. The model presented in Figure 2.1 was developed based on selected findings reported in the literature. In short, the model was created as a likely set of variables and paths that would predict recovery from CHD among Malaysian patients.

The selection of variables included in the model was based on several criteria. A set of research hypotheses were first set forth (see Section 2.4), based on the review of literature conducted (see Chapter 2) and a set of outcome variables were selected. Since this research project was the first of its kind in Malaysia, the outcome variables chosen (e.g., affective status, quality of life, functioning status, attendance at CRP and the use of complementary medicine) were deemed important in exploring the nature of recovery from CHD among Malaysian patients.

Next, a set of psychological variables were selected as predictor variables. Similarly, based on the literature review conducted, the predictor variables selected and included in the model were deemed as better predictors of the outcome variables presented in the model. Moreover, the predictor variables selected such as self-referent beliefs were deemed more relevant than other social cognitive variables such as social pressure when used on in-hospital patients. Additionally, the predictor variables included in the model were also deemed culturally relevant (e.g., locus of control to God, turning to God as a coping strategy).

The model also included behavioral intention as a predictor variable. The inclusion of this variable in the model was due to the feasibility of assessing behavioral outcomes such as
attendance at CRP and the use of complementary medicine. However, a notable methodological limitation is the way intention was assessed. It was measured as a single dichotomous variable. Ideally, at least two items with a Likert response scale would have been used. At the time when measures were developed for this study, the prediction of intention was not a primary focus. Additionally, standardised measures of goal and implementation intentions were not available at the time the studies were conducted.

The findings of the studies conducted on Malaysian cardiac patients supported the hypothesised relationships among variables presented in the model to some extent, providing some support for the utility of the model created. However, not all of the relationships among variables as hypothesised in the model were found. Self-referent beliefs, for example, played a negligible role in predicting long term outcomes. The failure to obtain several expected relationships in these studies led to Study 5 which looked at perceptions of illness among Malaysians. A rationale for conducting Study 5 was to identify Malaysians' perceptions of illness that may be useful in explaining the factors involved in predicting outcomes from CHD.

The findings of Study 5 suggested the importance of looking at perceptions of illness in assessing illness outcomes. Thus, the model of recovery from CHD developed for this research could be modified to include illness perception constructs in the preparation for future work. The addition of illness perception constructs may be helpful in predicting self-regulatory processes such as coping strategies which in turn, may help predict illness outcomes.

Future work could also include other behavioural outcome variables not assessed in this study but are equally important in influencing the process of recovery from CHD. These outcome variables include smoking cessation, exercise uptake and dietary changes. Hence, the model developed for this research could be modified to include social cognitive variables such as attitudes and normative pressures that have been found to be associated with these behavioral outcomes. These social cognitive variables may be especially helpful in explaining health-related behavioral patterns in a collectivistic society such as Malaysia.
8.3.2 Methodological issues

A methodological limitation of the research project relates to the method of establishing the psychometric properties of measures used on patients; the psychometric properties of the measures were restandardised in each study. To best of the knowledge of the investigator, none of the measures have been used and validated in Malaysia. Hence, the main reason for conducting restandardisation of the measures' psychometric properties in each study was to establish the face validity and internal reliability of these measures to an acceptable extent when used on different Malaysian samples. It was also important to establish the face validity and reliability of these measures at different times of assessment. For example, although the measures demonstrated an acceptable level of validity and reliability in Study 1, there was some concern that this may not hold true in patient samples, hence the re-working of the psychometric properties of the measures on in-hospital patients. The validity and reliability of these measures then needed to be confirmed with patients convalescing after discharge from hospital. Whilst it is acknowledged that this method was time-consuming, it was the most feasible way of establishing, to some extent, the psychometric properties of the measures during the course of the empirical programme. An alternative method of establishing the validity and reliability of these measures in the future would be to conduct fewer studies but each with more participants.

Additionally, although the measures used provided evidence of some degree of face validity and internal reliability when used on these samples of Malaysians, they need to be further validated on other cardiac and chronically ill patients. Better methods of translation could be adopted (i.e. via qualified and trained translators).

Another methodological limitation of this research is its relatively small sizes of patient samples, particularly the sample size of patients in the longitudinal study (n = 26). This is particularly problematic given the number of variables assessed. Such high attrition rate was not expected. Several reasons could have led to the high attrition rate. One possible reason that could account for such high attrition rate was accessibility -postal systems in some rural areas in Malaysia may not be as efficient as the ones in urban areas. Patients who live in these
rural areas may have had difficulties in receiving and/or posting their questionnaires. A second problem may be due to patient illiteracy. Apathy could also have contributed to the high attrition rate. If the study had not lost the patients at follow-up, then study would have had a reasonable statistical power. The small sample size necessitated in the use of less powerful statistical tools. Interpretation of findings are treated as tentative and should be used only as pilot data for future research. Generalisation of findings is therefore, limited.

Ideally, the way to test the model presented in this study (Figure 2.1) is to use structural equation modelling (SEM). SEM, which serves purposes similar to multiple regression, is more powerful in that it takes into account the modeling of interactions, nonlinearities, correlated independents, multiple latent independents and latent dependents, among others. It includes more flexible assumptions and allows the testing of models overall rather than coefficients independently. However, due to the small sample size of the studies on patients, the use of such a statistical tool would not be acceptable.

Several steps could be taken to increase the sample size of the empirical studies conducted on patients. One way is to ensure higher participation rate at the time of hospitalisation. Hospitalised patients could be approached immediately before the time of discharge from hospital instead of being assessed three days after initial diagnosis. One way is to ensure lower attrition rate after discharge from hospital. Home interviews or telephone calls could be conducted at follow-up. The researcher could conduct interviews via telephone where and when possible. The researcher could also pay home visits to patients and conduct face-to-face interviews. However, these alternatives tend to be more costly and time consuming.

Another notable methodological limitation of this research is the failure to assess the demographics of patients who declined to participate. Similarly, the research was also not able to analyse the psychological outcomes of the attrition group. Patients who declined to participate in the hospital assessments and/or those who dropped out from the longitudinal study may systematically differ in their demographic and psychological characteristics from those who participated. The former may be more depressed and anxious, hence the inability to participate. The findings, therefore, may only represent those patients with better physical and
psychological health. Additionally, the research did not include patients’ comprehensive medical, physical and co-morbidity data. Cardiological data such as results of angiography and ECG may have helped predict attendance at CRP, for instance, whilst data on co-morbidity may have helped predict the use of complementary medicine.

The research also relied predominantly on self-reported data. As mentioned previously, a social desirability and/or demand expectations effect could have occurred, resulting in the possible exaggeration and/or masking of findings. In addition to self-report data, observer ratings of adjustment could be conducted as well. For example, a clinician could rate patients’ functional status pre and post-discharge from hospital.

The findings of this research were mostly cross sectional; hence directions and inferences of causality are questionable. Future research could adopt a longitudinal study that assesses psychological outcomes at different time points. As many studies have shown, different patterns of relationships emerge in cross-sectional vs. longitudinal analyses (e.g. van-Elderen, 1999).

Future work could employ prospective studies in assessing psychological and behavioural outcomes for patients attending rehabilitation programmes. Patients could be assessed at the beginning of the programme and after completion of the programme. Follow-up assessments at three or six months would provide useful information on the effectiveness of the programme on patients’ psychosocial and behavioural functioning. Assessment tools, both generic and disease-specific should be selected carefully; they need to demonstrate high internal and test-retest consistency as well as contextual validity, specific to the outcomes being assessed.

Similar prospective studies assessing outcomes for patients using complementary medicine could also be conducted. Patients could be assessed at the beginning of their treatment regime and after completion of their treatment programme. In addition, rather than depending solely on subjective, self-report measures, more objective outcomes such as increased survival time should be incorporated in assessing the effects of complementary medicine on patients’
physical and psychological adjustment. Future studies should incorporate other psychological outcomes not assessed in this study that may be better associated with the use of complementary medicine (e.g. physical health status).

Lastly, the comparisons made in this study with findings in the West were implicit. Any claims of differences in patterns of psychological characteristics and responses between Malaysians and Westerners would, thus, be premature. Ideally, future work in this field could compare psychological characteristics of Western and Malaysian cardiac patients.

Despite these limitations, this research has its strengths. One notable strength is that this is the first known research of its kind in Malaysia. No other studies looking at psychological aspects of recovery from CHD, adopting both cross-sectional and longitudinal designs have been conducted in Malaysia. The findings of these studies could be used as guidelines by cardiac care authorities providing better psychological care and facilities that cater to the specific needs of their patients.

This study also tested the possible direct relationships between self-referent beliefs, coping styles and attendance at CRP, by-passing intentions. Although most data obtained were self-report, actual attendance at CRP was objective. Verification of attendance at CRP was obtained from CRP nurses.

8.4 Conclusion

The findings of this research project highlight the importance of studying health and illness-related behaviors within the socio-cultural contexts in which the illness occurs. The mixed findings provide evidence on the intricacies of conducting studies in non-Western, collectivistic societies. Although models developed in the West may be applicable in these non-Western, collectivistic societies, the constructs assessed may not be sufficient in accounting for the variance in explaining psychological and behavioral outcomes of illness. Thus, in addition to the constructs found to be predictive of these outcomes on Western patients, psychological studies done in
Malaysia should also assess mental representations of illness that are specific to
Malaysians. Future studies should also take into account cultural-specific factors such
as religiosity and spirituality, and quality of support received in the attempt to predict
psychological and functional outcomes of having a heart disease.
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APPENDIX 1

Illustration of a Normal Resting ECG Complex
P wave: 0.06–0.10 sec
PR interval: 0.12–0.20 sec
QRS complex: 0.08–0.12 sec
QT interval: 0.35–0.45 sec
APPENDIX 2

Study 1 Questionnaire
PANDANGAN TERHADAP KESIHATAN DAN PENYAKIT
PERCEPTIONS OF HEALTH AND ILLNESS

ARAHAN UNTUK BORANG KAJI SELIDIK
QUESTIONNAIRE INSTRUCTIONS

Tujuan kajian ini adalah untuk memahami pandangan dan perasaan anda terhadap isu keshatan dan masalah penyakit.

The purpose of this study is to look at how you think and feel about your health and illness.


The following is a series of questionnaire for you to complete. The questionnaire consists of six parts. Each part of the questionnaire has its own instructions. Please respond according to the instructions given. You may complete this questionnaire at your own time. Once you have completed the questionnaire, please return it to the researcher.

Kami memberi jaminan bahawa pandangan anda akan dirahsiakan.

We ensure you that your responses will be kept strictly confidential.

Terima kasih atas bantuan dan penyertaan anda.

Thank you for your co-operation.
INSTRUCTIONS: We would like to know your general feelings about yourself. Based on the scale given below, please indicate the extent to which you agree or disagree with each of the following statements in describing your views of yourself. Write your responses in the box provided.

“1” strongly disagree
“2” disagree
“3” uncertain
“4” agree
“5” strongly agree

1. When learning something new, I give up if I am not initially successful. [ ]
2. I feel that I am able to get involved in physical activities. [ ]
3. Failure just makes me try harder. [ ]
4. I give up easily. [ ]
5. I feel that I can change my diet and eat healthy food. [ ]
6. If something looks complicated, I will not even bother to try it. [ ]
7. I do not seem capable of dealing with most problems that come up in life. [ ]
8. I think that it would be difficult for me to change my eating habits. [ ]
9. I feel insecure about my ability to do things. [ ]
10. I feel as if I can exercise regularly. [ ]
11. If I can’t do a job the first time, I keep trying until I can. [ ]
12. I avoid trying to learn something new when they look too difficult for me. [ ]
13. I feel that I have a number of good qualities. [ ]
14. I feel that I am a person of worth, at least equal with others. [ ]
15. I am able to do things as well as others. [ ]
16. I certainly feel useless at times. [ ]
17. I feel I do not have much to be proud of. [ ]
18. I take a positive attitude towards myself. [ ]
19. All in all, I am inclined to feel that I am a failure. [ ]
20. On the whole, I am satisfied with myself. [ ]
INSTRUCTIONS: Below are statements other people have made about their recovery from their illness. Based on the same scale as given above, please indicate the extent to which you agree or disagree with each statement in describing your views on the recovery process.

1. How I manage in the future depends on me, not on what other people (e.g. doctors and nurses) can do for me.

2. It’s up to the doctors and nurses to make sure I recover from my illness.

3. It’s what I do to help myself that’s really going to make all the difference.

4. It is God’s will that determines whether I fully recover from my illness or not.

5. My own efforts are very important because my recovery really depends on me.

6. Following doctor’s orders will make me get better.

7. It’s up to me to make sure I make the best recovery possible under the circumstances.

8. My recovery depends on God’s will.

9. It doesn’t matter how much help I get from others, in the end it’s my own efforts that count.

10. I have little or no control over my progress from now on; it’s all up to the doctors.

11. Getting better now is a matter of my own determination rather than anything else.

12. God will protect my health.

INSTRUCTIONS: Below are statements other people have made about their recovery from their illness. Based on the same scale as given above, please indicate the extent to which you agree or disagree with each statement in describing your views on health, illness and recovery.

1. If I get sick, it is my own behaviour which determines how soon I get well again.

2. Often I feel that no matter what I do, if I am going to get sick, I will get sick.

3. If I see an excellent doctor regularly, I am less likely to have health problems.

4. It seems that my health is greatly influenced by accidental happenings.

5. I can only maintain my health by consulting health professionals.

6. I am directly responsible for my health.
7. Other people play a big part in whether I stay healthy or become sick.
8. I prefer to seek traditional medication.
9. Whatever goes wrong with my health is my own fault.
10. When I am sick, I just have to let nature run its course.
11. Health professionals keep me healthy.
12. My physical well-being depends on how well I take care of myself.
13. When I feel ill, I know it is because I have not been taking care of myself.
14. The type of care I receive from others is what is responsible for how well I recover.
15. Traditional medication is more effective in treating my health problems.
16. Even when I take care of myself, it’s easy to get sick.
17. When I become ill, it’s a matter of fate.
18. I can stay healthy by taking good care of myself.
19. When I stay healthy, I am just plain lucky.

INSTRUCTIONS: Below are statements on how people view their future. Based on the same scale above, please indicate the extent to which you agree or disagree with each statement in describing your feelings and views of your life in the next year or so.

1. I have great faith in the future.
2. I can look forward to more good times than bad times.
3. My future seems dark to me.
4. I look forward to my future with hope.
5. There’s no use in really getting what I want because I probably will not get it.
6. When I look ahead in the future, I expect I will be happier than now.
7. I don’t expect to get what I want.
8. All I can see ahead of me is unpleasantness rather than pleasantness.
9. In the future, I expect to succeed in what concerns me most.
INSTRUCTIONS: The following statements may describe how you have been feeling since your first day in the hospital. Based on the scale given above, please indicate the extent to which you experience these feelings.

1. I feel tense and uneasy.
2. I feel frightened, as if something awful is about to happen.
3. I still enjoy the things that have always made me happy.
4. Worrying thoughts go through my mind.
5. I get a sort of frightened feeling like butterflies in the stomach.
6. I am at ease and feel relaxed.
7. I feel restless as if I have to be on the move.
8. I get sudden feelings of panic.
9. I feel cheerful.
10. I feel as if I have slowed down.
11. I can laugh and see the funny side of things.
12. I look forward with enjoyment to things.
13. I have lost interest in my appearance.
14. I can enjoy little things like chatting with my family or reading.

INSTRUCTIONS: There are many ways of dealing with difficulties in life. We are interested in how you respond to the stressful events in your life. Based on the scale above, please indicate the extent to which each of the following statements describes your actions when you confront such problems.

1. I think about how I might best handle the problem.
2. I feel a lot of emotional distress and find myself expressing those feelings a lot.
3. I give up the attempt to get what I want.  
4. I find comfort in my religion.  
5. I say to myself “this isn’t real.”  
6. I concentrate my efforts in doing something about it.  
7. I admit to myself that I can’t deal with the problem and quit trying.  
8. I try to get emotional support from my family and friends.  
9. I get used to the idea that it has happened.  
10. I make a plan of action.  
11. I seek God’s help.  
12. I refuse to believe that it has happened.  
13. I just give up trying to reach my goal.  
14. I accept that it has happened and that it can’t be changed.  
15. I talk to someone about how I feel.  
16. I do what has to be done, one thing at a time.  
17. I put my trust in God.  
18. I pretend that it hasn’t really happened.  
19. I ask people with similar experiences what they did.  
20. I think hard about what steps to take.  
21. I reduce the amount of effort I’m putting into solving the problem.  
22. I pray more than usual.  
23. I act as though it hasn’t happened.  
24. I take a direct action to solve the problem.
YOUR BACKGROUND INFORMATION:

Age: ____________ years old

Gender: Male   Female
Ethnicity: Malay   Chinese
           Indian   Others
Religion: Islam   Christian
           Hindu   Buddha
           Others   None

Are you: Married   Widowed
         Divorced   Single

Are you currently employed? YES   NO

If YES, please indicate your current occupation:

________________________________________________________________________

If NO, please indicate your last occupation:

________________________________________________________________________
APPENDIX 3

Ethical Approval:

Letters to and from Ministry of Health, Malaysia and National Heart Institute
Yours sincerely,

Miss Haryati Abdul-Majid

Department of Psychology
University of Surrey
Guildford
Surrey GU2 7XH
United Kingdom.

Tel: 00 44 (0) 1483 300 800 ext. 3346
Dear Dato',

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Please kindly refer to the aforementioned matter.

I, Hariyati Shahrima Abdu' Majid, a PhD student in Applied Health Psychology at the Department of Psychology, University of Surrey, U.K., would like to seek ethical approval for academic research at government hospitals in Malaysia. For your information, the objectives of the proposed research include the following:

i. identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life among patients recovering from CHD in Malaysia.

ii. providing information which will be useful to the primary care teams in identifying groups of cardiac patients at particular risk of further cardiac-related heart complications.

iii. providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes in the respective government hospitals.

I would greatly appreciate it if my application for access to the government hospitals be granted. I will strictly adhere to the medical ethical procedures involved in conducting the proposed research interviews.

Please inform me of any steps that should be taken to ensure that the research would be carried out according to bureaucratic procedures. I will provide you with details of the proposed research should you request them. Please do not hesitate to contact me at the following address for any further enquiries.

Thank you for your attention and cooperation.

University Telephone No: (+44) 01483 300800
Our Ref. : Bil(4\^) dlm. KKM(SMD) 9/6 Jld. V  
Date : 6 December 1996

Dean 
Department of Psychology  
University of Survey  
Guildford  
Surrey GU2 5XH  
ENGLAND  
(Attn : Miss Haryati Shahrima Abdul Majid)

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Your letter dated 1 November and 9 December 1996 on the above matter is kindly referred.

2. Our Unit is not involved in health surveys and research and is therefore unable to help you in your endeavour.

3. However, you may try contacting the following two departments in the Ministry which may be of assistance:

i) Pengarah
Institut Kesihatan Umum
Jalan Bangsar
59200 Kuala Lumpur
Tel : 03-2821333
Faks : 03-2823114

ii) Timbalan Ketua Pengarah Kesihatan
(Kesihatan Awam)
Kementerian Kesihatan Malaysia
Blok E, Aras 2,
Kompleks Pejabat Bukit Damansara
50490 Jalan Dungun
Kuala Lumpur
Tel : 03-2540088
Faks : 03-2539345

Thank you.

( DR. HADITHAH BT. HUSIN )  
for Principal Assistant Director  
Information and Documentation System Unit  
Ministry of Health Malaysia

"Silia catatkan rujukan surat ini apabila memerlukan"
Ms Haryati,

Research on Psychological Aspects of Recovery From CHD in Malaysia.

Thank you for your faxed letter regarding the above.

The Institut Kesehatan Umum is a centre for training in research methodology especially Health System Research, and we also conduct HSR projects ourselves.

Since your study is involving government hospital patients, you will need to obtain approval of the Division of Medical Services in the Ministry of Health. You may therefore write to:

Dr. Abdul Gani bin Mohamed Din
Pengarah Amalan Perubatan
Kementerian Kesehatan Malaysia
Jalan Condorsari
50590 Kuala Lumpur.

(Fax No.: 60-3-2934933)

Thank you.

Yours sincerely,

(DR. NAKIMAH AWIN)  
Director 
Public Health Institute 
Ministry of Health, Malaysia.

cc: Dr Abdul Gani bin Mohamed Din
Pengarah Amalan Perubatan
Kementerian Kesehatan Malaysia.

(I am sending you a copy of the fax from the above applicant).

N/A
Dear Sir,

Ref: Research on Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

In response to your letter dated 24 December 1996 we would appreciate if you could send as more information on your research methodology and the expected outcome of the study.

2. Kindly, indicate too, the hospitals which you intend to visit. If all goes well, if we will only be able to provide you with access to government hospitals under the Ministry of Health. As for University hospitals and private hospitals you will have to request separately through their respective organisations.

Yours sincerely,

(DR. M. A. KADAR BIN MARIKAR)
Principal Assistant Director
Medical Division
for Director of Medical Services
Ministry of Health Malaysia.
Dear Miss Hariyati,

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

Your letter was passed on to me and the proposed study was discussed at the last monthly meeting of the University Hospital Ethics Committee.

I am happy to say that we have no objections to the study being done but would value a preview of the actual questionnaires to be used as well as a patient information sheet to be given prior to getting consent - a full letter of approval from the ethical committee will then ensue.

I would also like to know whether you have approached any of the cardiologists in our hospital as a link person as you will be using their patients. Do you also plan to use patients from the National Heart Institute (Institut Jantung Negara), They have their own ethical committee.

Regards.

Yours sincerely,

Amir S Khir
Chairman, UHKL Ethical Committee
Dear Miss Hariyati,

RESEARCH ON PSYCHOLOGICAL ASPECTS OF CORONARY HEART DISEASES IN MALAYSIA


2. The Ministry has no objections to your request to carry out the abovementioned research in the public hospitals in the country, provided that the research is carried out with the permission and support of the hospital directors of all the public hospitals involved in the project. In addition to this, the Ministry requires that:

   i. informed consent be obtained from all patients involved in the project;

   ii. information concerning the patients, whether obtained through interviews or medical records, be kept strictly confidential;

   iii. permission of the respective State Medical Directors be obtained before the results of your research can be published; and

   iv. copies of the outcome of the research be sent to the respective State Medical Directors and a copy to the Ministry of Health on completion of the project.

3. We regret to inform you that the Ministry cannot speak on behalf of the universities and their affiliated hospitals, as well as the private hospitals, in this matter. You may wish to correspond directly with the directors of these hospitals concerning your request.
We hope the above information has been of use and we wish you all the best in your endeavor.

Yours sincerely,

(DR. ABDUL SALAM MOHAMMED DIN)
Director
Medical Practices Division
Ministry of Health, Malaysia
for Director-General of Health, Malaysia.
Executive Director,
Institute Jantung Negara,
145 Jalan Tun Razak,
50400 Kuala Lumpur,
MALAYSIA.

26 February 1997

Dear Datuk Dr.,

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Please kindly refer to the above matter.

2. I, Hariyati Shahrima Abdul Majid, a Ph.D. student in Applied Health Psychology at the University of Surrey, United Kingdom would like to conduct an academic research on the psychological aspects of recovery from coronary heart disease among Malaysian cardiac patients. I hope to conduct the research commencing in August of 1997 at IJN.

3. Among the objectives of the research include the following:
   a) identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life post-illness among Malaysian patients;
   b) providing information which will be useful to IJN primary care teams in identifying groups of cardiac patients at particular risk for further heart-related complications; and
   c) providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes by IJN cardiac care authorities.

4. For your information, I conducted a similar research for my Msc. project on psychological factors predicting participation in cardiac rehabilitation programmes at St. Thomas’s Hospital in London, in collaboration with the Greenwich Health Promotion Services, London last year. The project was a part of the Healthy Heart Programme, which aimed at designing more effective cardiac rehabilitation programmes at various

University Telephone No: (+44) 01483 300800
London hospitals. The results obtained and the experiences gained from this previous research highlight the importance of understanding the specific psychological characteristics and needs of Malaysian cardiac patients to enable cardiac health authorities to improve the services provided. Hence, I believe that IJN, as the leading cardiac care body in Malaysia would greatly benefit from this research as the findings of the research will be able to provide essential information on the psychological and social needs of Malaysian patients, which in turn will assist IJN health care professionals in developing cardiac intervention and rehabilitation programmes that tailor to the specific needs of IJN patients.

5. Enclosed please find a letter of support from my academic supervisor, Professor Sarah Hampson regarding the proposed research. Please also find a copy of the research proposal, as submitted earlier to the Department of Psychology, University of Surrey. The details of the methodology are subject to minor amendments, depending upon the feasibility of conducting such research at your Heart Institute.

6. I would greatly appreciate it if you could provide me with any information regarding the bureaucratic processes involved in conducting such research at IJN. I would also be very grateful if you could inform me of the steps that I should take to ensure that the research could be carried out smoothly and successfully.

7. I will provide more detailed information regarding the nature of the research if requested and/or needed. Please do not hesitate to liaise with me or Professor Hampson at the address and contact/fax numbers below.

Thank you for your attention and cooperation. I look forward to your response.

Yours Sincerely,

(Miss Haryati S. Abdul-Majid)
Department of Psychology
University of Surrey
Guildford,
Surrey GU2 5XH
ENGLAND

fax: 01483 32813
telephone: 01483 300 800 ext. 3346
Dear Sir/Madam,

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Please kindly refer to the above matter.

2. I, Hariyati Shahrina Abdul Majid, a PhD student in Applied Health Psychology at the University of Surrey, United Kingdom would like to conduct an academic research on the psychological aspects of recovery from coronary heart disease among Malaysian cardiac patients. I hope to conduct the research commencing in August of 1997 at your Hospital.

3. Among the objectives of the research include the following:
   a) identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life post-illness among Malaysian patients;
   b) providing information which will be useful to the primary care teams in identifying groups of cardiac patients at particular risk for further heart-related complications; and
   c) providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes.

4. For your information, I conducted a similar research for my Msc. project on psychological factors predicting participation in cardiac rehabilitation programmes at St. Thomas's Hospital in London, in collaboration with the Greenwich Health Promotion Services, London last year. The project was a part of the Healthy Heart Programme, which aimed at designing more effective cardiac rehabilitation programmes at various London hospitals. The results obtained and the experiences gained from this previous research highlight the importance of understanding the specific psychological characteristics and needs of Malaysian cardiac patients to enable cardiac health authorities to improve the services provided. Thus, I believe that University Hospital, as a credible and resourceful Medical Institute will greatly benefit from this research as the findings will be helpful in providing essential information to UH medical heart...
authorities on the specific psychosocial needs of UH patients. This in turn will assist the
former in designing more effective cardiac intervention and rehabilitation programmes
that tailor to the needs of UH heart patients.

5. Enclosed please find a letter of support from my academic supervisor, Professor
Sarah Hampson regarding the proposed research. Please also find a copy of the research
proposal, as submitted earlier to the Department of Psychology, University of Surrey.
The details of the methodology are subject to minor amendments, depending upon the
feasibility of conducting such research at your Hospital.

6. I would greatly appreciate it if you could provide me any information regarding
the bureaucratic processes involved in conducting such research at UH. I would also be
very grateful if you could inform me of the steps that I should take to ensure that the
research could be carried out smoothly and successfully.

7. I will provide more detailed information regarding the nature of the research if
requested and/or needed. Please do not hesitate to liaise with me or Professor Hampson
at the address and contact/fax numbers below.

Thank you for your attention and cooperation. I look forward to your response.

Yours Sincerely,

(Miss Hariyati S. Abdul-Majid)
Department of Psychology
University of Surrey
Guildford,
Surrey GU2 5XH
ENGLAND

fax: 01483 32813
telephone: 01483 300 800 ext 3346
Managing Director,
Ampang Puteri Specialist Hospital,
No:1, Jalan Mamanda 9,
Taman Dato' Ahmad Razali,
68000 Ampang,
Selangor,
MALAYSIA

10 March 1997

Dear Sir/Madam,

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Please kindly refer to the above matter.

2. I, Hariyati Shabrima Abdul Majid, a PhD student in Applied Health Psychology at the University of Surrey, United Kingdom would like to conduct an academic research on the psychological aspects of recovery from coronary heart disease among Malaysian cardiac patients. I hope to conduct the research commencing in August of 1997 at your Hospital.

3. Among the objectives of the research include the following:

   a) identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life post-illness among Malaysian patients;

   b) providing information which will be useful to the primary care teams in identifying groups of cardiac patients at particular risk for further heart-related complications; and

   c) providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes.

4. For your information, I conducted a similar research for my Msc. project on psychological factors predicting participation in cardiac rehabilitation programmes at St. Thomas’s Hospital in London, in collaboration with the Greenwich Health Promotion Services, London last year. The project was a part of the Healthy Heart Programme, which aimed at designing more effective cardiac rehabilitation programmes at various London hospitals. The results obtained and the experiences gained from this previous research highlight the importance of understanding the specific psychological characteristics and needs of Malaysian cardiac patients to enable cardiac health authorities to improve the services provided. Thus, I believe that APSH, as a resourceful Health Medical Institute will greatly benefit from this research as the findings will be helpful in providing essential information to APSH medical heart authorities on the specific psychosocial needs of APSH patients. This in turn will assist
the former in designing more effective cardiac intervention and rehabilitation programmes that tailor to the needs of APSH heart patients.

5. Enclosed please find a letter of support from my academic supervisor, Professor Sarah Hampson regarding the proposed research. Please also find a copy of the research proposal, as submitted earlier to the Department of Psychology, University of Surrey. The details of the methodology are subject to minor amendments, depending upon the feasibility of conducting such research at your Hospital.

6. I would greatly appreciate it if you could provide me any information regarding the bureaucratic processes involved in conducting such research at APSH. I would also be very grateful if you could inform me of the steps that I should take to ensure that the research could be carried out smoothly and successfully.

7. I will provide more detailed information regarding the nature of the research if requested and/or needed. Please do not hesitate to liaise with me or Professor Hampson at the address and contact/fax numbers below.

Thank you for your attention and cooperation. I look forward to your response.

Yours Sincerely,

(Miss Hariyati S. Abdul-Majid)
Department of Psychology
University of Surrey
Guildford,
Surrey GU2 5XH
ENGLAND

fax: 01483 32813
telephone: 01483 300 800 ext 3346
Dear Dato',

Research on Psychological Aspects of Coronary Heart Disease in Malaysia

Please kindly refer to the aforementioned matter.

I, Hariyati Shahrima Abdul-Majid, a PhD student in Applied Health Psychology at the Department of Psychology, University of Surrey, U.K., would like seek ethical approval for academic research at government hospitals in Malaysia. For your information, the objectives of the proposed research include the following:

i. identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life among patients recovering from CHD in Malaysia.

ii. providing information which will be useful to the primary care teams in identifying groups of cardiac patients at particular risk of further cardiac-related heart complications.

iii. providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes in the respective government hospitals.

I would greatly appreciate it if my application for access to the government hospitals be granted. I will strictly adhere to the medical ethical procedures involved in conducting the proposed research interviews.

Please inform me of any steps that should be taken to ensure that the research would be carried out according to bureaucratic procedures. I will provide you with details of the proposed research should you request them. Please do not hesitate to contact me at the following address for any further enquiries.

Thank you for your attention and cooperation.

University Telephone No: (+44) 01483 300800
Yours sincerely,

Miss Hariyati Abdul-Majid

Department of Psychology
University of Surrey
Guildford
Surrey GU2 7XH
United Kingdom.

Tel: 00 44 (0) 1483 300 800 ext. 3346
Miss Haryati Shahrima Abdul Majid  
Department of Psychology  
University of Surrey  
Guildford  
Surrey GU2 5XH  
ENGLAND

Dear Ms Haryati,

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

Thank you for your letter dated 26 February 1997 on the above matter.

2. Before we can consider your application, kindly forward us the following documents for our reference:
   a. Research proposal (please include questionnaire for interview)
   b. Letter of support from the Head, Department of Psychology, University of Surrey
   c. Curriculum vitae

Thank you.

Sincerely,

(DATO' DR. M. GEATHESAN)  
Deputy Director General of Health (Research & Technical Support)  
Ministry of Health  
Malaysia

(Sila catatkan rujukan surat ini apabila menjawab)
Dear Dr.,

RESEARCH ON PSYCHOLOGICAL ASPECTS OF RECOVERY AMONG CARDIAC PATIENTS IN MALAYSIA

Please kindly refer to the aforementioned matter.

2. I, Hariyati Shahrina Abdul Majid, a PhD student in Applied Health Psychology at the Department of Psychology, University of Surrey, UK will be conducting an academic research on the above subject at various government and private hospitals in Malaysia commencing in July 1997.

3. Upon advise from Dr. Abdul Gani Mohammed Din, Director of Medical Practices Division at the Ministry of Health, Malaysia, I hereby would like to inform you of the proposed research, the objectives of which include the following:

i. identifying psychological and social factors that are predictive of healthy readjustment from cardiac illness and enhancement of quality of life post-illness among Malaysian patients.

ii. providing information which will be useful to the primary care teams in identifying groups of cardiac patients at particular risk of further heart-related complications; and

iii. providing information on the needs of particular groups of patients which can be used to design formal cardiac rehabilitation programmes in the respective hospitals.
4. I would greatly appreciate it if my application for access to the government hospitals be granted. I will strictly adhere to the medical ethical procedures involved in conducting the proposed research interviews. Lastly, please inform me of any steps that need to be taken to ensure that the research would be carried out according to bureaucratic processes.

Thank you very much for your attention and cooperation.

Yours Sincerely,


(Hariyati Shahrima Abdul Majid)  
Department of Psychology  
University of Surrey  
Guildford  
Surrey GU2 5XH  
ENGLAND  

[signature]

telephone: 01483 300 800 ext 3346  
fax: 01483 300 803
Dear Ms. Hariyati,

RESEARCH ON PSYCHOLOGICAL ASPECTS OF CORONARY HEART DISEASE IN MALAYSIA

Thank you for your letter dated 26 February, 1997 regarding the above matter.

2. We are pleased to inform you that the Management has no objection for the proposed research on “Psychological Aspects of Coronary Heart Disease in Malaysia.” However, we hope you would adhere to the guidelines set forth below:

   i) a copy of the research paper must be submitted to IJN when the study is completed;

   ii) all papers must be approved by the Professional Advisory Committee and Management before publication. It should contain an acknowledgement to IJN for permission granted on the publication. Where there is no acknowledgement, it would be assumed that the paper has not been cleared by the relevant parties;

   iii) papers and/or publications should not adversely affect image of IJN;

   iv) all information on patient’s records and details should be strictly confidential; and

   v) respondents in the study must be voluntary, no one will be coerced to participate.
3. We would be grateful if these guidelines be adhered to. For your information, currently there are studies on the Psychological aspects of Coronary Heart patients in IJN by the Anaesthetic Department and International Islamic University. You may wish to discuss the matter with them before your study.

Thank you.

Yours sincerely,
INSTITUT JANTUNG NEGARA SDN. BHD.

(DATO' DR. HAJJAH NUR'AINI BT HAJI ABU BAKAR)
Chief Executive

cc: Y. Bhg. Dato' Dr. Mohamed Hassan Mohamed Ariff - P.A.C. Chairman
    Y. Bhg. Dato' Dr. Yahya Awang - Head of Cardiothoracic Department

NAB/ea
Dear Dato',

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

I wish to express my sincere gratitude for your letter dated 18 March 1997 on the above matter.

2. Enclosed please find the following documents, as requested, for your reference:

   a. Research proposal as submitted to the Department of Psychology, University of Surrey (the methodology of the research is subjected to minor amendments, depending upon the feasibility of conducting the interviews with patients).
   
   b. Consent form and patient information sheet
   
   c. Support letter from the Course Director/Research Supervisor, Clinical and Health Psychology (for the Head of Department)
   
   d. Previous letters to the Director, Medical Practices Division, Ministry of Health, Malaysia on the above matter.
   
   e. Curriculum Vitae

3. However, I am not able to provide a copy of the final version of the questionnaire to be used for the interviews as it is still being statistically analysed and modified. This is to ensure that the items selected are reliable and valid for use on Malaysian patient population.
4. I would greatly appreciate it if my application for access to the government hospitals be granted. I will strictly adhere to the medical ethical procedures involved in conducting the proposed research interviews. Lastly, please inform me of any steps that need to be taken to ensure that the research would be carried out according to bureaucratic processes.

Thank you very much for your attention and cooperation.

Yours Sincerely,

(Hariyati Shahrima Abdul Majid)
Department of Psychology
University of Surrey
Guildford
Surrey GU2 5XH
ENGLAND

telephone: 01483 300 800 ext 3346
fax: 01483 300 803
Dear Y. Bhg. Dato’ Dr. Hajjah Nor’Aini,

RESEARCH ON THE PSYCHOLOGICAL ASPECTS OF CORONARY HEART DISEASE IN MALAYSIA

I wish to acknowledge the receipt of your letter dated 29 March 1997 on the above matter.

2. My sincere gratitude for the ethical approval granted by the Management of IJN for the proposed research. I fully understand the guidelines provided and will adhere to the bureaucratic and medical codes outlined to the best of my ability. With the access granted to the patients at your Institute, I hope that the research will provide invaluable information to cardiac teams at IJN.

3. Thank you also for providing me the information regarding other studies that are being conducted at IJN. For your information, I have recently formed a liaison with En. Rahmatullah Khan of the International Islamic University concerning both his and my research, in which the insights given and discussions held have been helpful.

4. Please further inform me of any other steps that need to be taken to ensure the smooth running process of the research. For instance, it would be very helpful if I could establish a rapport with a contact person(s) at IJN for the purpose of consultation and/or advisement on matters regarding the medical and ethical codes related to the research.

5. I will provide more detailed information concerning the commencement and duration of the research when able. I will also provide you a final copy of the questionnaire to be distributed to the patients, later, after the completion of its reliability and validity analyses which is currently being investigated.
My sincere appreciation again for your attention and cooperation. I look forward to conducting the research at IJN in August/September 1997.

Yours Sincerely,

(MISS HARIYATI ABDUL-MAJID)  
Department of Psychology  
University of Surrey  
Guildford  
Surrey GU2 5XH  
ENGLAND  

telephone: 01483 300 800 ext 3346  
fax: 01483 300 803
Our Ref. : Bil. (JO) dim. IJN/P/1/88
Date : 23 April, 1997

Miss Hariyati S. Abdul Majid
Department of Psychology
University of Surrey
Guildford
Surrey GU2 5XH
England

Dear Ms. Hariyati,

RESEARCH ON PSYCHOLOGICAL ASPECTS OF CORONARY HEART DISEASE IN MALAYSIA

Your letter dated 8 April, 1997 regarding the above matter refers.

I am pleased to inform you that Y. Bhg. Dato' Dr. Mohamed Hassan Mohamed Ariff, Head Department of Anaesthesiology will be the contact person for the above research.

We look forward to your attachment in August/September, 1997.

Thank you.

Yours sincerely,

INSTITUT JANTUNG NEGARA SDN. BHD.

(DATO' DR. HAJJAH NOR'AINI BT HAJI ABU BAKAR)
Chief Executive

cc: Y. Bhg. Dato' Dr. Mohamed Hassan Mohamed Ariff
    /aa
Director  
University Hospital  
Jalan Universiti  
46700 Petaling Jaya  
Selangor  
MALAYSIA  

9 May 1997

Dear Sir/Madam,

Re: RESEARCH ON THE PSYCHOLOGICAL ASPECTS OF RECOVERY FROM CORONARY HEART DISEASE IN MALAYSIA

Please kindly refer to my letter dated 10 March 1997 on the above matter.

2. I am writing to enquire about the progress of my application to conduct the above research at your hospital in August 1997 until October 1997. I would be sincerely grateful if you could provide me any information concerning the bureaucratic procedures involved in applying for the ethical approval to conduct research with UH patients.

3. Enclosed please find a copy of both my letter dated 10 March 1997 and my supervisor’s letter of support. Please do not hesitate to liaise with me or Professor Hampson at the contact address/number below.

Thank you very much for your attention and cooperation.

Yours Sincerely

MISS HARIYATI ABDUL-MAJID  
Department of Psychology  
University of Surrey  
Guildford  
Surrey GU2 5XH  
telephone: 01483 300 800 ext 3346  
fax: 01483 300 803
Y. Bhg. Dato' Dr. Mohammed Hassan Mohamed Ariff  
Head  
Department of Anaesthesiology  
National Heart Institute  
145 Jalan Tun Razak  
50400 Kuala Lumpur  
MALAYSIA  
9 May 1997

Assalamu'alaikum wbt.,

Dear Dato',

RESEARCH ON THE PSYCHOLOGICAL ASPECTS OF RECOVERY  
AMONG CARDIAC PATIENTS IN MALAYSIA

Please kindly refer to the aforementioned matter.

2. With reference to Y.Bhg. Dato' Dr. Hajjah Nor'Aini's letter dated 23 April 1997, I would like to express my sincere gratitude to UN for granting me the ethical approval to conduct research at UN.

3. For your information, I will be returning to Malaysia at the end of June 1997 and would like to begin my research at UN soon afterwards. Hence, I would be sincerely grateful if I could set an appointment with you to discuss matters concerning the rules and regulations of conducting research interviews with patients at UN, in addition to other relevant matters. Hence, please inform me of the most convenient date and time for you, for the appointment to take place.

University Telephone No: (+44) 01483 300800
Thank you very much for your attention and cooperation. I look forward to hearing from you.

Wassalam.

Yours Cordially,

(MISS HARIYATI SHAHRIMA ABDUL-MAJID)
Department of Psychology
University of Surrey
Guildford
Surrey GU2 5XH
ENGLAND

telephone: 01483 5300 800 ext 3346
fax: 01483 532 813
13th May 1997

Miss Hariyati Abdul Majid
Department of Psychology
University of Surrey
Guildford
Surrey HU2 5XH
United Kingdom.

Dear Madam,

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

This is to acknowledge receipt of your application for the above study. This will have to be screened by the Hospital Ethics Committee and we will let you know of the outcome soon.

Yours sincerely

Professor Datuk Dr Anuar Zaini Mohd Zain
Director
University Hospital
To: Miss Hariyati Shahrima  
Fax: 00 0483 532 813  
Department of Psychology

From: Dato' Dr. Hassan Ariff  
Date: 14 May 1997

Pages: 1 only

Dear Miss Hariyati,

RESEARCH ON THE PSYCHOLOGICAL ASPECTS OF RECOVERY AMONG CARDIAC PATIENTS IN MALAYSIA

Further to your fax dated 9th May 1997 regarding the above matter, I will be away in Canada from 27th June - 9th July 1997. Therefore, you can come either before or after the date mentioned above at any time.

Thank you.

Yours sincerely,

Dato' Dr. Mohd. Hassan Ariff

/7z

DEPARTMENT OF ANAESTHESIA
Y. Bhg. Dato' Dr. Anuar Zaini Mohd. Zain
Director
University Hospital (University Malaya)
Unit Pentadbiran Am
Hospital Universiti
59100 Kuala Lumpur
MALAYSIA 22 May 1997

Assalamu'alaikum wbt.,

Dear Dato' Dr.

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

I would like to express my sincere gratitude for your letter dated 13th May 1997 on the above matter.

2. To aid the smoothrunning of the screening process by the Hospital Ethics Committee, I am enclosing a copy of the research proposal, along with a copy each of the consent form, patient information sheet and questionnaire to be distributed to future patients.

3. I would be sincerely grateful if you could grant me access to UH cardiac patients. I will strictly adhere to the hospital’s ethical codes when conducting the research, if approved.

Thank you very much for your attention and co-operation. I look forward to your response.

Wassalam.
Yours Cordially,

MISS HARIYATI SHAHERMA ABDUL-MAJID
Department of Psychology
University of Surrey
Guildford
Surrey GU2 5XH
ENGLAND

telephone: 01483 300 800 ext 3346
fax: 01483 532813
Miss Hariyati Shahrina Abdul Majid
Department of Psychology
University of Surrey
Guildford
Surrey GU2 5XH
ENGLAND

Dear Ms Hariyati,

Re: A longitudinal Study of Psychological Aspects of Recovery among Cardiac Patients in a Southeast Asian Country

I refer to your letter dated 4 April 1997 pertaining to the above matter. I am pleased to inform you that the Ministry of Health Malaysia has approved your application to conduct the above project in the 3 hospitals (Hospital Johore Bahru, Hospital Kuala Lumpur and Hospital Penang) on the condition that prior consent is obtained from the Directors of the hospitals concerned before the commencement of the project.

2. On completion of your study, kindly submit a report on the findings to the Ministry of Health Malaysia.

Thank you.

Sincerely,

(DATO' DR M JEGATHESAN)
Deputy Director-General of Health Malaysia
(Research & Technical Support)
Ministry of Health Malaysia

(Silia catatan rujukan surat ini apabila memjawab)
Professor Amir S. Khir  
Chairman of Ethical Committee  
Division of Endocrinology  
Department of Medicine  
Faculty of Medicine  
University of Malaya  
50603 Kuala Lumpur  
MALAYSIA  

20 June 1997

Dear Professor,

Re: Research on the Psychological Aspects of Recovery from Coronary Heart Disease in Malaysia

Please kindly refer to your fax on 11 June 1997 on the above matter.

Firstly, I would like to express my sincere gratitude for the ethical approval granted by UHKL for the aforementioned research. I will strictly adhere to the medical codes of your hospital when conducting the research with your patients.

Enclosed please find a copy of the questionnaire set to be given to patients which include the patient information sheet, informed consent form and the questionnaire itself. I hope that the information provided is sufficient to enable me to start the research in mid July 1997. I will be in contact with the referred cardiologist at UHKL upon my return home.

I look forward to my attachment at UHKL. Thank you for your cooperation.

Yours sincerely,

MISS HARIYATI ABDUL-MAJID

ADDRESS after 24th June 1997: 4987 Jalan Inang 10  
Taman Skudai Baru  
81300 Skudai  
Johor
Johor State Director of Health (Medical)  
Block B, Wisma Persekutuan  
Jalan Air Molek  
80590 Johor Bahru  
Johor  
MALAYSIA  
20 June 1997  

Dear Dr.,  

Re: Research on the Psychological Aspects of Recovery among Cardiac Patients in Malaysia: Ethical Consent  

Please kindly refer to the above matter.  

I have been referred to you by Dato' Dr. M. Jegathesan, Deputy Director General of Health Malaysia to obtain consent from you for the above research. For your information, the Ethical Committee of the Ministry of Health has granted me its ethical approval to conduct research at your hospital on the condition that consent is obtained prior to the commencement of the project.  

Enclosed please find a copy each of the letter concerned from Dato' Dr. M. Jegathesan, a letter of support from my supervisor, Prof. Sarah Hampson and my application letter to the Ministry for its approval.  

I would be sincerely grateful if you could provide me consent for the above research. I will strictly adhere to the ethical codes of your hospital in conducting the proposed study. Please also inform me of any further actions that I need to take to ensure that the project runs smoothly.  

Thank you for your attention and cooperation.  

Yours sincerely,  

MISS HARIYATI SHAHRIMA ABDUL MAJID  

Address of correspondence after 24th June 1997: 4987 Jalan Inang 10  
Taman Skudai  
81300 Skudai  
Johor  

tel: 07 557 6976
Pengarah Hospital,
Hospital Sultanah Aminah
JOHOR BAHRU.

Puan,

Research On The Psychological Aspects of Recovery
Among Cardiac Patients in Malasia: Ethical Consent

Adalah saya dengan hormatnya merujuk kepada perkara di atas.


Sekian, terima kasih.

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(DR. KHOO SOO TECK)
Timbalan Pengarah Kesihatan (Perubatan),
b.p. Pengarah Kesihatan Negeri,
JOHOR

Miss Hariyati Sharima Abdul Majid,
4987 Jalan Inang 10,
81300 SKUDAI,
JOHOR.
ATTENTION: Dr. Robaiyah

Dear Dr.,

Re: RESEARCH ON THE PSYCHOLOGICAL ASPECTS OF RECOVERY AMONG CARDIAC PATIENTS IN MALAYSIA

Please kindly refer to the aforementioned matter.

I have been referred to you by Yang Berbahagia Dato’ Dr. Mohammed Hassan Mohamed Ariff, Head of Department of Anaesthesiology, concerning the above research. I hope to begin the research by mid-July; the project should last for approximately 4 to 6 months.

Enclosed please find a copy each of my application letters for ethical approval to Yang Berbahagia Dato’ Dr. Hajjah Nor’Aini Haji Abu Bakar along with the research proposal.

Please inform me of any further information that I need to provide to ensure the smooth running process of the above project. I hope to be able to meet an LN cardiac authority to discuss matters pertaining to the methodology of the study before commencing the research.

Thank you for your attention and cooperation.

Yours cordially,

MISS HARIYAH SHATIRMA ABDUL-MAJID

4987 Jalan Inang 10
Taman Skudai
81300 Skudai
Johor

telephone: 07 5576 976
010 710 3830

University Telephone No: (+44) 01483 300800
Prajurut Tuan:

Rujukan Kami: Bil (14 ) PJ. 1398 Jld.2

Tarikh: 19 September 1997

PERINGATAN

Puan,

Research On the Psychological Aspects of Recovery Among Cardiac Patients in Malaysia


2. Sukacita dapat sekininya puan mengambil tindakan mengenainya. Bersama-sama ini disertakan salinan surat daripada International Islamic University Malaysia untuk perhatian puan selanjutnya.

Sekian, terima kasih.

“BERKHIDMAT UNTUK NEGARA”

Saya yang menurut perintah,

(DR. KHOO SOO TECK)
Timbalan Pengarah Kesihatan (Perubatan)
b.p. Pengarah Kesihatan Negeri,
J O H O R

s.k. Miss Hariyatai Sharima Abdul Majid,
Mo. 4 Jalan keris 11/4A, SHAH ALAM.
APPENDIX 4

Study 2 Time 1 Questionnaire
Anda dijemput untuk mengambil bahagian di dalam kajian yang sedang dijalankan mengenai pemulihan daripada penyakit jantung. Kajian ini dikendalikan oleh Cik Hariyati Abdul Majid, seorang penuntut Doktor Falsafah dari University of Surrey di England.

You are being invited to take part in a study of recovery from cardiovascular illness. This research is being conducted by Hariyati Abdul Majid, who is studying for a PhD at the University of Surrey in England.

Tujuan kajian:
The purpose of the study:

Kami bermimpi untuk mengetahui secara umumnya tentang pandangan dan perasaan anda terhadap kesihatan anda, dan khususnya ke atas penyakit anda. Pandangan dan perasaan mungkin mempengaruhi proses pemulihan anda.

We are interested in the way you think and feel about health and illness in general, and your illness in particular. These thoughts and feelings may affect your recovery.

Hasil kajian ini akan digunakan untuk membantu pesakit-pesakit supaya cepat sembuh dan kembali kepada kehidupan asal secepat mungkin. Hasil kajian ini juga akan digunakan untuk memperbaiki perkhidmatan yang diberi kepada pesakit-pesakit semasa berada di hospital dan juga selepas pulang ke rumah.

The findings of this study will be used to help patients recover more quickly from their illness and make it easier for them to get back to normal life. The findings will be used to improve services for patients in hospital and after they leave.

Apa yang akan anda lakukan:
What you will be asked to do:

Semasa anda di hospital ini, satu temubual pendek akan dijalankan mengenai beberapa perkara. Anda juga akan diminta untuk mengisi satu borang kajiselidik. Selepas kira-kira 6 bulan, anda akan dihubungi semula untuk ditemubua buat kali kedua.

During your stay in hospital, you will be given a short interview and a questionnaire to complete in your own time. Then, approximately 6 months from now, you will be contacted again for a second short interview.

Kami juga akan meminta kebenaran anda untuk mendapatkan maklumat daripada rekod kesihatan anda untuk digunakan sebagai rujukan.

We will also ask your permission to collect information about your illness and recovery from your medical records for reference purposes.
Keburukan dan kebaikan:
*Risks and benefits:*

Anda mungkin merasa risau jika maklumat yang diberikan kepada kami akan disebarkan kepada orang lain. Pandangan anda akan dirahsia kan. Ini bermakna bahawa apa yang anda lapor akan tidak akan disebarkan kepada yang lain, termasuk para doktor dan jururawat bertugas. Kami akan menggunakan nombor kod dan bukan nampa anda sebagai pengenalan diri di dalam rekod kami. Dalam laporan kami, kami akan menyatukan kesemua jawapan yang kami kumpul supaya identiti anda tidak akan dikesan.

*You may be anxious that what you say will be shared with others. Your responses will be kept strictly confidential. This means that what you say will not be passed on to anyone outside the study, including the nurses and doctors taking care of you. In our records, we will use a code number instead of your name. In reports of the study, we will combine the information from everyone we are seeing so that it will be impossible to identify individuals.*


*You may be concerned about the kinds of questions you will be asked. The questions have been carefully chosen, but if you should find them upsetting for any reason you may choose not to answer any of the questions, or to withdraw from the study at any time.*

Kajian ini adalah kajian ilmiah dan bukan terapi. Walau bagaimanapun, anda mungkin akan memperoleh banyak pengalaman daripada temubual dan menjawab soalan-soalan ini. Anda juga akan dapat menolong orang lain yang mungkin akan menghadapi situasi yang serupa di masa akan datang.

*The study is part of a research project and not a therapy. However, you may find you learn something about yourself through the interview and answering the questionnaires. You will also have the satisfaction of knowing that you have helped to make a difference for future patients.*

Sila kemukakan soalan jika anda tidak memahami apa yang disoal atau yang dikehendaki.

*Please ask if you have any questions.*

Jika anda ingin mengambil bahagian dalam kajian ini, sila tandatangan borang akuan di muka sebelah.

*If you decide you would like to take part, then please sign the consent form on the next page.*

TERIMA KASIH

THANK YOU
Borang Pemberian Kebenaran Oleh Pesakit Sendiri
STANDARD CONSENT FORM WHERE THE INDIVIDUAL IS CONSENTING ON HIS/HER OWN BEHALF

Nama pesakit:
Name of patient: _____________________________________________________________

Saya, HARIYATI ABDUL MAJID, Penyelidik Psikologi dari University of Surrey, England telah memberi maklumat kepada pesakit tersebut di bawah mengenai tujuan kajian saya yang bertajuk:

PANDANGAN MENGENAI KESIHATAN DAN PENYAKIT

dan penama di atas telah bersetuju untuk mengambil bahagian dalam kajian saya ini. Saya telah memberikan kertas maklumat kepadanya dan telah menjawab soalan-soalan beliau.

PERCEPTIONS OF HEALTH AND ILLNESS

I, HARIYATI ABDUL MAJID, Research Psychologist of the University of Surrey, England have fully explained to this patient the nature and purpose of the research project entitled:

and she/he has consented to participate. I have given them a copy of the information sheet about this research and have answered her/his questions.

Tandatangan Penyelidik:
Signature of Investigator: ________________________________________________

TARIKH (Date): __________________

NAMA:
NAME: _________________________________________________________________

Saya, (I) ______________________________________________________________

dengan ini bersetuju untuk mengambil bahagian dalam kajian ini. Saya juga membenarkan rekod kesihatan saya digunakan sebagai rujukan. Tujuan kajian ini telah pun dimaklumkan kepada saya dan soalan-soalan saya sudahpun dijawab dengan sepenuhnya. Saya faham bahawa saya boleh menarik diri pada bila-bila masa Tindakan saya itu tidak akan menjejaskan penjagaan atau perkhidmatan yang saya terima sebagai seorang pesakit.

hereby consent to take part in the above investigation, the nature and purpose of which have been explained to me. I give my consent for my medical records to be used as reference. Any questions I wish to ask have been answered to my satisfaction. I understand that I may withdraw from the investigation at any stage and this will in no way affect the care I receive as a patient.

Tandatangan Pesakit
(Signature of Patient): ________________________________________________
BAHAGIAN 1
PART 1

Arahan: Kami ingin mengetahui pandangan anda terhadap diri anda. Berdasarkan skala di bawah, sila nyatakan setakat mana anda bersetuju atau tidak bersetuju dengan setiap kenyataan berikut dalam menggambarkan pandangan anda terhadap diri anda. Sila tuliskan nombor yang berpatutan di dalam petak di tepi kenyataan berkaitan.

Instructions: We would like to know your general feelings about yourself. Based on the scale given below, please indicate the extent to which you agree or disagree with each of the following statements in describing your views of yourself in the box provided.

| Skala | "1" | amat tidak setuju
| Scale | strongly disagree |
| "2" | tidak setuju
| disagree |
| "3" | tidak pasti
| uncertain |
| "4" | setuju
| agree |
| "5" | amat setuju
| strongly agree |

1. Apabila mempelajari sesuatu yang baru, saya mengalah jika saya gagal melakukan.
   When learning something new, I give up if I am not successful.

2. Kegagalan membuat saya berusaha dengan lebih keras lagi.
   Failure just makes me try harder.

3. Saya senang mengalah.
   I give up easily.

4. Saya rasa saya mempunyai beberapa sifat yang baik.
   I feel that I have a number of good qualities.

5. Jika sesuatu kelihatan sulit, saya tidak akan mencubanya langsung.
   If something looks complicated, I will not even bother to try it.

6. Saya rasa saya seorang yang berguna, sekurang-kurangnya sama seperti orang lain.
   I feel that I am a person of worth, at least equal with others.

7. Saya tidak berkemampuan untuk menghadapi kebanyakan masalah yang timbul dalam hidup saya.
   I do not seem capable of dealing with most problems that come up in life.
8. Saya tidak yakin terhadap kemampuan diri saya untuk melakukan pelbagai perkara.
I feel insecure about my ability to do things.

9. Jika saya tidak berjaya melakukan sesuatu perkara pertama kali, saya akan terus mencuba sehingga berjaya.
If I can't do a job the first time, I keep trying until I can.

10. Saya tidak akan mencuba sesuatu yang baru jika ianya kelihatan sukar.
I avoid trying to learn something new when they look too difficult for me.

11. Saya mampu melakukan perkara sebaik yang dilakukan orang lain.
I am able to do things as well as most other people.

I certainly feel useless at times.

13. Saya rasa saya tidak mempunyai banyak perkara yang boleh dibanggakan.
I feel I do not have much to be proud of.

14. Saya mengambil sikap yang positif terhadap diri saya.
I take a positive attitude towards myself.

15. Pada keseluruhannya, saya cenderung merasai seperti seorang yang gagal.
All in all, I am inclined to feel that I am a failure.

16. Pada keseluruhannya, saya berpuas hati dengan diri saya.
On the whole, I am satisfied with myself.

Arahan: Berikut adalah kenyataan-kenyataan yang dibuat oleh orang lain mengenai pemulihan daripada penyakit mereka. Berdasarkan skala di atas (Bahagian 1), sila nyatakan sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan berikut dalam menggambarkan pandangan anda terhadap pemulihan anda dari penyakit ini.

Instructions: Below are statements other people have made about their recovery from their illness. Based on the same scale given above (Part 1), please indicate the extent to which you agree or disagree with each statement in describing your views on your recovery from your illness.

1. Bagaimana saya menjaga kesehatan saya terpulang pada diri saya sendiri, bukan pada apa orang lain (contohnya doktor dan jururawat) boleh lakukan untuk saya.
How I manage my illness depends on me, not on what other people (e.g. doctors and nurses) can do for me.

2. Terpulang pada doktor dan jururawat untuk menentukan saya pulih dari penyakit ini.
It's up to the doctors and nurses to make sure I recover from my illness.

3. Apa yang saya lakukan untuk menolong diri sendiri akan menjamin kesehatan saya.
It's what I do to help myself that's really going to make all the difference.
4. Takdir Tuhan yang akan menentukan jika saya sembuh sepenuhnya atau tidak.
   It is God’s will that determines whether I fully recover from my illness or not.

5. Saya akan pulih jika saya mengikuti arahan doktor.
   Following doctors’ orders will make me get better.

6. Terpulang pada saya untuk memastikan agar saya pulih dengan sebaik-baiknya dalam keadaan ini.
   It’s up to me to make sure that I make the best recovery possible under the circumstances.

7. Pemulihan saya bergantung pada takdir Tuhan.
   My recovery depends on God’s will.

8. Tidak kiralah berapa banyak pertolongan yang saya terima, akhirnya usaha saya sendiri yang menentukan pulihnya saya.
   It doesn’t matter how much help I get from others, in the end it’s my own efforts that count.

9. Pakar kesihatanlah yang memainkan peranan yang besar dalam menentukan pemulihan saya.
   Health professionals largely influence how well I recover from my illness.

10. Tuhan yang akan menjaga kesihatan saya.
    God will protect my health.

Arahan: Betulkah adalah pandangan orang mengenai masa hadapan mereka. Berdasarkan skala di atas (Bahagian 1), sila nyatakan sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan ini dalam menggambarkan perasaan dan pandangan anda mengenai masa hadapan anda dalam masa setahun yang akan datang.

Instructions: Below are statements on how people view their future. Based on the scale given above (Part 1), please indicate the extent to which you agree or disagree with each statement in describing your feelings and views of your life in the next year or so.

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
<th>Agree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Saya berkeyakinan penuh terhadap masa hadapan saya.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Saya boleh mengharapkan lebih kegembiraan daripada kedukaan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Masa hadapan saya kelihatan gelap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Saya menunggu masa hadapan saya dengan harapan.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Tidak ada gunanya saya mahukan sesuatu kerana kemungkinan besar saya tidak akan mendapatnya. There’s no use in really getting what I want because I probably will not get it.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Apabila melihat ke arah masa depan, saya menjangka yang saya akan lebih gembira dari sekarang.  
When I look ahead in the future, I expect I will be happier than now.

7. Saya tidak berharap untuk mendapatkan apa yang saya mahu.  
I don’t expect to get what I really want.

8. Apa yang kelihatan pada masa depan saya hanyalah kedukaan bukan kegembiraan.  
All I can see ahead of me is unpleasantness rather than pleasantness.

9. Pada masa akan datang, saya berharap untuk berjaya di dalam perkara yang saya ambil berat.  
In the future, I expect to succeed in what concerns me most.

10. Lebih baik saya mengalah kerana saya tidak dapat memperbaiki keadaan diri saya.  
I might as well give up because I can’t make things better for myself.

BAHAGIAN 2  
PART 2


Instructions: There are many ways to deal with difficulties in life. We are interested in how you respond to the difficult or stressful events in your life. Based on the scale given below, please indicate the extent to which each of the following statements describes your actions when you confront such problems.

1. Saya memikirkan cara yang terbaik dalam mengendalikan masalah itu.  
i think about how I might best handle the problem.
2. Saya merasa banyak gangguan perasaan dan mendapatkan saya sering meluahkan perasaan tersebut.
I feel a lot of emotional distress and I find myself expressing those feelings a lot.

3. Saya mengalah dalam usaha saya untuk mendapatkan apa yang saya hajati.
I give up the attempt to get what I want.

4. Saya mendapatkan ketenangan dalam agama saya.
I find comfort in my religion.

5. Saya berkata pada diri sendiri, “Ini tidak benar”.
I say to myself “this isn’t real”.

6. Saya menumpukan usaha saya dalam mengendalikan masalah itu.
i concentrate my efforts on doing something about it.

7. Saya mengaku pada diri sendiri bahwa saya tidak boleh menghadapi masalah itu dan terus berhenti mencuba.
I admit to myself that I can’t deal with the problem and quit trying.

8. Saya cuba mendapatkan sokongan emosi daripada keluarga dan sahabat-handai saya.
I try to get emotional support from my family and friends.

9. Saya membiasakan diri dengan kenyataan bahwa tanya telah berlaku.
i get used to the idea that it has happened.

10. Saya membuat perancangan tindakan.
i make a plan of action.

11. Saya memohon pertolongan Tuhan.
I seek God’s help.

12. Saya enggan mempercayai bahawa tanya telah berlaku.
I refuse to believe that it has happened.

13. Saya terus mengalah dalam mencapai matlamat saya.
I just give up trying to reach my goal.

14. Saya menerima hakikat bahawa tanya telah terjadi dan tidak boleh diubah.
i accept that this has happened and it can’t be changed.

15. Saya berbincang dengan seseorang mengenai perasaan saya.
i talk to someone about how I feel.

16. Saya melakukan perkara yang patut dilakukan, langkah demi langkah.
i do what has to be done, one thing at a time.

17. Saya meletakkan kepercayaan saya pada takdir Tuhan.
i put my trust in God’s will.

18. Saya berpura-pura tanya tidak terjadi.
i pretend that it hasn’t really happened.
19. Saya bertanya kepada orang lain yang menghadapi pengalaman yang sama apa yang mereka lakukan.
   I ask people with similar experiences what they did.

20. Saya bertifikir secara mendalam mengenai langkah-langkah yang perlu diambil.
   I think hard about what steps to take.

21. Saya mengurangkan usaha saya dalam mengatasi masalah tersebut.
   I reduce the amount of effort I'm putting into solving the problem.

22. Saya beribadat lebih dari biasa.
   I pray more than usual.

23. Saya berlagak seperti ianya tidak pun terjadi.
   I act as though it hasn't happened.

24. Saya mengambil langkah langsung dalam mengatasi masalah itu.
   I take direct action to solve the problem.

Arahan: Kenyataan-kenyataan di bawah mungkin menggambarkan perasaan anda semenjak hari pertama anda berada di hospital ini. Berdasarkan skala di atas (Bahagian 2), sila nyatakan sejauh manakah setiap kenyataan menggambarkan keadaan diri anda semasa berada di hospital.

Instructions: The following statements may describe how you have been feeling since your first day in the hospital. Based on the scale given above (Part 2), please indicate the extent to which each statement describes your condition in the hospital.

1. Saya merasa cemas dan resah.
   I feel tense and uneasy.

2. Saya merasa ketakutan seperti ada perkara buruk yang akan berlaku.
   I feel frightened, as if something awful is about to happen.

3. Saya masih boleh merasa terhibur dengan perkara-perkara yang mengembirakan saya (sp, membaca)
   I still enjoy the things that have always made me happy (e.g reading)

   Worrying thoughts go through my mind.

5. Saya merasa kecut perut.
   I get a sort of frightened feeling like butterflies in the stomach.

6. Saya merasa senang dan tenang.
   I am at ease and feel relaxed.

7. Saya merasa resah seperti saya sepatutnya melakukan sesuatu.
   I feel restless as if I have to be on the move.

8. Saya merasa cemas dengan tiba-tiba.
   I get sudden feelings of panic.
9. Saya merasa gembira.
I feel cheerful.

10. Saya rasa saya tidak sepanas dahulu.
I feel as if I have slowed down.

11. Saya boleh ketawa dan melihat kelucuan di sebalik perkara-perkara yang berlaku.
I can laugh and see the funny side of things.

12. Saya menunggu dengan kegembiraan untuk melakukan berbagai perkara.
I look forward with enjoyment to things.

BAHAGIAN 3
PART 3

Berikut adalah soalan-soalan mengenai pandangan dan perasaan anda mengenai kesihatan anda.
Following are questions on your views and feelings about your health.

Pada pandangan anda, apakah punca atau sebabnya anda jatuh sakit?
In your view, why do you think you fell ill?

__________________________________
__________________________________
__________________________________
__________________________________

Apakah yang akan lakukan untuk kembali pulih?
What are you going to do to get better?

__________________________________
__________________________________
__________________________________
__________________________________
Pada pandangan anda, adakah perubatan tradisional berkesan dalam memulihkan anda dari sesuatu penyakit? Adakah lanya berkesan untuk memulihkan penyakit anda sekarang? Mengapa?
In your views, is traditional medication effective in treating an illness? Is it effective in treating your illness? Why or why not?
# MAKLUMAT LATARBELAKANG

**SOCIODEMOGRAPHIC INFORMATION**

<table>
<thead>
<tr>
<th>Umur: Age:</th>
<th>___________ tahun ___________ years</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Jantina: Gender:</th>
<th>Lelaki Male</th>
<th>Perempuan Female</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bangsa: Ethnicity:</th>
<th>Melayu Malay</th>
<th>Cina Chinese</th>
<th>India Indian</th>
<th>Lain-lain (sila nyatakan) Others (please indicate)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Agama: Religion:</th>
<th>Islam Islam</th>
<th>Kristian Christianity</th>
<th>Hindu Hinduism</th>
<th>Buddha Buddhism</th>
<th>Tiada None</th>
<th>Lain-lain Others</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Adakah anda: Are you:</th>
<th>Berkahwin Married</th>
<th>Janda/Duda Widowed</th>
<th>Bercerai Divorced</th>
<th>Bujang Single</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Adakah anda masih bekerja? Are you currently employed?</th>
<th>YA YES</th>
<th>TIDAK NO</th>
</tr>
</thead>
</table>

Jika YA, sila nyatakan pekerjaan anda:
If YES, please indicate your occupation:

____________________

Jika TIDAK, sila nyatakan pekerjaan terakhir anda:
If NO, please indicate your last occupation:

____________________
APPENDIX 5

Correlation table of psychological constructs at Time 1
<table>
<thead>
<tr>
<th>Construct</th>
<th>(II)</th>
<th>(III)</th>
<th>(IV)</th>
<th>(V)</th>
<th>(VI)</th>
<th>(VII)</th>
<th>(VIII)</th>
<th>(IX)</th>
<th>(X)</th>
<th>(XI)</th>
<th>(XII)</th>
<th>(XIII)</th>
<th>(XIV)</th>
<th>(XV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy (I)</td>
<td>.690*</td>
<td>.582**</td>
<td>.355*</td>
<td>.190</td>
<td>.175</td>
<td>.201</td>
<td>-.605**</td>
<td>.392**</td>
<td>-.230</td>
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<td>-.083</td>
<td>.125</td>
<td>-.397**</td>
<td>-.358**</td>
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<tr>
<td>Self-esteem (II)</td>
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<td>.165</td>
<td>.334**</td>
<td>.324**</td>
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<td>-.463**</td>
<td>.288*</td>
<td>-.004</td>
<td>-.098</td>
<td>-.043</td>
<td>.033</td>
<td>-.300**</td>
<td>-.056</td>
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<td>Exercise efficacy (III)</td>
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<td>.255</td>
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<td>.102</td>
<td>-.411**</td>
<td>.183</td>
<td>-.128</td>
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<td>-.140</td>
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<td>Diet efficacy (IV)</td>
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<td>-.160</td>
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<td>-.061</td>
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<td>-.101</td>
<td>-.086</td>
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<td>Internal locus (V)</td>
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<td>-.125</td>
<td>-.012</td>
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<td>.144</td>
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<td>God locus (VI)</td>
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<td>-.244</td>
<td>.249</td>
<td>.175</td>
<td>-.159</td>
<td>.027</td>
<td>.045</td>
<td>.298**</td>
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<td>Doctor locus (VII)</td>
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<td>-.091</td>
<td>.069</td>
<td>-.188</td>
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<td>.032</td>
<td>-.184</td>
<td>-.244</td>
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<tr>
<td>Pessimism (VIII)</td>
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<td>-.373**</td>
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<td>.057</td>
<td>.190</td>
<td>-.022</td>
<td>.526**</td>
<td>.506**</td>
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<tr>
<td>Active coping (IX)</td>
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<td>-.053</td>
<td>.043</td>
<td>.138</td>
<td>-.256*</td>
<td>-.210</td>
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<tr>
<td>Giving up (X)</td>
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<td>.060</td>
<td>.257*</td>
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<td>.241</td>
<td>.325*</td>
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<tr>
<td>Turning to God (XI)</td>
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<td>-.153</td>
<td>.187</td>
<td>.194</td>
<td>-.103</td>
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<tr>
<td>Denial (XII)</td>
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<td>.153</td>
<td>.167</td>
<td>.194</td>
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<td>Seeking Support (XIII)</td>
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<td>Anxiety (XIV)</td>
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<td></td>
<td>.604**</td>
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<tr>
<td>Depression (XV)</td>
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</tbody>
</table>

Correlation matrix of psychological constructs at Time 1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
APPENDIX 6

Study 3 Time 2 Questionnaire
Pandangan terhadap Kesihatan dan Penyakit

HELAIAN MAKLUMAT PESAKIT

Anda dijemput untuk mengambil bahagian di dalam kajian yang sedang dijalankan mengenai pemulihan daripada penyakit jantung. Kajian ini dikendalikan oleh Cik Haryati Abdul Majid, seorang penyelidik dalam bidang Psikologi Kesihatan dari University of Surrey di England dengan kerjasama Dr. Goh Khiam Yan, Pakar Kardiologi di Hospital Sultanah Aminah Johor Bahru.

TUJUAN KAJIAN:

Kami berminat untuk mengetahui secara umumnya tentang penyakit dan perasaan anda terhadap kesihatan anda dan khususnya ke atas penyakit anda. Pandangan dan perasaan anda mungkin mempengaruhi proses pemulihan anda.

Hasil kajian ini akan digunakan untuk membantu pesakit-pesakit supaya cepat sembuh dan kembali kepada kehidupan asal secepat mungkin. Hasil kajian ini juga akan digunakan untuk memperbaiki perkhidmatan yang diberi kepada pesakit-pesakit semasa berada di hospital dan juga selepas pulang ke rumah.

APA YANG AKAN ANDA LAKUKAN:

Anda hanya perlu mengisi borangkaji selidik yang dilampirkan. Setelah selesai, anda dikehendaki menghantarnya melalui pos di dalam sampul surat berstem yang telah disediakan.

KEBURUKAN DAN KEBAIKAN:

Anda mungkin merasa risau jika maklumat yang diberikan kepada kami akan disebarkan kepada orang lain. Pandangan anda akan dirahsiaikan. Ini bermakna bahawa apa yang anda laporkan tidak akan disebarkan kepada orang lain, termasuk para doktor dan jururawat yang bertugas. Kami akan menggunakan nombor kod dan bukan nama anda sebagai pengenalan diri di dalam rekod kami. Dalam laporan kami, kami akan menyatukan kesemua jawapan yang kami kumpul supaya identiti anda tidak akan dikesan.


Kajian ini adalah kajian ilmiah dan bukan terapi. Walaubagaimanapun, anda mungkin akan memperoleh banyak pengalaman menjawab soalan-soalan ini. Anda juga akan dapat menolong orang lain yang mungkin akan menghadapi keadaan yang serupa di masa akan datang.

Jika anda ingin mengambil bahagian, sila isi borang kajiselidik berikut.

Terima kasih atas kerjasama anda.
### BAHAGIAN I

**ARAHAAN:** Kenyataan-kenyataan berikut mungkin menggambarkan pengalaman anda semenjak keluar dari hospital. Berdasarkan skala di bawah, sila nyatakan sejauh manakah anda mengalami keadaan sedemikian semenjak keluar dari hospital.

<table>
<thead>
<tr>
<th>Skala</th>
<th>Deskripsi</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>tidak benar</td>
</tr>
<tr>
<td>1</td>
<td>kadang-kadang</td>
</tr>
<tr>
<td>2</td>
<td>ya, benar</td>
</tr>
</tbody>
</table>

1. Saya lebih kerap baring pada waktu siang untuk berehat.  
2. Saya terlelap apabila duduk.  
3. Saya kurang melakukan kerja-kerja harian di rumah.  
4. Saya tidak melakukan kerja-kerja berat di rumah.  
5. Saya kurang makan berbanding selalunya.  
6. Saya makan makanan khas seperti makanan yang kurang garam dan rendah lemak.  
7. Saya langsung tidak bekerja.  
8. Saya lebih banyak melakukan perkara-perkara yang tidak aktif sekarang berbanding dahulu.  
9. Saya berdiri hanya untuk seketika waktu sahaja.  
10. Saya merasa amat kekok apabila bergerak.  
11. Saya melakukan kerja-kerja rumah sekejap sahaja; saya lebih banyak berehat.  
12. Saya sentiasa berbaring di atas katil.  
13. Saya tidak banyak bergerak dari satu bilik ke bilik yang lain apabila berada di rumah.  
14. Saya tidak lagi berjalan jauh dan sentiasa berhenti untuk berehat.  
15. Saya jarang keluar untuk menziarahi orang lain.  
16. Saya kurang menghadiri aktiviti sosial bersama orang-orang lain.
17. Saya tidur tidak selena dahulu.

18. Saya kerap berjaga sepanjang malam.

19. Saya merasa risau untuk melakukan hubungan jenis dengan suami/isteri saya.

20. Saya boleh melakukan hubungan romantik dengan suami/isteri saya seperti biasa.

**BAHAGIAN II**

**ARAHAN:** Perkara-perkara berikut adalah berkaitan dengan pengalaman sehari-hari seseorang individu. Berdasarkan skala di bawah, sila nyatakan sejauh manakah anda berpuas hati dalam setiap aspek kehidupan anda sekarang.

- **1** langsung tidak berpuas hati
- **2** kurang berpuas hati
- **3** tidak pasti
- **4** berpuas hati
- **5** amat berpuas hati

1. Kehidupan dan pengalaman sosial.
2. Kehidupan dan pengalaman bersama keluarga.
3. Hobi dan rekreasi.
4. Pendidikan dan aktiviti intelek.
5. Pengalaman hidup sehari-hari (seperti kerja).
7. Harapan untuk masa hadapan.
BAHAGIAN III


"1" tidak pernah
"2" jarang
"3" tidak pasti
"4" kadang-kadang
"5" selalu

1. Saya merasa cemas dan resah. ☐
2. Saya merasa ketakutan, seperti ada perkara buruk yang akan berlaku. ☐
3. Saya masih boleh merasa terhibur dengan perkara-perkara yang menggembirakan saya. ☐
5. Saya merasa kecut perut. ☐
6. Saya merasa senang dan tenang. ☐
7. Saya merasa resah seperti saya sepatutnya melakukan sesuatu. ☐
8. Saya merasa cemas dengan tiba-tiba. ☐
9. Saya merasa gembira. ☐
10. Saya rasa saya tidak sepantas dahulu. ☐
11. Saya boleh ketawa dan melihat kelucuan di sebalik perkara-perkara yang berlaku. ☐
12. Saya menunggu dengan kegembiraan untuk melakukan pelbagai perkara. ☐
13. Saya sudah hilang minat terhadap rupa dan perawakan saya. ☐

Berdasarkan skala yang sama seperti di atas (Bahagian III), sila nyatakan sejauh manakah anda menggunakan cara-cara berikut di dalam menghadapi masalah-masalah tersebut.

1. Saya memikirkan cara yang terbaik dalam mengendalikan masalah itu.
2. Saya terasa banyak gangguan perasaan dan mendapati saya sering meluahkan perasaan tersebut.
3. Saya mengalah dalam usaha saya untuk mendapatkan apa yang saya mahu.
4. Saya mendapatkan ketenangan dalam agama saya.
5. Saya berkata pada diri sendiri "ini tidak benar."
6. Saya menumpukan usaha saya dalam mengendalikan masalah itu.
7. Saya mengaku pada diri sendiri bahawa saya tidak boleh menghadapi masalah itu dan terus berhenti mencuba.
8. Saya cuba untuk mendapatkan sokongan emosi daripada keluarga dan sahabat-handai saya.
9. Saya membiasakan diri dengan kenyataan bahawa ianya telah berlaku.
10. Saya membuat perancangan tindakan.
11. Saya memohon pertolongan Tuhan.
12. Saya enggan mempercayai bahawa ianya telah berlaku.
13. Saya terus mengalah dalam mencapai matlamat saya.
14. Saya menerima hakikat bahawa ianya telah berlaku dan tidak boleh diubah.
15. Saya berbincang dengan seseorang mengenai perasaan saya.
16. Saya melakukan perkara yang patut dilakukan, langkah demi langkah.
17. Saya meletakkan kepercayaan saya pada takdir Tuhan.
18. Saya berpura-pura ianya tidak terjadi.
19. Saya bertanya kepada orang lain yang menghadapi pengalaman yang sama apa yang mereka lakukan.
20. Saya berfikir secara mendalam mengenai langkah-langkah yang perlu diambil.
21. Saya mengurangkan usaha saya dalam mengatasi masalah tersebut.

22. Saya beribadat lebih dari biasa.

23. Saya berlagak seperti ianya tidak pun terjadi.

24. Saya mengambil langkah langsung dalam mengatasi masalah tersebut.

ARAHAN: Berikut adalah pandangan orang terhadap masa hadapan mereka. Berdasarkan skala yang sama seperti di atas (Bahagian III), sila nyatakan sejauh manakah anda bersetuju atau tidak bersetuju dengan setiap kenyataan dalam menggambarkan perasaan dan pandangan anda mengenai masa hadapan anda.

1. Saya berkeyakinan penuh terhadap masa hadapan saya.

2. Saya boleh mengharapkan lebih kegembiraan daripada keduakan.

3. Masa hadapan saya kelihatan gelap.

4. Saya menunggu masa hadapan saya dengan harapan.

5. Tidak ada gunanya saya mahukan sesuatu kerana kemungkinan besar saya tidak akan mendapatnya.

6. Apabila melihat ke arah masa depan, saya menjangka yang saya akan lebih gembira daripada sekarang.

7. Saya tidak berharap untuk mendapatkan apa yang saya mahu.

8. Apa yang kelihatan pada masa depan saya hanya ketidaksenangan bukanlah kesenangan.

9. Pada masa akan datang, saya berharap untuk berjaya di dalam perkara yang saya ambil berat.

10. Lebih baik saya mengalah kerana saya tidak dapat memperbaiki keadaan diri.
BAHAGIAN IV


1. Pada pandangan anda, apakah punca utama anda menghidap penyakit jantung?

2a. Bolehkah anda tidur nyenyak pada waktu malam selepas keluar dari hospital?

   Ya [ ]
   Tidak [ ]

b. Jika Ya, secara kasar, berapa jamkah anda dapat tidur nyenyak pada waktu malam?

   antara 1 - 4 jam [ ]
   antara 5 - 8 jam [ ]
   9 jam atau lebih [ ]

c. Jika Tidak, sila nyatakan sebabnya.

3a. Semenjak keluar dari hospital, adakah anda mendapatkan cara perubatan yang lain (seperti perubatan tradisional) selain daripada perubatan yang disediakan oleh doktor anda?

   Ya [ ]
   Tidak [ ]

b. Jika Ya, sila nyatakan cara perubatan tersebut.

c. Jika Ya, adakah cara perubatan tersebut berkesan dalam memulihkan penyakit anda?

   Ya [ ]
   Tidak [ ]

4a. Adakah anda melakukan senaman semenjak keluar dari hospital?

   Ya [ ]
   Tidak [ ]
b. Jika Ya, sila nyatakan jenis senaman tersebut.

c. Jika Ya, berapa kerapakah anda melakukan senaman?

3 kali atau lebih dalam seminggu
2 kali dalam seminggu
sekalai dalam seminggu


d. Jika Ya, berapa lamakah anda melakukan setiap sesi senaman?

lebih dari 30 minit
antara 20 - 30 minit
kurang dari 20 minit

5a. Sudahkah anda menukar cara pemakanan anda semenjak keluar dari hospital?

Ya □ Tidak □

b. Jika Ya, sila nyatakan cara pemakanan anda sekarang.

6a. Adakah anda merokok sebelum mengalami penyakit jantung?

Ya □ Tidak □

b. Jika Ya, berapa batang rokok sehari?

c. Jika Ya, adakah anda masih merokok?

Ya □ Tidak □

d. Jika Ya, berapa batang rokok sehari?
7a. Sudahkah anda pulang bekerja?

Ya [ ] Tidak [ ]

b. Jika Ya, berapa lama selepas keluar dari hospital anda memulakan kerja anda kembali?


8a. Adakah anda tahu mengenai program pemulihan jantung yang disediakan oleh pihak hospital?

Ya [ ] Tidak [ ]

b. Jika Ya, adakah anda menyertai program tersebut?

Ya [ ] Tidak [ ]

c. Jika Tidak, sila nyatakan mengapa.

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
INSTRUCTIONS: The following statements may describe the experiences for the past month. Based on the scale below, please indicate whether you have experienced these thoughts, feelings and behaviours.

“0” No, not at all
“1” Sometimes
“2” Yes, all of the time

1. I spend much of the day lying down in order to rest.

2. I sit around half asleep.

3. I am doing less of regular daily work around the house.

4. I am not doing any heavy work around the house.

5. I am eating much less than usual.

6. I am eating special or different foods (e.g. low salt, low fat).

7. I am not working at all.

8. I am doing more inactive pastimes in place of my other usual activities.

9. I stand only for short periods of time.

10. I am very clumsy in body movements.

11. I do work around the house only for short periods of time or rest often.

12. I am staying in bed most of the time.

13. I stay within one room.

14. I walk shorter distances or stop to rest often.

15. I am going out less often to visit people.

16. I am doing fewer social activities with groups of people.

17. I do not sleep as well as I used to.

18. I lie awake most of the time throughout the night.

19. I am worried about having sex with my spouse.

20. I make love to my spouse as often as I used to.
Instructions: The following areas summarise the typical experiences that occur in daily living for the past month. Please rate the extent to which your life is fulfilling or satisfying in each of the stated area.

| “1”   | not satisfying |
| “2”   | quite satisfying |
| “3”   | uncertain |
| “4”   | satisfying |
| “5”   | very satisfying |

1) Social life and experiences
2) Family life and experiences
3) Hobbies and recreational experiences
4) Educational and intellectual experiences
5) The experiences of daily living (e.g. work)
6) Romantic and sexual experiences with spouse
7) Expectations and hopes for the future

INSTRUCTIONS: The following statements may describe how you have been feeling for the past month. Based on the scale given above, please indicate the extent to which you experience these feelings.

| “1”   | never |
| “2”   | seldom |
| “3”   | uncertain |
| “4”   | sometimes |
| “5”   | often |

1. I feel tense and uneasy.
2. I feel frightened, as if something awful is about to happen.
3. I can still enjoy the things that have always made me happy.
4. Worrying thoughts go through my mind.
5. I get a sort of frightened feeling like butterflies in the stomach.
6. I am at ease and feel relaxed.
7. I get sudden feelings of panic.
8. I feel cheerful.

9. I feel as if I have slowed down.

10. I can laugh and see the funny side of things.

11. I look forward with enjoyment to things.

14. I can enjoy little things like chatting with my family or reading.

INSTRUCTIONS: There are many ways of dealing with an illness. We are interested in how you respond to your illness. Based on the same scale given above, please indicate the extent to which each of the following statements describes how you are dealing with your illness.

1. I think about how I might best handle this illness.

2. I feel a lot of emotional distress and find myself expressing those feelings a lot.

3. I find comfort in my religion.

4. I try to get emotional support from my family and friends.

5. I seek God's help.

6. I talk to someone about how I feel.

7. I do what has to be done, one thing at a time.

8. I put my trust in God.

9. I ask people with similar experiences what they did.

10. I think hard about what steps to take.

11. I seek advice and support from others about what steps to take.

12. I pray, sometimes more than usual.

13. I seek God's help by praying.

14. I take a direct action to recover from my illness.
INSTRUCTIONS: Below are statements on how people view their future. Based on the scale given below, please indicate the extent to which you agree or disagree with each statement in describing your feelings and views of your life in the next year or so.

"1" strongly disagree
"2" disagree
"3" uncertain
"4" agree
"5" strongly agree

1. I have great faith in the future.
2. I can look forward to more good times than bad times.
3. My future seems dark to me.
4. I look forward to my future with hope.
5. There's no use in really getting what I want because I probably will not get it.
6. When I look ahead in the future, I expect I will be happier than now.
7. I don't expect to get what I want.
8. All I can see ahead of me is unpleasantness rather than pleasantness.
9. In the future I expect to succeed in what concerns me most.
10. I might as well give up because I can't make things better for myself.

Instructions: The following questions ask about your experiences since your discharge from the hospital. Please answer the following questions and tick / accordingly in the space provided.

In your opinion, what was the main cause of your heart problem?

__________________________________________________________________________

Have you been able to sleep well at night since your discharge from the hospital?

Yes [ ] No [ ]
On average, how many hours of sleep per night have you been able to get?

- none
- between 1-4 hours
- between 5-8 hours
- 9 hours or more

Since your discharge from the hospital, have you sought any other forms of treatment (alternative treatment) apart from the ones prescribed by your doctor?

- Yes
- No

Please state the kind of treatment you have sought and received.

Do you think that the alternative treatment is effective in treating your illness?

- Yes
- No

Do you exercise at all since you were discharged from the hospital?

- Yes
- No

If Yes, what kind(s) of exercise do you do?

How often do you exercise?

- More than 3 times per week
- Twice per week
- Once a week
How long does each exercise session last?

<table>
<thead>
<tr>
<th>Duration</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>More than 30 minutes</td>
<td></td>
</tr>
<tr>
<td>Between 20-30 minutes</td>
<td></td>
</tr>
<tr>
<td>Less than 20 minutes</td>
<td></td>
</tr>
</tbody>
</table>

Have you changed your diet since you were discharged from the hospital?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
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</tbody>
</table>

Are you working?

<p>| | |</p>
<table>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If Yes, approximately how long after your discharge from the hospital did you return to work?

_________________________

Are you aware of the rehabilitation programme provided by the hospital?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If Yes, did you attend the rehabilitation programme?

<p>| | |</p>
<table>
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<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
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APPENDIX 7

Correlation table of psychological constructs at Time 2
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<th>(XV)</th>
<th>(XVI)</th>
<th>(XVII)</th>
<th>(XVIII)</th>
<th>(XIX)</th>
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</thead>
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<td>.071</td>
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</table>

Correlation matrix of psychological constructs at Time 1 and Time 2

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)
APPENDIX 8

Correlation table of psychological constructs at post-hospitalisation
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<th>(V)</th>
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<th>(VIII)</th>
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<th>(X)</th>
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</table>

Correlation matrix of psychological constructs at post-hospitalisation

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
APPENDIX 9

Study 5 Questionnaire
PANDANGAN TENTANG KESIHATAN DAN PENYAKIT
PERCEPTIONS OF HEALTH AND ILLNESS

ARAHAN UNTUK BORANG KAJI SELIDIK
QUESTIONNAIRE INSTRUCTIONS

Tujuan kajian ini adalah untuk memahami pandangan anda terhadap kesihatan anda secara umum dan juga pandangan anda mengenai dua jenis penyakit.
The purpose of this study is to look at how you think about your health in general and your perceptions of two types of illness.

The following is a questionnaire for you to complete. Each section of the questionnaire has its own instructions. Please respond according to the instructions given. Once you have completed the questionnaire, please return it to the researcher.

Kami memberi jaminan bahawa pandangan anda akan dirahsiakan.
We ensure that your responses will be kept strictly confidential.

Terima kasih atas penyertaan anda.
Thank you for your cooperation.
ARAHAN: Kami ingin tahu tentang pandangan anda berkenaan penyakit jantung. Berdasarkan skala di bawah, sila nyatakan sejauh mana anda bersetuju atau tidak bersetuju dengan kenyataan-kenyataan berikut mengenai penyakit jantung. Sila tulis nombor yang bersesuaian di dalam kotak yang berkenaan.

INSTRUCTIONS: We are interested in your own personal views of how you perceive coronary heart disease. Based on the scale below, please indicate the extent to which you agree or disagree with each of the following statements about heart disease. Please write the appropriate number in each of the boxes provided.

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<tr>
<th>“1”</th>
<th>“2”</th>
<th>“3”</th>
<th>“4”</th>
<th>“5”</th>
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</thead>
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<tr>
<td>amat tidak setuju</td>
<td>tidak setuju</td>
<td>tidak pasti</td>
<td>setuju</td>
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<tr>
<td>strongly disagree</td>
<td>disagree</td>
<td>uncertain</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

1. Kuman atau virus ialah penyebab penyakit jantung.
   A germ or virus causes heart disease

2. Pemakanan memainkan peranan yang besar dalam mengakibatkan penyakit jantung.
   Diet plays a major role in causing heart disease.

3. Penyakit jantung terjadi disebabkan takdir Tuhan.
   Heart disease is caused by the will of God.

4. Penyakit jantung ialah penyakit keturunan - ianya turun temurun dalam keluarga.
   Heart disease is hereditary - it runs in the family.

5. Seseorang itu boleh mendapat penyakit jantung secara kebetulan.
   It is just by chance that one gets heart disease.

6. Tekanan adalah faktor penting dalam menyebabkan penyakit jantung.
   Stress is a major factor in causing heart disease.

7. Orang lain berperanan besar dalam menyebabkan penyakit jantung.
   Other people play a large role in causing heart disease.

8. Penyakit jantung disebabkan oleh kurang penjagaan kesihatan.
   Heart disease is caused by poor medical care.

9. Keadaan mental seseorang memainkan peranan yang besar dalam menyebabkan penyakit jantung.
   One’s state of mind plays a major part in causing heart disease.

10. Merokok memainkan peranan yang besar dalam menyebabkan penyakit jantung.
    Smoking plays a large role in causing heart disease.

11. Penyakit jantung boleh disebabkan oleh kurang senaman.
    Heart disease can be caused by lack of exercise.

12. Penyakit jantung akan berlanjutan untuk seketika waktu.
    Heart disease will last a short time.

13. Penyakit jantung berkemungkinan kekal, bukananya untuk sementara waktu.
    Heart disease is likely to be permanent rather than temporary.

14. Penyakit jantung akan berlanjutan untuk jangkamasa yang panjang.
    Heart disease will last a long time.
15. Penyakit jantung ialah penyakit yang serius.
Heart disease is a serious condition.

16. Akibat penyakit jantung ke atas kehidupan pengidapnya adalah besar.
Heart disease has major consequences on one’s life.

17. Penyakit jantung senang ditanggung oleh pengidapnya.
Heart disease is easy to live with.

18. Penyakit jantung tidak memberi kesan yang besar ke atas kehidupan seseorang.
Heart disease does not affect one’s life much.

19. Penyakit jantung mempengaruhi pandangan orang lain terhadap pengidapnya.
Heart disease strongly affects the way others see the patient.

20. Penyakit jantung mengakibatkan masalah ekonomi dan kewangan yang serius.
Heart disease has serious economic and financial consequences.

21. Penyakit jantung mempengaruhi pandangan pesakit terhadap dirinya.
Heart disease strongly affects the way the patient sees herself/himself.

22. Diberi masa, penyakit jantung boleh dipulih.
Heart disease can be cured in time.

There is a lot which a patient can do to control his/her symptoms.

24. Tidak banyak yang boleh dilakukan untuk pulih daripada penyakit jantung.
There is very little that can be done to improve heart disease.

25. Penyakit jantung boleh dirawati.
Heart disease can be treated.

26. Pemulihan daripada penyakit jantung banyak bergantung kepada takdir atau nasib.
Recovery from heart disease is largely dependent on chance or fate.

27. Perkara yang dilakukan oleh pesakit boleh menentukan dirinya sembuh atau tidak daripada penyakit jantung.
What the patient does can determine whether he/she gets better or worse.

28. Pemulihan daripada penyakit jantung banyak bergantung kepada takdir Tuhan.
Recovery from heart disease largely depends on the will of God.

29. Perubatan tradisional boleh digunakan untuk merawat penyakit jantung.
Alternative medication can be used to treat heart disease.

30. Tidak banyak yang boleh dilakukan untuk pulih daripada penyakit jantung.
There is not much that can be done to recover from heart disease.

ARAHAN: Kami ingin tahu pandangan anda berkenaan penyakit demam panas. Berdasarkan skala yang di bawah, sila nyatakan sejauh mana makalah anda bersetuju atau tidak bersetuju dengan kenyataan-kenyataan berikut mengenai demam panas. Sila tulis nombor yang bersesuaian di dalam kotak yang berkaitan.

DIRECTIONS: We are interested in your own personal views of how you perceive the fever. Based on the scale below, please indicate the extent to which you agree or disagree with each of the following statements about the fever.
1. Kuman atau virus ialah penyebab penyakit demam panas.  
_A germ or virus causes fever._

2. Pemakanan memainkan peranan yang besar dalam mengakibatkan penyakit demam panas.  
_Diet plays a major role in causing fever._

3. Demam panas terjadi disebabkan takdir Tuhan.  
_The fever is caused by the will of God._

4. Sesorang ini boleh mendapat demam panas secara kebetulan.  
_It is just by chance that one gets the fever._

5. Tekanan adalah faktor penting dalam menyebabkan penyakit demam panas.  
_Steel is a major factor in causing fever._

6. Orang lain berperanan besar dalam menyebabkan penyakit demam panas.  
_Other people play a large role in causing fever._

7. Demam panas disebabkan oleh kurang penjagaan kesihatan.  
_The fever is caused by poor medical care._

8. Keadaan mental sesorang memainkan peranan yang besar dalam menyebabkan penyakit demam panas.  
_One’s state of mind plays a major part in causing fever._

9. Demam akan berlanjutan untuk seketika waktu.  
_The fever will last a short time._

10. Demam panas berkemungkinan kekal, bukan untuk sementara waktu.  
_The fever is likely to be permanent rather than temporary._

11. Demam panas akan berlanjutan untuk jangkamasa yang panjang.  
_The fever will last a long time._

12. Demam panas ialah penyakit yang serius.  
_The fever is a serious condition._

_The fever has major consequences on one’s life._

14. Demam panas tidak membebankan pengidapnya.  
_The fever is easy to live with._

15. Demam panas tidak memberi kesan yang besar ke atas kehidupan pengidapnya.  
_The fever does not affect one’s life much._

16. Demam panas mempengaruhi pandangan orang lain terhadap pengidapnya.  
_The fever strongly affects the way others see the patient._

17. Demam panas mempengaruhi pandangan pesakit terhadap dirinya.  
_The fever strongly affects the way the patient sees herself._
18. Diberi masa, demam panas boleh disembuh.
   The fever can be cured in time.

   There is a lot which a patient can do to control his/her symptoms.

20. Tidak banyak yang boleh dilakukan untuk pulih daripada demam panas.
   There is very little that can be done to improve from the fever.

    The fever can be treated.

22. Pemulihan dari demam panas banyak bergantung pada takdir atau nasib.
    Recovery from the fever is largely dependent on chance or fate.

23. Perkara yang dilakukan oleh pesakit boleh menentukan dirinya sembuh atau tidak
dari pada demam panas.
    What the patient does can determine whether he/she gets better or worse.

24. Pemulihan daripada demam panas banyak bergantung kepada takdir Tuhan.
    Recovery from the fever largely depends on the will of God.

25. Perubatan tradisional boleh digunakan untuk merawat demam panas.
    Alternative medication can be used to treat the fever.

26. Tidak banyak yang boleh dilakukan untuk pulih daripada demam panas.
    There is not much that can be done to recover from the fever.

ARAHAN: Kami ingin tahu pandangan anda mengenai isu-isu yang berkaitan dengan kesihatan. Berdasarkan skala berikut, sila nyatakan sejauh manakah anda bersetuju atau tidak bersetuju dengan kenyataan-kenyataan berikut.

INSTRUCTIONS: Please indicate the extent to which you agree or disagree with each of the following statements about health-related issues.

<table>
<thead>
<tr>
<th></th>
<th>&quot;1&quot;</th>
<th>&quot;2&quot;</th>
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<tr>
<td></td>
<td>amat tidak setuju</td>
<td>tidak setuju</td>
<td>tidak pasti</td>
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<td>amat setuju</td>
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<tr>
<td></td>
<td>strongly disagree</td>
<td>disagree</td>
<td>uncertain</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

1. Jikalau saya jatuh sakit, puncanya salah saya sendiri juga.
   Whatever goes wrong with my health is my own fault.  

2. Tidak kira apa yang saya lakukan, jika saya akan jatuh sakit, saya akan jatuh sakit juga.
   Often I feel that no matter what I do, if I am going to get sick, I will get sick.

3. Saya tidak akan senang jatuh sakit jika saya selalu berjumpa doktor.
   If I see a doctor regularly, I am less likely to fall ill.

4. Takdir yang menentukan bila saya jatuh sakit.
   When I become ill, it's a matter of fate.

5. Apabila saya jatuh sakit, saya tahu bahawa saya tidak menjaga kesihatan saya dengan baik.
   When I fall ill, I know it's because I have not been taking care of myself.

6. Saya sendiri yang bertanggungjawab ke atas kesihatan saya.
I am directly responsible for my own illness.

7. Saya jatuh sakit kerana takdir yang menentukannya begini.
   Fate determines when I fall ill.

   My health can be maintained if I regularly see the doctor.

   Health professionals keep me healthy.

Soalan-soalan di bawah bertanyakan mengenai cara hidup anda sekarang. Sila jawab soalan-soalan berikut dengan tepat. Sila tandakan X di dalam kotak yang berkenaan.
The following questions ask about your current lifestyles. Please answer the questions as accurately as possible and mark X in the relevant boxes.

1. Adakah anda merokok?
   Do you smoke?
   Ya/Yes  ❌  Tidak/No  ❌  Sudah berhenti/Have quit  

   Jika “Ya”, sudah berapa lamakah anda merokok?
   If “Yes”, how long have you smoked?
   ________________

   Jika “Ya”, berapa batang rokok anda hisap setiap hari?
   If “Yes”, how many cigarettes per day do you smoke?
   ________________

2. Adakah anda melakukan senaman?
   Do you exercise?
   Ya/Yes  ❌  Tidak/No  

   Jika “Ya”, apakah jenis senaman/sukan yang anda lakukan?
   If “Yes”, what kind(s) of exercise do you do?
   ____________________________

   Jika “Ya”, berapa kerap anda melakukan senaman/bersukan?
   If “Yes”, how often do you exercise?
   Sekali seminggu/once a week
   dua kali seminggu/twice a week
   tiga kali seminggu atau lebih/three or more times a week
   lain-lain/other
   Sila nyatakan/Please state: ____________________________

   Jika “Ya”, berapa lamakah setiap sesi senaman anda?
   If “Yes”, how long does each exercise session last?
   kurang dari 10 minit/less than 10 minutes
   di antara 10 dan 20 minit/between 10 to 20 minutes
   30 minit atau lebih/30 minutes or more
3. Do you try to eat a healthy diet?
   - Ya/Yes
   - Tidak/No

   If “Yes”, please state the kinds of food you try to avoid.

4. In your own view, what is the leading cause of heart disease?

5. In your own view, is alternative medicine effective in treating heart disease?
   - Ya/Yes
   - Tidak/No
   - Tidak tahu/Don’t know

   In your own view, is alternative medicine effective in treating the fever?
   - Ya/Yes
   - Tidak/No
   - Tidak tahu/Don’t know

6. In your own view, what illness(es) can be treated using alternative medication?

7. Has a doctor ever informed you that you have health problems that are heart-related?
   - Ya/Yes
   - Tidak/No
MAKLUMAT LATARBELAKANG/SOCIODEMOGRAPHIC BACKGROUND

Sila isi tempat kosong dengan maklumat yang tepat dan tandakan X di kotak yang kerkenaan.

Please fill-in the blanks with the appropriate responses and mark X in the appropriate boxes.

<table>
<thead>
<tr>
<th>Umur/Age:</th>
<th>tahun/years</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Perempuan/Female</td>
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<td>Buddha/Buddhism</td>
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<td>Hindu/Hinduism</td>
<td>Kristian/Christianity</td>
</tr>
<tr>
<td>Lain-lain/Other</td>
<td></td>
</tr>
</tbody>
</table>

Pendidikan tertinggi/Highest Education:

| Sekolah Rendah/Primary School |
| SPM atau STPM |
| Sijil atau Diploma/Certificate or Diploma |
| Universiti/University(BA/BSc., MA/MSc., PhD) |

Adakah anda bekerja/Are you working?

<table>
<thead>
<tr>
<th>Ya/Yes</th>
<th>Tidak/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudah bersara/Have retired</td>
<td>Masih belajar/Still studying</td>
</tr>
</tbody>
</table>

Jika "Ya", sila nyatakan pekerjaan anda sekarang.
If "Yes", please state your current occupation.

Jika "Tidak" atau "Sudah bersara", apakah pekerjaan terakhir anda?
If "No" or you "Have retired", please state your last occupation.