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EFFECTS OF A DISCHARGE PLANNING INTERVENTION FOR
ELDERLY PATIENTS WITH CORONARY HEART DISEASE IN
TIANJIN, CHINA: A RANDOMIZED CONTROLLED TRIAL

BY
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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
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DOCTOR OF PHILOSOPHY

SCHOOL OF NURSING
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AUGUST, 2004
CERTIFICATION OF ORIGINALITY

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________________________ (Signed)

ZHAO, Yue (Name of the student)
ABSTRACT

Background: Elderly patients with chronic disease need continuity of health care during the transitional period following discharge from hospital to home. Comprehensive discharge planning models have been applied in developed countries such as the USA and the UK. However, the continuity of health care delivery during the transitional period is still underdeveloped in mainland China. It is critical to develop a continuous health care model during the transitional period and test the effects upon the elderly who have chronic illnesses such as coronary heart disease, dovetailing the acute phase of care with the rehabilitation phase in the community. It is important that this model takes into account the particular health conditions in mainland China.

Objective: To test the effects of an original discharge planning and follow-up support program in mainland China during the transitional period of care for coronary heart disease (CHD) in elderly patients. The outcome measures of the program are: adherence to health recommendations; understanding of the general and the specific treatment goals; self-management of CHD risk factors; readmission rates and related costs; and the effectiveness on community support for CHD elderly.

Design: This study used a randomized controlled trial to compare the effectiveness of a discharge planning protocol developed specifically for elderly Chinese hospitalized CHD patients. Subjects were followed-up for 4 weeks post-discharge by community nurses (CNS). Data was collected on four occasions: the day after getting patient’s consent in hospital (baseline data); within two days after discharge; at the end of the fourth week after discharge; at 12 weeks after discharge.
**Setting:** Data collection in hospital took place in the cardiac medical ward of Tianjin The First Central Hospital, one of the two largest hospitals in Tianjin, and also in the teaching hospital of the School of Nursing, Tianjin Medical University. This hospital provides comprehensive health care services for both local and non-local patients. Patients’ follow-up in the study was conducted by the community nurses of Tianjin Wang Ding-Di community hospital which is located in Nan Kai district of Tianjin.

**Participants:** Two hundred subjects screened for study participation, aged 60 years and older, were admitted from home (in the Nan Kai district of Tianjin) to Tianjin The First Central Hospital between September 2001 and April 2003 with a diagnosis of either angina or myocardial infarction.

**Intervention:** The elderly CHD patients in both the study group and the control group received routine care. Patients in the study group received a discharge planning program which included assessment, health education and consultation before discharge; plus a discharge plan, patient referral, and continued education and consultation during the follow-up after discharge.

**Outcome Measures:** Self-reporting based upon an understanding of the basic knowledge of CHD-related risk factors, CHD diet, CHD medications, and CHD physical exercise plus self-reported adherence to diet, medication, physical exercise, the daily practice of health related behavior, and the readmission rate.

**Results:** Demographic factors, health and functional status were controlled. Compared with the control group, elderly CHD patients in the study group scored
significantly higher on self-reported basic awareness for: CHD risk factors; diet; medication at 2 days, 4 weeks and 12 weeks post-discharge; and awareness about physical exercise at 4 weeks and 12 weeks post-discharge. (P<0.01). Similarly, self-reported adherence to diet and health-related daily behavior at 2 days, 4 weeks and 12 weeks post-discharge; medication adherence at 4 weeks and 12 weeks post-discharge; and physical exercise at 12 weeks post-discharge were all significantly higher in the study group than in the control group (p<0.05). But readmission rate between the two groups measured at 12 weeks post-discharge was not significantly different p>0.05.

Conclusions: Study findings demonstrate that the discharge planning and follow-up support program may benefit the elderly CHD patients by enhancing CHD related knowledge and health behavior. This study suggests that a coordinated discharge plan and follow-up program is needed for elderly CHD patients in mainland China during the transitional period from hospital to home. If implemented by both clinical nurses and community nurses it could facilitate effective continuity of health care from hospital to community outcomes in the long term.
ACKNOWLEDGEMENTS

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I was indebted to all the patients who participated in this study. They gave their time unsparingly to share their experience of the management of coronary heart disease. My special thanks to those participants who allowed home visit in Tianjin, China during the SARS outbreak. I was particularly impressed by the genuineness of my fellow graduate students at the School of Nursing of The Hong Kong Polytechnic University. Special thanks also for objective and impartial help from Yim Wah Mak, Ka Yan Wong, Angie Soetanto, Si Jian Li, and Hai Ou Xia.

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Chapter One Introduction

Elderly patients are usually discharged with complex medical systems, high stress and vulnerability, and this places the elderly at risk for poor outcomes (Daly, et al. 2000; Marcantonio, et al., 1999). Elderly patients with chronic diseases need seamless health care during transitional period- a highly stressful and vulnerable period for them. Transitional care such as a discharge planning program is to facilitate the care process from hospital to home. Nurses can assist patients with transitions throughout the healthcare continuum. The present study implemented in Tianjin China tries to explore a way of providing appropriate and affordable health services by nursing professionals to meet older patients' health care needs during their transitional period. The background, objective, and significance of this study will be presented in this chapter.

1.1 Background

Health and welfare systems across the world are facing increasing pressure with the continuous growth of the elderly population. The affordability of health service for the elderly is a key concern in China. The health service system in China is facing challenges to provide a cost-effective health service especially for the elderly.

About eighty percent of the elderly have a chronic disease or disability (Jiang & Zhang, 1999; Guralnic & Everett, 1989; McClelland, Kelly & Buckwalter, 1985). The most common chronic conditions affecting older adults around the world are cardiovascular disease, cancer, diabetes, osteoarthritis, pulmonary disease,
Alzheimer's disease, psychiatric disorders and most commonly depression and dementia (International Council of Nurses on Healthy Aging, 1999). It has been predicted that by the year 2020, about thirty-six percent of all deaths will be from cardiovascular diseases (He, 1998). The coronary heart disease (CHD) patients and the number of hospital days will increase rapidly each decade to the year 2020 (Johansen, Nair & Taylor, 1998). In addition, the death rate from CHD will increase exponentially with aging. Of the deaths from CHD, 80 percent occur in those older than 65 years. Moreover, CHD is responsible for 50 percent of all deaths in the over 85 age group.

It is obvious that CHD is one of the major problems in the geriatric population. Studies confirmed that CHD can be favorably altered through multi-factorial approaches to risk modification and prevention strategies (Tresch & Alla, 2001; Manninen, et al., 1988). Successful intervention of CHD risk factors management would have a significant impact on morbidity and mortality. Intervention is possible once risk factors are identified. The effectiveness of chronic disease management ultimately depends on the patient's actions, specifically on the patient's adherence to medication, diet, exercise regimens and response to symptoms (DeBusk, et al., 1999). Evidence shows that unsatisfactory management of CHD risk factors after the patient is discharged may have a significant impact on hospital readmission, morbidity, and health care cost (Burke & Dunbar-Jacob, 1995; Esposito, 1995). CHD risk-factor management for elderly CHD patients should be provided continuously from hospital to community by effective nursing intervention.
CHD risk factor management can be introduced at various stages of the disease's progression and is characterized as primary, secondary, or tertiary (Jairath, 1999). The immediate post-discharge period is highly stressful because elderly patients are vulnerable and often discharged with complex medical conditions. The transitional period is fraught with discontinuity and poor communication which places the elderly at risk of poor outcome and early readmission to hospital (Daly, et al. 2000; Thompson, Ersser & Webster, 1995; Robinson, et al. 1998; Holloway, Medendorp & Bromberg, 1990).

An effective discharge-planning program is critical for meeting the post-hospital needs of elderly patients, and is considered to be associated with an increase in patient health status and satisfaction. Studies have demonstrated that implementing a discharge plan for elderly CHD patients can improve their outcome, and also reduce care costs by delaying or preventing readmission (Naylor, et al., 1999; Naylor, et al., 1994). So, discharge planning for elderly is identified as a way of utilizing health resources effectively (Armitage & Kavanagh, 1998). Even though some health promotion programs were applied to CHD patients both in hospital and the community in mainland China, surveys concluded that some outcomes such as patients' adherence to health recommendations had not been satisfactory (Diao, et al., 2002; Gao, Huang & Tang, 1998; Tian, et al., 1998; Guo & Zhang, 1998). Nursing professionals should focus attention on elderly patients who are at risk of failing to maintain medication regimens and health care recommendations for their chronic diseases (Applegate, 2002).
1.2 Objective and research hypotheses of the study

Objective: The objective of this study is to examine the effects of a nurse-led discharge planning and follow-up support program for elderly patients with coronary heart disease CHD and to provide them with an effective continuing care model during their transitional period. This study was conducted among a group of elderly patients with CHD in Tianjin, mainland China.

Null hypotheses are:

H.1. There is no difference concerning CHD-related knowledge between the study group and the control group;

H.2. There is no difference concerning dietary adherence between the study group and the control group;

H.3. There is no difference concerning drug adherence between the two groups;

H.4. There is no difference concerning physical exercise adherence between the two groups;

H.5. There is no difference concerning daily living behavior adherence between the two groups; and

H.6. There is no difference concerning the readmission rate between the two groups.

1.3 Significance of the study

Although the treatment and nursing intervention for CHD patients during their hospitalization is improving in mainland, China, the follow-up health care service after the patient's discharge, is still underdeveloped. There is a gap in patient health care between hospital and community during the transitional period. There are a number of comprehensive hospitals and community health service agencies in China.
In addition, the nursing field has used holistic care methods since 1980 and the hospitals have implemented discharge planning. However, the present continuing health care service lacks collaboration and coordination between the comprehensive hospital and the community hospital. Usually, patients do not receive a continuous health care service from health professionals in either the comprehensive hospital or community hospital when a patient is discharged from hospital to the community.

Cost-effective health service for elderly patients is significant for China, the largest developing country with the largest population in the world. In mainland China, health service reform is progressing, a social health insurance system is being established, and the government is promoting the community health service system nationally. The health service reform aims to provide quality as well as cost-effective care for the people. Health service agencies are expected to minimize costs and maximize profits for providing these services.

The study of the effect of a discharge planning intervention for elderly patients with CHD in Tianjin, China meets the trend for China's health service reform. This nurse-led discharge planning and follow-up support program is a collaborative and coordinated program combining clinical and community nursing. In this study, the model was implemented and tested for the first time in mainland China. This study aims to explore a way of providing a cost-effective continuing health care service for elderly CHD patients during the transitional period. Also, the intervention of a discharge planning and follow-up support program for Chinese CHD elderly is anticipated to improve the health care outcomes related to CHD risk factor management.

Chapter One Introduction
Chapter Two Literature Review

This chapter will review literature from these aspects:

1) The health care system facing the pressure of an aging population, the impact of a large number of elderly patients with chronic heart diseases on the delivery of health care systems worldwide, in particular mainland China. CHD risk factors and the management and assessment of intervention effectiveness.

2) Continuing care for elderly CHD patients during the transitional period; the definition; the conceptual framework; and the professionals involved in discharge planning.

3) Research evidence of discharge planning and follow-up intervention implementation.

2.1 The health care system is facing pressure to expand health care services to meet the needs of an aging population with CHD

Aging affects physiological systems, clinical medicine, society, economics, and ethics (Greengross, et al., 1997), and emerges as the premier health service global issue. The health care system is facing pressure to expand health care services to meet the needs of an aging population.

Pressure of an aging population on the health care system

The International Council of Nurses on Healthy Aging (1999) pointed out that the number of elderly people in developed and developing countries had noticeably increased during the twentieth century and continues to do so in the twenty-first
century. Nearly one million people cross the threshold of age 60 each month. This includes developed countries, such as the United States, where for example the number of elderly persons has been increasing so rapidly that by the year 2020 people aged 65 and older will make up 16% of the U.S. population (U.S. Census Bureau, 1994). In 1994, there were 31 million elderly Americans. By 2030, this number is expected to reach 69.3 million, representing about 20% of the total U.S population (U.S Census Bureau, 1996). Between the years 1981 and 2001 the population in the UK of those aged 85 and above was expected to double (Henwood, 1992).

Five of the ten countries with the largest population of older persons are in the developing world: China, India, Indonesia, Brazil and Pakistan. This group is expected to increase its elderly population by almost 240% by 2020 from its 1980 level (International Council of Nurses on Healthy Aging, 1999).

In mainland China, the number of people aged 60 and above is about 126 million and this number increases by about 3% each year. The age group of 80 and above is increasing at the rate of 5.4% every year (Zhang, 2000). China's population survey in 2000 showed that the proportion of people aged 65 and above increased 1.39% since the 1990 survey. In the year 2000, according to a national consensus report, there were 88 million people over the age of 65 – about 6.96% of the total population (National Statistics Bureau of P.R. China, 2001). By the year 2050, it is expected that 25% of the total population of China, that is 439 million people, will be 60 and above (Fan, 2000). In addition to this increasing number of older people in society, the number of older, frail people is also increasing. It is predicted that the percentage of the elderly family in which the elderly live without their children will be about 50%
by the year 2005 in mainland China (Zhang, 2000). In 2000, 8.33% of the population of Tianjin, China was aged 60 and above. Now with 1,234,500 elderly, it constitutes about 13.54% of the total. In fact, within the Heping district of Tianjin, the elderly aged over 60, represents about 17.5% of the community’s total population (Liu, 2002). This rapid demographic change in aging will dramatically increase the demands on China’s health care system and accordingly impact upon the nursing interventions required for the elderly in hospitals and communities.

Elderly people use more health services than other age groups. Elderly patients over 65 years account for 31 percent of acute care hospital admissions in the United States, and account for 45 percent of hospital expenditures for adults (Hahn & Efkwitz, 1992). Facing an aging situation, there are concerns in society regarding the cost and quality of care (Ulla & Sion, 1997; O’Hare, 1992). Increased attention, to reducing healthcare costs and achieving high-quality patient care outcomes, has focused on how patient care is planned and implemented (McCloskey, 1991).

**Coronary heart disease - one of the major threats to an aging population**

Elderly patients are among the frailest of the patients needing nursing care. Their nursing and medical problems are often complex (Mezey & Fulmer, 1999). Coronary heart disease (CHD) is a common chronic disease that affects the elderly in China and other countries (Qu, 2000; Jiang & Zhang, 1999; Gregoratos, 2001; Tresch & Alla, 2001; Abrams, et al., 1995; Kligman, 1992). Coronary heart disease is identified as one of the most important health problems in America. The yearly number of deaths, the degree of disability, and the costs are enormous. Although the continuing decrease in CHD death rates may, in part, suggest the waning of a major twentieth century
epidemic, it is also related to improved treatment modalities for acute (unstable angina pectoris, acute myocardial infarction [MI]) and chronic (stable angina, ischemic congestive heart failure) and manifestations of CHD, as well as a favorable alteration in the prevalence of major coronary risk (Abrams, et al., 1995). In China, CHD is also the leading cause of death in the older population (XinHua News Agency, 2001; Gao, et al., 1999; Yao, Liu & Zuo, 1999; Li, 1999; Wong & Wan, 2000). It is predicted that by the year 2020, 36% of all mortality cases will be caused by cardiovascular disease (He, 1998). Among the major cities in China, Tianjin ranks second on the list for the highest incidence of cardiac disease and hypertension (Zhang, 2001).

Although an overall reduction in the death rate due to cardiovascular disease has occurred over the last several decades, cardiovascular diseases, particularly coronary heart disease, remain one of the leading causes of death in both men and women (Chesler, 1999). Although absolute mortality rates declined, absolute prevalence rates of coronary disease increased, especially in the elderly (US Dept. of Health and Human Services, Public Health Service, Centers For Disease Control and Prevention, 1994; National Center for Health Statistics, US, 1990). In fact, the age-adjusted death rates from cardiovascular disease may start to rise as increasing numbers of patients with heart disease remain at risk for death from CHD (Hunink, et al., 1997).

The aging population brings challenges to our health service system, and elderly patients use more health services. Coronary heart disease is one of the major chronic diseases among the elderly. Health service delivery systems, in particularly in developing countries, should develop cost-effective health services for the elderly with CHD or other chronic diseases. The management of chronic diseases can delay
or even, at times, avoid the expense of costly acute episodes of inpatient or outpatient care. For CHD, comprehensive cardiovascular risk reduction interventions are unsatisfactory. There is an urgent need to develop and implement innovative approaches that provide people with CHD effective risk reduction interventions that are accessible and affordable (Allen & Scott, 2003).

Health care providers have been concerned with the maintenance and improvement of the quality of care for hospitalized patients, and are learning to develop tools to evaluate the quality and appropriateness of care rendered to patients at their institutions. Quality assurance involves the process of monitoring and evaluating the quality and appropriateness of care. It is also a process that: focuses on the outcomes of patient care; employs monitoring and evaluation methods to determine quality and appropriateness of patient planning and care; investigates the structure, process, and outcome components of the care provided; seeks to identify deficiencies in care provided and plans interventions to improve care; focuses on identifying appropriate or inappropriate patterns of care within and across hospitals, but also conducts individual case reviews when necessary; and identifies ways health care providers can improve their delivery of care (Dash, et al., 1996).

Risk factors related to CHD

A major focus for rehabilitation of CHD is to reduce known risk factors of CHD by health care intervention (Robinson, 1999; Newens, et al., 1995; Chua & Lipkin, 1993). Comprehensive risk factor reduction in patients with CHD can extend overall survival, improve quality of life, decrease the need for interventional procedures, and reduce subsequent myocardial infarction (Smith, et al., 2001).
Also, the major CHD risk factors of smoking, elevated blood cholesterol level, lack of exercise, poor diet and high blood pressure-have been targeted for health promotion packages which aim at modifying these factors (General Medical Services Committee, 1993). The goals of global cardiovascular risk management are to ensure that high risk patients are aggressively treated and that advice and motivation are given for possible lifestyle changes. Issues that need to be considered with regard to risk factor management include advice on modifiable risk factors (Riley, 2003).

There is usually no single cause of CHD. It is a multi-factorial disease, a combination of modifiable and non-modifiable risk factors including physical and biochemical parameters as well as lifestyle and behavior. Main modifiable CHD risk factors include: smoking, raised blood lipids, raised blood pressure, diet, lack of physical activity, obesity, and blood clotting disorders. The main non-modifiable CHD risk factors are: family history, age, gender, disease states, including renal disease and diabetes (Daniels, 2002).

Studies related to identifying factors that contribute to the risk of CHD have been investigated in many populations (Stamler, et al., 1993; Kannel & Larson, 1993; Neaton & Wentworth, 1992; Multiple Risk Factor Trial Research Group, 1990; Kannel, Castelli & Gordon, 1979; Kannel & McGee, 1979; Pooling Project Research Group, 1978; Gordon, et al., 1977; Gordon, et al., 1977). These studies and others (Rosengren, et al., 1989; Butler, et al., 1985; Chapman & Massey, 1964) described and confirmed that the risk for the development of coronary heart disease (CHD) is related to cigarette smoking, levels of serum cholesterol and blood pressure, and
diabetes mellitus. The American Heart Association identified the major factors that contribute to the risk of cardiac heart disease as: elevated cholesterol, hypertension, smoking, decreased or lower levels of physical activity, gender, diabetes (Pearson & Fuster, 1996). Elevated cholesterol, smoking and hypertension are frequently referred to as the group triad in recognition of their magnitude and prevalence as CHD risk factors. Intervention is possible once risk factors are identified. Epidemiologists conceptualize intervention in terms of disease prevention. Prevention can occur at various stages in disease progression and is characterized as primary, secondary, or tertiary in nature (Jairath, 1999). The risk-factor concept and the results of completed clinical trials designed to test the efficacy of intervention to control specified risk factors are the foundation of current recommendations for smoking cessation and the treatment of hypertension, hypercholesterolemia, and diabetes. Modifiable risk factors that affect the prognosis for a person with CHD are cigarette smoking, hypertension, serum lipids and lipoproteins, physical inactivity, diabetes, obesity, diet, lack of reproductive hormones, and psychosocial factors. Non-modifiable risk factors that affect the prognosis for a person with CHD are family history, age, and gender (Nalini Jairath, 1999; Edward, 1997; Froelicher, et al., 1995; Stamler, 1988). So, efficacy is needed upon the modifiable factors.

Management of CHD risk factors through continuing care
Elderly patients with CHD need a cardiac rehabilitation program of exercise and risk reduction education, plus counseling, to promote healthy living with coronary heart disease (Liehr, et al., 2003). Patients with post-MI can manage the post-discharge period safely and make informed decisions about potential life-style changes by
receiving information regarding the condition, risk factors, medications, diet, psychological concerns, activities, stress-management and symptoms (Duryee, 1992).

The American Heart Association published an updated Consensus Panel Statement (Smith, et al., 2001) including a guide to comprehensive risk reduction for patients with CHD which evinced that comprehensive risk factor reduction in patients with CHD can extend overall survival, improve quality of life, decrease the need for interventional procedures, and reduce subsequent myocardial infarction. A joint statement of the American Heart Association and the American Association for Cardiovascular and Pulmonary Rehabilitation lists the core components of cardiac rehabilitation as patient assessment, nutritional counseling, smoking cessation, physical activity counseling, exercise training plus lipid, hypertension, weight, diabetes, and psychosocial management (Balady, et al., 2000).

According to The National Service Framework of the UK (Department of Health, 2000), the rehabilitation activities for CHD are divided into four distinct phases. Phase one begins before discharge from hospital and usually takes the form of discussion about the patient's lifestyle in an attempt to identify any risk factors for heart disease, and general information on how to reduce these risks and so prevent a further heart attack. It also involves education regarding medications. Phase two is identified as rehabilitation and involves a comprehensive assessment of risk, provision of lifestyle advice and a general progress review. Health promotion for elderly CHD patients will continue long after discharge with a referral to a health visitor. Phase three is recommended to begin four weeks after CHD occurs and should consist of structured exercise sessions to meet the individual’s assessed needs. It should also
contain access to advice and support from a variety of trained experts in areas such as relaxation, health promotion exercise and psychological matters. Phase four involves the long-term maintenance of changed behaviors and is mainly carried out by the primary care professionals such as community nurse.

Prevention and management of CHD risk involve modifying multiple behaviors that can be influenced by intentional changes in lifestyle. These may include modification of smoking; reduction of dietary cholesterol, fat, or sodium intake; exercise adoption; weight control; stress reduction; and adherence to medication or medical regimens to control problems like blood pressure or diabetes.

**Improvement of elderly CHD patients’ adherence to health recommendations**

Continuing-health care intervention is focused towards health promotion and disease prevention strategies such as adherence to healthier behaviors (Burke & Dunbar-Jacob, 1995).

Adherence is a term used to describe submission or yielding to predetermined goals where the health-care provider or educator is viewed as the traditional authority and the client or learner is viewed as a submissive figure. Health-care literature suggests that adherence is the equivalence of the achieved goal to a predetermined regimen. Adherence to a health regimen is an observable behavior and can be directly measured. Adherence is the degree to which one acts in accord with a prescribed regimen (Sieber & Kaplan, 2000; Erlen, 1997). The prescription for medication, diet, exercise and health behavior is intended to decrease or eliminate the problem for the patient. The adherence optimizes patient outcomes, decreases health care costs in terms of patient
hospitalizations and emergency room visits, and supports the use of limited health care resources (Erlen, 2002). Haynes (1975) defined adherence in health care as the extent to which a person's behavior coincides with health-related advice and includes the ability of the patient to attend clinic appointments as scheduled, take medication as prescribed, make recommended lifestyle changes, and complete recommended investigations.

Esposito (1995) conducted an intervention study of different educational protocols on increasing medication compliance rates for the elderly. Forty-two elderly patients were randomized into four groups. Group 1 received the standard education protocol; group 2 received the standard education and 30 minutes of verbal instruction; group 3 received the standard education and a medication schedule; and group 4 received the standard education, a medication schedule, and 30 minutes of verbal instruction. The medication schedule included the following information about the medication: the name, color, the dosage amount, the time of dosage, side-effects, and reasons for taking the medication. The intervention started on the day of the patient's discharge from hospital, and the follow-up home visits were conducted at 2 weeks, 1 month and 2 months after discharge. Patients who received the standard education and a medication schedule (in group 3 and group 4) had higher compliance rates. Although this study had the limitation of a small sample size, it revealed the benefits of the medication schedule compared with other education protocols.

Adherence among individuals with cardiovascular risk factors is related mainly to three therapeutic plans: prescribed medication, diet, and physical activity (Burke & Dunbar-Jacob, 1995). After myocardial infarction, healthy diets (low in fat and high
in fruit and vegetables) have significantly reduced cardiovascular mortality in randomized trials (Moher, 1995) and exercise regimens have reduced sudden deaths by 36% and total mortality by 20% in a meta-analysis of randomized trials (O'Connor, et al, 1989). Insufficient adherence to prescribed medications and diets leads to increased morbidity and increased medical costs. Ghali et al. (1988) found that non-adherence accounted for 37% of the admissions. Fair and Berra (1995) pointed out that clinical trials demonstrated progression of CHD was slower in subjects adhering to low-fat, low-cholesterol diets.

Adherence is also described as a collaboration or active alliance between a health care provider and patient in which both endeavor to guarantee the patient's self-sufficiency in the self-management of his or her condition (American Hospital Association, et al. 1982). Nurses are stricter in monitoring adherences, providing individualized counseling promoting lifestyle changes, and initiating regular follow-up by telephone or mail. Nurse-directed models may be one of the most effective strategies for managing cardiovascular disease risk factors (Allen & Scott, 2003). Frequently, the nurse is the single source of such care. As such, the nurse has a unique opportunity to educate the patient and offer suggestions for lifestyle modifications that can reduce the recurrence of CHD events (Froelicher, et al., 1995).

Evaluation of an individual's potential to follow the regimen must be an integral part of the initial treatment visit. An ongoing assessment of adherence should be incorporated into subsequent clinical encounters. Assessment usually consists of self-reporting measures, biologic measures, electronic monitoring, or pill counts and
pharmacy refills. Although self-reporting measures seem to be the most vulnerable to
the bias of overestimation, they are used most frequently to assess adherence, perhaps
because they are the most easily administered and the least expensive. Interviews,
structured questionnaires, and daily diaries are the three most commonly used formats
(Burke & Dunbar-Jacob, 1995).

Gil et al. (1994) used indirect methods to evaluate therapeutic compliance on 152
hypertensive patients. These indirect methods includes self communicated compliance,
appointment attendance, the degree of blood pressure control, patient's knowledge of
the disease, and doctor's judgment on patient's compliance. The indirect methods were
applied to 152 hypertensive patients randomly selected from the Health Centers of
Alfaz and Alicante (Spain). Concordance with the compliance obtained from the
“counting of tablets” in the patient’s home at random was evaluated by double entry
tables. This study concluded that self communicated compliance and patient's
knowledge of disease were the methods which provided the best indicators of validity
to measure therapeutic compliance in high blood pressure in outpatients.

Measurement of patient compliance is essential if management of low adherence is to
be performed efficiently. For measuring medication adherence, several methods are in
use, although accurate determinations are difficult to obtain. The validity and
reliability of simple measures such as questioning, tablet count, prescription counts
and clinicians estimates have been questioned (George, et al., 2000). Furthermore,
more reliable methods, such as serum drug levels and stability of level/dose ratios
during the maintenance phase, are not easy to perform (Keller, et al., 2002). Although
there are many techniques and instruments to measure patient adherences, asking a
patient direct questions with a non-threatening approach effectively demonstrated a sensitive simple clinical measure of assessing patient adherence.

Haynes et al. (1980) studied ways to measure compliance. The value of several easily obtained clinical assessments was assessed to compare quantitative pill counts among 134 newly treated hypertensive male steelworkers during the first 6 months of their treatment with antihypertensive medication. Patients’ self-reports obtained from structured interviews correlated best with pill count compliance \( r = 0.74, p<0.0001 \). Qualitative urinary chlorothalidone and hydrochlorothiazide levels and changes in serum potassium, uric acid, and blood pressure were also correlated with pill count compliance but were less accurate than the interviews. Assessment of the patient's "health beliefs" and a variety of sociodemographic and health traits and perceptions did not provide useful information on compliance. Interviewing the patient is a simple and useful approach in assessing compliance with antihypertensive therapy.

Pampallona et al. (2002) reviewed 14 random studies of interventions on adherence in treatment. The most common interventions were patient education related to medication. However, these investigations did not provide consistent indicators that they were effective. McDonald et al. (2002) indicated that an insufficient sample size and the lack of power to detect clinically important effects may be the reasons for the inconsistent results. However, recent studies (Akerblad, et al. 2003; Keller, et al. 2002) reported that the patient education program is an important aspect to further improve adherence.

Akerblad et al. (2003) conducted a randomized controlled study to test the effect of a patient educational compliance enhancing program on 1031 depressed patients.
Adherence was measured by questioning, measuring serum levels, the keeping of appointments, and a composite index at 4, 12, and 24 weeks. Treatment adherence was found in 37–70% of patients, depending on the method used. This study demonstrated that treatment response increases when using an educational compliance program and that a strong relationship between treatment adherence and response exists.

**Assessment of intervention effectiveness for elderly CHD patients**

Patient adherence monitoring is a key component of CHD management. A clear understanding of the knowledge of the disease, diagnosis, and the treatment required to keep the disease in check, together with the education and adherence programs necessary to prevent future incidents of care intervention. The objective is the management of the disease versus event-driven treatment of the disease. Prevention and control of the disease state are key management strategies that may result in avoidance of costly and acute cases of care intervention. To assist case managers in disease management, clinical guidelines and pathways for the disease must be developed, monitored, and directed to ensure adherence of care. Clinical pathways and guidelines may be purchased through a number of sources, including the Center for Case Management. In addition, a number of clinical groups share information on the Internet on clinical guideline development, monitoring, and reporting. It is important that these clinical guidelines and pathways are developed as monitoring and adherence reporting tools (Dewing, 1997).

Intervention outcomes are being used to describe the impact of care on patients’ lives, establish a basis for clinical decision-making, evaluated the effectiveness of care, and
identify areas for improvement in care (Davies, et al., 1994). The selection of an outcome measure should be comprehensive, comparable, meaningful and accurate in the reflection of areas that are important to the elderly (Kleinpell, 1997). The goals related to the outcome measurements for aging patients include: an increased understanding of the effectiveness of various health care interventions, eventual use of this information to aid in health care decision making by patients, health providers, and health service payers; and a potential for the development of standards for guiding health care providers in optimizing the use of available resources (Kleinpell & Mick, 2001).

A variety of factors need to be considered when addressing diet in the development of CHD. Diet can affect many of the modifiable risk factors, notably blood cholesterol levels, blood pressure and weight.

Dietary adherence includes avoidances of high fat intake (Department of Health, 1994), high salt intake, and overweight and obesity (WHO, 1998). Dietary advice should not just be about eating less fat and salt, but also about increasing intakes of fruit, vegetables and fish to reduce the risk (Department of Health, 1994). Salt intake should be limited to 6g per day to help control blood pressure (Department of Health, 1994).

Keeping physically active provides protection against CHD (Department of Health, 1999). People should become more physically active by walking or cycling on a regular basis. Physical activity guidelines recommend 30 minutes' activity at least five times a week (Department of Health, 1999).
According to the exercise standards of the American Heart Association (Fletcher, et al., 1995), walking is the preferred activity due to its safety and ease of control. The emphasis of exercise within the first 2 weeks after MI should be to avoid or offset the effects of bed rest. When the individual is stable as measured by ECG, vital signs, and symptomatic standards, he or she can begin walking. Follow-up supervision is recommended to enhance the educational process, to ensure that the participant is tolerating the program, to confirm that progress is occurring, and to provide medical supervision in high-risk situations. A long-term follow-up should be encouraged to strengthen their long-term adherence and to ensure that the program is being followed properly.

Unmonitored exercise can be used for conditioning after the individual has recovered from the MI (2 weeks or more after hospital discharge) or in other cases of stable CAD, although medically supervised and monitored exercise is preferred. Activity should be restricted to walking (ordinary walking, not race walking) or equivalent activities. Activities are considered safe and appropriate if they meet the criterion of moderate intensity as perceived by the physician or judged by an exercise test.

2.2 Continuing care for elderly CHD patients during the transitional period

Elderly patients often cannot manage their health care needs independently, especially during their transitional period. Many no longer have family members who can assist their needs or speak on their behalf. Nurses are expected to take management responsibility for their patient’s health care needs. Continuing care is seen by many
nurses as requiring skilled nursing input and is said by some nursing commentators to be wholly/uniquely the domain of nursing (Maslin-Prothero & Masterson, 1998). Continuity of care for elderly patients is recognized as essential for achieving a positive outcome in these patients. Discharge planning for continuing care between hospital and community services provides care cost effectively for elderly patients with CHD, therefore effective discharge planning is essential to ensure continuity of care (Naylor, et al., 2001).

**Continuing care to meet elderly patients' needs during their transitional period**

Continuing health care is a coordinated delivery of ongoing health care services over time and across a variety of setting and providers (Anderson & Helms, 1998). Elderly patients with cardiovascular diseases such as CHD are highly stressed and vulnerable immediately following their discharge. Medical patients are seriously at risk of discontinuity of care in the transfer from hospital to community (Daly, et al. 2000; Marcantonio, et al., 1999; Robinson, et al., 1998; Thompson, Ersser & Webster, 1995; Holloway, Medendorp & Bromberg, 1990; Armitage, 1981). Cardiology patients, compared with other patients, are particularly concerned about their ability to manage their illness after discharge, and they want more information related to medications, pain management, daily activities, and diet (Burney, Purden & McVey, 2002). Marcantonio et al. (1999) investigated patient (65 and older) characteristics and risk factors at discharge associated with unplanned readmission within 30 days of hospital discharge. They identified that patients age 80 years or older, previous admission within 30 days, more medical co-morbidities, and lack of patient or family education were the risk factors.
Thompson et al. (1995) interviewed twenty patients and their partners one month after a heart attack and concluded that services spanning the immediate post-discharge to early convalescence phase are rarely available. There was a lack of continuity and coordination between hospital and community services. However, this is the time that the elderly patients are particularly vulnerable and likely to need support. The transition from hospital to home is characterized by uncertainty, difficulties with coping, and distress (Ley, 1988).

An exploratory descriptive study of ten female patients with myocardial infarction by Jackson and her colleagues (2000) revealed that recovery was experienced as a complex process, the immediate post-discharge period being initially characterized by internal disorder, fear and uncertainty. A lack of reliable information was revealed throughout the study period, although by the end of the third week following discharge, some of the women had started actively to seek out information from various sources.

Wong et al. (2002) pointed out that patients who were readmitted to hospital usually had unmet needs and developed complications from existing problems or they had inadequate rehabilitation. So, need for follow-up care after discharge was evident. It was suggested that patients receiving simple advice from a health professional would return to former activities fairly quickly (Hampton & McWilliam, 1992). To meet elderly patients' needs during their transitional period, discharge planning implementation would bring these patients the benefit of collaborative quality improvement across the healthcare continuum (Bours, et al. 1998). Studies demonstrated a positive outcome for hospitalized elderly through continuing care, and
whereas a lack of continuous care contributes to a poor outcome. A discharge planning program (including home follow-up) has been demonstrated as a clinical pathway for effective continuing care (Bolman, De Bries & van Breukelen, 2002; Naylor, et al., 1999; Armitage & Kavanagh, 1998, Martens & Mellor, 1997, Naylor, et al., 1994).

**Discharge planning**

Adequate discharge planning is essential to ensure continuity of care (Naylor, et al., 2001). Being involved in discharge planning will help ensure that patients receive the most appropriate level of care; have a planned post hospitalization program to meet continuing care needs; remain in hospital for the shortest length of time; receive the highest level of quality care; and are not hospitalized unnecessarily (Dash, et al. 1996).

Discharge planning is described as focusing on assessment and needs identification, selecting agencies, and implementing and evaluating the plan (Potthoff, Kane & Franco, 1995). Discharge planning was defined by McKeehan (1981) as a process of activities that facilitate the transition of a client from one environment to another, with the transitional environment identified as hospitals, nursing homes, clients' homes, or family members' homes.

Discharge planning for the elderly patients was originally developed by staff at the Education Development Center, Inc. and the Beth Israel Hospital in Boston, Massachusetts, as a continuing education curriculum for nurses in New England hospitals. The Education Development Center and the Beth Israel Hospital were
contracted to develop a discharge-planning program for the elderly and an intensive continuing education program for acute care or bedside nursing. The educational program was designed to address the impact of the Prospective Payment System and it is associated with diagnostic-related groups on the nature of hospital stays for elderly individuals and to help nurses meet the new challenges associated with this policy change. Specifically, it aimed to improve the quality of services delivered to the increasing number of frail elderly being discharged sicker and quicker from acute care settings. The reason behind this focus on nurses was the growing realization that clinical nurses who provide direct care are in an ideal situation to assess elderly patients' needs and develop continuing care plans that ease their transition from the hospital to home and community (Dash, et al., 1996).

The Omnibus Budget Reconciliation Act (Omnibus Budget Reconciliation Act, 1986) mandates that hospitals have a discharge-planning program. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the American Hospital Association (AHA), and the American Nurses Association (ANA) have identified specific requirements for discharge planning (Lile & Borgeson, 1998). The JCAHO guidelines mandate early identification of patients in need of discharge planning and assessment of available and appropriate resources to meet patient post-discharge needs. Specific to nurses, the JCAHO guidelines state that patients needing post-hospital care must receive individualized instruction and counseling from the nurse. Additionally, all discharge planning activities and instructions, as well as nursing documentation of patient status at discharge, are to be included in the patient record. The American Hospital Association (1984) published guidelines for discharge planning. These guidelines list essential elements for discharge planning: early
identification of patients who are likely to require post-hospital care, patient and family education, assessment and counseling, discharge plan development, coordination and implementation, and follow-up after discharge.

According to The Standards of Clinical Nursing Practice of the American Nurses Association (1991) the nurse’s responsibilities are to ensure continuity of care, identify expected outcomes, develop a plan of care, and make referrals.

**Discharge planning framework**

The nursing process provides a helpful framework (Zarle, 1987) for developing and implementing effective discharge plans. Discharge planning according to Zarle’s model is a multidisciplinary process in that it involves the cooperation and coordination of several teams of people (primary team, resource team, and community team) inside and outside the hospital.

- **The primary team** is a multidisciplinary, interactive group of health care providers charged with the following responsibilities: to assess the patient for continuing care needs; to develop a plan of care that can enable the patient to move toward an optimal level of functioning; to implement the plan of care.

- **The resource team** is a group of persons within the acute care setting who are available to the primary team as consultants for the patient’s health care needs. These persons, trained in special health care fields, are used as resources and educators to the primary team. They assist in the implementation process as their expertise dictates.

- **The community team** consists of persons from various community agencies and programs who are able to assist in the discharge planning process. The community
team professionals continue in the community the plan of care that has been
developed and carried out in the acute care setting.

Discharge planning according to Zarle's model is a multidisciplinary process
including assessment, plan, implementation, and evaluation.

- **Assessment** involves collecting, validating, analyzing, and interpreting
  information about patients and their discharge environment. Beginning at
  admission, nurses should obtain information from patients, other professionals,
  and families.

  Rankin & Stallings (2001) pointed out that discharge planning and patient
  education are intertwined for many patients. The successful discharge plan for
  patient education must include teaching about physical care and how it can be
  performed at home. Patients' understanding of their illness and treatment must be
  evaluated in the nurses' assessment and counseling. Nursing assessment and
  counseling should help patients to make behavioral changes, and manage their
  continuing care. Some nurses construct their own assessment tools, which may
  better meet individual situations. The instruments should help the nurse focus on
  the total person and direct the nurse in collecting data in specific areas relevant to
  what the patient must learn.

- **Planning** involves the patient and the family in addressing their individual needs
  and desires for a continuing care plan. Using data gathered in the assessment,
  health care providers try to match patients with available resources based on
  patient eligibility and need.

- **Implementation** involves arranging for services at home and acquiring the
  necessary equipment and supplies. It also may involve transferring the patient to
  another site such as a long-term care or rehabilitation facility. It is particularly

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important for providers in the acute care setting to communicate patient needs to those responsible for post-hospital care.

- **Evaluation** involves determining whether the patient's continuing care needs are being met. Evaluation often involves follow-up procedures to determine from patients, families, community agencies, and referral facilities whether the care and the services provided to the patient are satisfactory and delivered in a timely fashion. Evaluating the appropriateness of a continuing care plan can help to ensure the effectiveness of the future planning process for other patients who have similar needs.

Swanson and Tripp-Reimer (1996) highlighted that the elderly should receive discharge-planning services from personnel who understand the need for efficient care procedures. No matter which procedure is used from among the diverse models for wellness and health promotion programs available for the elderly, the following strategies merit consideration when planning and organizing programs:

- **Identify services to be delivered.**

- **Present services on a level acceptable and affordable to the target population.**

- **Know and understand the target population’s demographics, health beliefs and values, and communication abilities.** Pay particular attention to the ethnic diversity of older adults (Gibson, 1994; Yee & Weaver, 1994).

- **Ensure the accessibility of the program.**

- **Involve users of the program in activities, such as determining calendars for health promotion programs and concomitant screenings, evaluating services, and making suggestions for new services.**

- **Make the program enjoyable and social.**

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• Provide users of the program with information about community resources.

• Avoid taking an illness-first approach to wellness care. Focus on healthy life-style practices rather than on illness care.

• Evaluate the programs of the center yearly to: determine if criteria for services are relevant; if goals have or have not been attained and if not why not; if clients’ requirements are satisfied or not; if demographics and needs of clients are changing and why; if clients are indeed practicing positive life-style habits and if these practices are making a difference; and last but not least, are the services cost-effective.

• Ensure that all care deliverers maintain their expertise and enthusiasm.

An evaluation of outcomes should include the three areas of access, quality, and cost-effectiveness of care (Proctor, Morrow-Howell & Kaplan, 1996; Naylor, et al., 1994; Evans & Hendricks, 1993; Neidlinger, Scroggins & Kennedy, 1987). Assessment of the extent to which patients are informed about available resources to meet their needs, offered choice in providers and settings for service delivery, and understand the financial implications of these choices should be completed (Bull, 1994; Jackson, 1994). Patients’ and caregivers’ satisfaction with services and suggestions for improvement should be elicited. Assessment of the progress made by patients and outcomes should be conducted (Naylor, et al., 1994; Zarle, 1989; Johnson & Fethke, 1985).

Two models commonly used in evaluating discharge planning are the American Nurses Association’s (ANA) and the Joint Commissions on Accreditation of Hospitals’ (JCAH) models.
The ANA five-step model (1975) uses the following steps: 1. Design the study; 2. Establish the criteria; 3. Gather the data; 4. Interpret the data, and 5. Take action.

The JCAH follows these steps (1987): (1) Assign responsibility; (2) Delineate the scope for care; (3) Identify important aspects of care; (4) Identify indicators related to these aspects of care; (5) Establish thresholds for evaluation related to the indicators; (6) Collect and organize data; (7) Evaluate care needs when thresholds are reached; (8) Take actions to improve care; (9) Assess the effectiveness of the actions and document improvement; and (10) Communicate relevant information to the organization-wide quality assurance programs.

**Professionals in discharge planning**

The collaborative discharge planning session is a major component of the discharge planning process (Lile & Borgeson, 1998). Planned, supported, and funded care by general practitioners may improve the health of care home residents and avoid episodes of expensive care (Bowman, et al., 1999). Poor interdisciplinary collaboration can impede discharge planning communication (Hansen, Bull & Gross, 1998).

The responsibility for properly assessing and preparing patients' post-hospital needs falls on the entire health care team. Discharge planning involves the patient, the family, and relevant care providers in the planning phase and emphasizes collaboration and coordination (Borden & Taft, 1990; Lile & Borgeson, 1998). Each member of the multidisciplinary team uses unique expertise to ultimately benefit the patient.
Hospital nurse: Collaborating with other health team members, hospital staff nurses contribute significantly to the development of the discharge plan, and do so within a compressed time frame. The patient’s primary nurse plays an essential role in teaching basic nursing care skills to the patient and the family, ensuring that other members of the discharge team are aware of the unique needs of the individual, and devising nursing care plans with alternate site or home health agency personnel. Depending on the facility, the continuing care nurse may assume the role of discharge coordinator and work closely with the social services to ensure that all aspects of the discharge process progress smoothly (Make, et al., 1998).

Community health nurse: The community health-care nurse acts as the patient advocate and liaison to provide continuity of care in the patient’s home. He or she is also a planner, facilitator, implementer, evaluator, and personal counselor for the patient and a support person for the family. The community health nurse may come to the hospital for discharge planning conferences before the patient’s discharge, make home assessments, and serve as the hospital (medical) link to the family. He or she may work directly with the hospital nurse or discharge planning coordinator (Victor, et al., 1993).

Patient and family: The most essential members of the discharge team are the patient and the patient’s family. Particularly for discharge to home, all decisions regarding care should be made in conjunction with the patient and family, and should be agreed by the patient or, when that is impossible, by the patient’s family (Make, et al., 1998; Burggraf & Stanley, 1989).

Discharge coordinator: One team member should be designated as the coordinator who will serve as a liaison among the multiple disciplines involved. The coordinator is most often a nurse (nurse specialist), or hospital discharge planner. The coordinator
is the most appropriate person to define explicitly the roles and responsibilities of each members of a home care team, including the patient and family. The coordinator is a program planner, implementer, facilitator, and evaluator of discharge planning. The coordinator also needs to be an advocate, mediator, and counselor. Currently social workers and nurses most often hold this position.

**Physician:** The physician’s instructions and medical directions are the essential ingredients in discharge planning. The physician’s role is twofold: informing the patient of the diagnosis and possible risks in treatment, and predicting outcomes and expected changes in lifestyle.

**Social worker:** The social worker assists with the social, emotional, and economic problems related to illness or injury, concentrates on the whole person, and is a facilitator and counselor in using community resources.

**Dietician or nutritionist:** They are assessors, teachers, counselors, and interpreters. They are often researchers and are always important team members. Nutritional counseling is a priority for elderly clients in any setting.

**Physical, occupational, and respiratory therapists:** The therapists will collect and disseminate information to and from the physician and other members of the discharge planning team, pertinent to a realistic program and plan of discharge for the patient and for post-hospital rehabilitative follow-up care.

**Durable medical equipment provider (DME):** When patients are discharged to long-term care, including the home, the equipment and equipment maintenance required for the continuation of ventilatory assistance is provided by a DME company.
Among the professionals involved in a discharge planning program, the professional nurse is the key person for discharge planning. Nurses who serve a role in discharge planning are usually head nurses or team leaders on the unit. Because nurses have more direct contact with the patients than do other team members, they are in a key position for getting input from the patient and staff for the discharge planning conference (Burggraf & Stanley, 1989).

The nurse, as direct caregiver, regularly available and being familiar with the patient’s continuing care needs, is uniquely qualified to influence the discharge planning process, patient outcomes, and healthcare costs (Fritsch-deBrun & Cunningham, 1990; Lowenstein & Hoff, 1994). The nurse is essential to the discharge planning process as she makes sure that the patients’ discharge plans are adequate to meet the needs of each patient and is in the best position to identify those patients with complex discharge needs. Nurses must be knowledgeable and confident in their specific roles and responsibilities in the discharge planning process, understand Medicare and Medicaid entitlements and be aware of available community resources. Assessment by the nurse of the patient’s mental and emotional status, functional abilities and disabilities, and self-care deficits is imperative (Corkery, 1989). Patients who have access to specialist nurses are more knowledgeable, more proficient in self care and more satisfied with the care they receive (Meharry, 1995). Also, Anthony and Hudson-Barr (1998) found that experienced nurses are more effective than novice nurses as coordinators of the discharge plan. Nurses need to ensure that patients receive adequate and appropriate care while in hospital; prevent unnecessary readmissions and ensure patients leave hospital with adequate follow-up care.
The patient's assessment before discharge and the follow-up program are the two characteristics necessary in a formally structured discharge planning program for effective care of elderly patients (Haddock, 1991).

The prevention of avoidable poor discharge outcomes should be a major focus of discharge planning for the hospitalized elderly (Naylor, 1992). Accurate patient assessment combined with prevention, management, and treatment of certain conditions can lead to improve post-discharge outcomes. One of the best ways to determine patient post-discharge needs and avoid poor patient outcomes is to conduct a thorough patient assessment.

The reviewed components of patient assessment related to discharge process include physical health (i.e. medication, nutritional information), psychological health (mental/emotional status), social health (i.e. family relationship), functional health (i.e. activity daily life), environment health (i.e. home environment), and the patient's perceived post-discharge needs (Dash, et. al.1996).

Four main predictors of post-discharge outcomes of the hospitalized elderly can be identified through patient assessment:

1. The patients' perceptions of their own general health. Patients who believe their health is good or excellent have a much better chance of regaining health after hospitalization even with a high degree of disability present (Johnson & Fethke, 1985);

2. The complexity of medical conditions. Examples of variables affecting post-discharge outcome include severity of illness, presence of multiple other
chronic conditions, discharge diagnosis, and medication regimen (Kane, Matthias & Sampson, 1983);

3. Patients’ inability to maintain responsibility for their own health. Patients with mental status deficits, functional deficits, a history of repeated hospitalizations during the previous 12 months, and the repeated use of community agencies for health and social services prior to admission are more likely to experience poor post-discharge outcomes (Wolock, et al., 1987; Berkman & Abrams, 1986; Johnson & Fethke, 1985; Kane, et al., 1983; Lamont, et al., 1983; Inui, Stevenson, et al., 1981), and

4. The presence of family or social networks capable of providing needed support (Johnson & Fethke, 1985). Patients with no informal support systems or with care needs that surpass the capabilities of their families are at risk for poor post-discharge outcomes.

To promote continuity of care, the discharge planning process in primary care includes identification of short- and long-term health goals for a client and assisting the client to develop the means of achieving those goals. Health care activities in primary care for the most part are concerned with health promotion and primary and secondary prevention. For clients with chronic illness, health care interventions would be geared toward optimizing function, rehabilitation and preventing further complications of the illness (McClelland, Kelly & Buckwalter, 1985).

Identifying and understanding the challenges that nurses face with discharge practices provides the basis for administrators and managers when planning change and
improving the effectiveness of, and satisfaction with discharge from hospital.
(Anthony & Hudson-Barr, 1998).

The discharge plan in primary care is a dynamic ongoing process. The process is
based on the five steps described by Mckeehan (1981) and will culminate in any or
all of the following: prescription; health education; counseling; client self-care;
provider follow-up; reinforcement; and referral to other health care providers. Referral
to other providers, although a necessary component of discharge planning in primary
care, often plays a minor role relative to the other interventions. It is important to
consider these differences in the structuring of a discharge planning program.

The actual discharge planning program will reflect the philosophy, goals, and
objectives of the individual clinic setting. In order to assure the highest quality of
health care, all discharge planning in primary care must address the need for periodic
health evaluation. And it must recognize the complexity of intervention in some
positive and some preventive activities. Discharge planning programs in primary care
must also include in their philosophical base the belief that all clients have the right
for positive and preventive services (McClelland, Kelly & Buckwalter, 1985).
Effective communication, both verbal and written, is an important principle in
discharge planning. Because of the fragmented nature of primary care, effective
communication involves a mechanism for tracking the client's short- and long-term
progress along the health care continuum. Standardized assessment forms provide a
consistent means of obtaining baseline information enabling a complete understanding
and tracking of the services required from the provider as well as those that must be
coordinated with other providers. Use of the nursing process format or a
problem-oriented medical record format can be effective, when used appropriately, to maintain focus on potential and actual health problems of the client as well as to provide precise communication of the client's health status to other providers. Health maintenance flowcharts can be used to track screening and other preventive and positive activities. Sometimes, the flowchart can be copied and shared with the client as a means of communicating with them recommended positive and preventive activities. Clients can then show this form to other providers to avoid duplication of services.

2.3 Continuing care intervention for elderly CHD patients by discharge planning and follow-up support

Patients with CHD have a considerably increased risk of suffering further cardiac events. The development of secondary prevention programs is therefore an important task. Secondary prevention in patients with CHD aims to prevent further events after CHD. Studies in general practice and hospitals show an increased potential for secondary prevention through medical and lifestyle interventions (Campbell, et al. 1998). Intervention aims are focused on helping CHD patients with the successful management of their risk factors (Vale, et al. 2003). Continuing care interventions for patients are usually initiated within one month before discharge and the follow-up may cover several days to several months. Interventions include education, instruction, counseling, home visits, telephone contact and reading materials. Intervention focuses on enhancing changes in lifestyle behavior, decreasing readmissions and on health care cost. Health professionals involved in intervention programs may involve multi-disciplinary professionals or professional nurses. Table 2.1 provides a synopsis of the studies to be discussed.
Studies related to discharge intervention for CHD patients

Effective secondary prevention of coronary heart disease is one of the central targets for health professionals and researchers. Researchers conducted studies to explore the scientific interventions into coronary prevention through management of lifestyle and risk factors related to CHD.

Stewart et al. (2002, 1999, 1998) conducted a multidisciplinary home-based intervention (HBI) in two studies on elderly patients with CHF. Patients involved in this study were interviewed and their medical records reviewed before discharge to document: clinical baseline, demographic and psychosocial characteristics. Patients in the intervention group received both usual care and a structured home visit within 7 to 14 days of discharge. A qualified cardiac nurse undertook the home visit. During this visit the nurse assessed the patient’s clinical progress since discharge, performed a physical examination, assessed the patient’s adherence to the prescribed treatment regimen, monitored the disease progress, fluid and sodium intake, noted the current amount of physical activity; the extent of psychosocial support, and use of available community-based resources. On the basis of this comprehensive home assessment, patients and their families (if appropriate) received a combination of remedial counseling, an introduction to strategies designed to improve treatment adherence and response, an introduction to a simple exercise regimen, and incremental monitoring by family/carers beside receiving the existing services for discharge planning made available to all patients without restriction. Home visits were repeated only if a patient had two or more unplanned readmissions within 6 months of the index admission. All patients in the intervention group were contacted by telephone at 3 months and 6
months so that their progress could be assessed and additional follow-up arranged if necessary. Patients were encouraged to contact the cardiac nurse if any subsequent problems arose. A report (with recommendations) was sent to the physician treating the patient. The intervention showed the following comparative results. During a median of 4.2 years of follow-up: there were significantly fewer primary end points (unplanned readmission or death) in the HBI versus usual care group; HBI patients had 78 fewer unplanned readmissions compared with those in usual care; median event-free survival was more prolonged in the HBI than the usual care group; fewer HBI patients died and had prolonged survival compared with the usual care group; and there were lower costs for these HBI patient readmissions.

Also, Inglis et al. (2004) performed a nurse-led, multidisciplinary, home-based intervention (HBI) on 152 elderly patients with CHD. This study also revealed that HBI intervention was associated with a trend towards prolonged event-free survival and fewer fatal events, fewer readmissions and days in hospital. Patients in the intervention group had a significantly lower morbidity and mortality rate.

Fox and colleagues (2002, 2001) established a cardiac prevention and rehabilitation program (named The Changes for Life Program) on new CHD patients (mean age=65) based upon lifestyle, risk factor, and therapeutic targets. Patients allocated to the new program were visited on the ward by one of the cardiac prevention nurses. This nurse would remain as the patient's primary nurse throughout the duration of the program. Patients received a home visit followed, usually within two working days of their hospital discharge. The Change for Life cardiac prevention and rehabilitation program ran for 12 weeks and included giving lectures, behavioral change intervention,
screening coronary heart disease risk factors; and a comprehensive electronic report specifying lifestyle, risk factor, and therapeutic targets. The researchers concluded that lifestyle, risk factor, and therapeutic targets could be successfully achieved in most patients using such a hospital based program and therefore they could expect a corresponding reduction in coronary morbidity and mortality as long as these results were sustained in general practice.

Carlsson et al. (1997) conducted a continuing intervention on 168 CHD patients. These patients, aged from 50 to 70, had experienced acute MI since discharge. During the first three weeks after discharge from hospital, all patients were enrolled in a follow up schedule including two visits by a nurse and a cardiologist. Patients were informed about CHD risk factors and the effect of lifestyle changes. They were invited to join an exercise program which included information about the positive effects of physical activity and 45 minutes of easy interval training. Then, the intervention group patients participated in an education program including smoking cessation, dietary education and physical activity over a three month period. The results were assessed from questionnaires completed on admission to hospital and at the one year follow up. It revealed that significantly more patients in the study group improved their dietary habits and stopped smoking. The researchers summarized that after the initial education about coronary risk factors given to all patients, the extended prevention program attained an additional effect on diet habits. Initiating the smoking cessation program during the hospital stay, followed by repeated counseling during follow up, might have improved the result. However, this study showed that the exercise program had no advantage in supporting physical activity compared to the usual care.
DeBusk et al (1994) performed a physician-directed, nurse-managed, home-based intervention on CHD patients for coronary risk factor modification. Patients, before being discharged, received advice including smoking cessation, exercise training, and diet-drug therapy counseling. Patients, after their discharge home were contacted by telephone and mail, received 12 months continuing intervention for exercise training, smoking cessation; and dietary counseling, plus lipid-lowering drug therapy if needed. Patients who received this intervention showed significantly lower plasma LDL cholesterol levels, within their functional capacity. Patient smoking cessation rates in the intervention group were significantly higher than patients in the control group. Researchers concluded that the intervention was considerably more effective than routine care for the modification of coronary risk factors after MI.

Elderly CHD patients' needs during the transitional period were frequently met by the intervention protocol such as health teaching, guidance, and counseling (Bowles, 2000). It is important to point out that patients who have experienced CHD are exceptionally well motivated and eager to learn about self-care strategies. And it is important that nurses recognize this "critical moment" and provide education, counseling, and behavioral interventions. Nurses both in the clinical and the community should promote patients' adherence to health recommendations. Education provision for patients can not only help them manage the conditions better, but also contributes to a successful transition (Donlevy & Pietruch, 1996). The recovery period following hospitalization for a CHD event is an ideal time to assess a patient for various factors and to offer intervention. Patients with post-MI also took a keen interest in their health related behavior (Turton, 1998).
Most patients with CHD are looked after in primary care. Home visits by the nurses can provide a valuable professional bridge for patients during this vulnerable period between hospital diagnosis and the start of the outpatient phase of the program. Nurses were also able to assess the potential for lifestyle change by the household, and the whole family was encouraged to participate (Fox, et al., 2001).

Campbell et al. (1998) explored a program of nurse led clinics in primary care for promoting secondary prevention of CHD in the elderly. This program was intended to promote medical and lifestyle aspects of secondary prevention and offered regular follow up. The intervention group patients improved their physical activity and dietary habits significantly. This study identified that after discharge intervention for elderly CHD patients by nurses in primary care, can effectively improve both medical and lifestyle components of secondary prevention. Martens & Mellor (1997) found patients with heart failure, who received home care nursing services following hospital discharge, had significantly fewer readmissions within 90 days of their hospital discharge.

**Implications of discharge planning intervention for elderly CHD patients**

Studies have shown the benefits of discharge planning and follow-up intervention with elderly patients. Inadequate discharge planning and follow-up were leading factors associated with the readmission of heart failure patients after discharge (Vinson, et al., 1990). Also, patients need leaving hospital with a comprehensive discharge planning which included post-discharge support (Phillips, et al., 2004).
Comprehensive discharge planning plus post-discharge support for older patients with CHF resulted in a 25% relative reduction in the risk of readmission; a 13% relative reduction in all-cause mortality; and for a smaller subset of studies, improvement in QOL scores, without increasing the cost of medical care (Phillips, et al., 2004). Discharge planning intervention targeting high-risk patients (i.e. older adults) increased the likelihood of a successful transition to home, and decreased the likelihood of unscheduled readmissions and associated costs (Naylor, et al., 1999; Naylor, et al., 1994; Evans & Hendricks, 1993).

Naylor and colleagues (1994) demonstrated the potential for a comprehensive discharge plan designed specifically for the elderly and implemented by advanced practice nurses (APNs) in decreasing readmissions and associated costs for medical cardiac patients during the six weeks post discharge. Evans and Hendricks (1993) revealed that a discharge planning intervention targeting high-risk patients decreased the readmissions through the nine-month study period.

A nurse led, discharge planning intervention program, sought to coordinate preventive care and improve communication between the hospital and the community and to encourage community nurses to provide structured follow up (Jolly, et al., 1999). The intervention was led by three cardiac nurse specialists who were responsible for coordinating follow up care for patients, particularly the transfer of responsibility for care between hospital and community health care at the time of discharge and the support of practice nurses. A nurse specialist telephoned the nurses to discuss the care of each patient and to book the first follow up visit before the patient was discharged. The nurses were themselves encouraged to telephone to the nurse specialist to discuss...
problems or to seek advice on clinical or organizational issues. Guidance on clinical management was attached to each discharge communication given to each patient (or relative) and to the general practitioner. Each patient was also given a patient held record, as a prompt and guide for follow up at standard intervals. Patients were followed up by self administered questionnaire at 1 month, 4 months, and 1 year after recruitment. The specialist nurses provided support to practice nurses by telephone or meeting. They also encouraged practice nurses to attend initial training on behavioral change and an ongoing support group, to meet their information needs as they arose. The result showed that from a methodological and logistic perspective the trial was successful. Failure to follow-up was small (10%) and was similar in both the intervention and the control groups. However, at the end of the follow-up, the intervention was shown to be apparently ineffective in reducing risk such as smoking, lipid concentrations, blood pressure, although BMI was just slightly lower in the intervention group.

Allen (1996) conducted a nurse-directed intervention on 138 coronary artery bypass surgery women. The current smoking status was obtained from the patients’ self-report. Patients’ dietary intake was measured by a modified Block Food Frequency Questionnaire. Patients’ physical activity was measured by asking patients to estimate the number of city blocks they walked per day and to complete a 7-day activity recall. The intervention provided reading materials, videotapes, instruction, counseling, and phone calls. The intervention began on the day before their hospital discharge and lasted for one month. The nurse-directed intervention proved more effective than the usual medical care in that it reduced the dietary intake of fat and saturated fat and prevented any increase in smoking. However, the exercise
component of this intervention resulted in minimal increases in regular exercise. This study indicated that a short in-hospital session followed by a single home visit and subsequent telephone-based contacts can enhance changes in lifestyle behavior that may develop long term benefits in women after CABS.

The researcher analyzed the reasons for unsatisfactory sampling results in respect of the standard of follow up care in the control group and failure to relate to the given advice from a patient's perspective. The most important explanation for the lack of a demonstrable effect from the intervention seems to lie in the limitations of a liaison service which focused on coordination of services; the incorporation of discretionary training and the use of resources. The nurse liaison service formed the core of the intervention and was very helpful. However, it became clear during the study that the nurse liaison service could not influence local service provision within the framework of the program, and that practice nurses within some primary care teams found their effectiveness to coordinate and monitor limited. This made access to rehabilitation services difficult for some patients, and hospital discharge care was sometimes less than optimal.

Elderly patients after discharge from hospital need receive seamless health service within the community. Nursing intervention strategies targeting the patient, the provider, and the health care delivery system should try to improve on compliance with this recommendation. However, results of studies are inconclusive in demonstrating the effect of discharge planning intervention. So, further nursing research on discharge planning and follow-up is needed, especially in mainland China.
Elderly CHD patients discharge planning and follow-up during the transitional period in mainland China

The effectiveness of the implementation of discharge planning and follow-up on elderly patients is obvious. Patient outcomes, patient costs, satisfaction, and the rate of readmission could all improve with effective discharge planning (Haddock, 1994). It may be cost-effective for China to deal with the pressure from the growing number of elderly patients, despite an inadequate health budget. Many elderly patients cannot afford the large cost of health. The health service system is expected to minimize costs and maximize profits for providing the cost-effective health services.

The intervention of a discharge planning program would be expected to improve geriatric patient health outcomes, help improve patient activity and well being, and reduce health care costs. It compares well against the present hospital and home care arrangements for elderly Chinese with chronic diseases such as CHD.

When elderly patients are prematurely discharged in a weakened state because of the pressures from health service costs, it worries patients and they tend not to regain their previous functional levels and have to be readmitted (Haddock, 1994).

Although there have been many CHD-related health promotion programs which apply to CHD patients, those previous surveys which investigated how patients maintained their recommended health regime found patients dissatisfied. An investigation in mainland China (Gao, Huang & Tang, 1998) of 36 cases (mean age=66.9, 12 cases occurred after admission, and 24 cases after discharge) for causes of CHD sudden
death, found there were 8 cases (22.2%) related to emotional stress, 8 cases (22.2%) related to bowel problems, 4 cases (11.1%) related to overeating, 9 cases (25%) related to excess physical exertion, and 7 cases (19.5%) for unidentified reasons. A quarter of these cases were not taking the medication as prescribed. Some patients did not understand how to monitor their heart rate; were unable to adjust to altered bowel function; lacked emotional self control; were unable to adjust their diets; or lacked physical motivation. This survey concluded that appropriate discharge planning and follow-up might have helped avoid the sudden death of 24 cases, all of which occurred after discharge.

Another survey (Tian, et al., 1998) of 50 Chinese adults (mean age of 27 males was 55.5±12.3, and mean age of 23 females was 65.5±18.3) admitted as CHD patients also found patients reporting factors for CHD such tiredness, emotional stress, overeating, bowel problems, and smoking. All these CHD patients were admitted to hospital. More than 90% of male patients were smokers. Poor adherence is a major obstacle to baneful treatment.

An investigation (a choice of two answers per question) of 138 admitted patients with CHD (Mean age= 60.8±10.8) in mainland China (Guo & Zhang, 1998) found that among the 111 patients who had a smoking history, 61 of them continued smoking after being diagnosed with CHD, even when some of them understood that smoking is one of the risk factors for CHD patients. 45.7% of cases did not understand the CHD diet, 48.6% of cases failed to understand their CHD medication, and 47.1% of patients were unable to understand their CHD physical exercise instructions and the information relating to CHD health behavior. Also, the result in the same
investigation revealed that 83.3% of patients showed low medication adherence, 60.1% of patients showed low diet adherence and low physical exercise adherence, 52.2% of patients showed low health behavior adherence. There were more than 88% of patients did not know how to monitor their blood pressure and heart rate. 105 of 138 cases wanted telephone contact with health professional after their discharge. About one third of patients preferred health professional home visits.

There was also concern about the nurses’ performance in educating the patient. Diao et al. (2002) found that among the 111 admitted CHD patients, just 11 patients received the CHD related knowledge from nursing professionals. More than half of them received the related knowledge from books, media, and their doctor.

Despite evidence that modifying one's lifestyle is beneficial, eliminating unhealthy practices is difficult. Education provides only the initial step in this process. Successful cardiac rehabilitation risk-reduction programs are characterized by ongoing counseling, support, evaluation, and reinforcement (Gulanick, 1998).

A cost-effective continuing nursing intervention strategy needs to be developed and should provide for geriatric CHD patients during their transitional period in mainland China. It is important to evaluate the possibility of discharge planning to meet continuous care needs in alternative, less costly levels of care ( Conte, 1983).

The fifth report on the provision of services for patients with heart disease (2002) in the UK mentioned that cardiac nurses have a major role in the link with primary care,
rehabilitation, and carrying out supervised procedures. The nursing professional is likely to be very beneficial to cardiac services.

Despite the strong scientific evidence supporting the effectiveness of these risk reduction interventions, their application is inconsistent across medical care settings and patient groups. Data indicate that fewer than 50% of patients have their risk factors assessed, treated, or controlled (Cooper, et al., 2000). Reports indicate that many persons with CHD do not receive appropriate dietary or drug therapy and follow-up by their primary care physicians or cardiologists (Blair, Bryant & Bocuzzi, 1988; Allison, et al., 1999; Hoogwerf, et al., 1999; Stuart-Shor, et al., 1999). Most primary care physicians and cardiologists do not have the time or resources to focus adequate attention on comprehensive cardiovascular risk reduction interventions and formal cardiac rehabilitation programs experience low participation rates, despite documented benefits.

Non-adherence to lifestyle modifications and pharmacological therapy contributes to inadequate risk factor control (Kjellgren, Ahlner & Saljo, 1995). Barriers to medications and diet therapy are associated with non-adherence (Bennett, et al. 2000). Poor adherence to medication and diet also leads to increased morbidity and mortality, increased medical costs, and increased costs to society secondary to lost wages and productivity (Jairath, 1999). More than 50% of the prescriptions written annually for treatment of various conditions are taken incorrectly by patients (Burke & Dunbar-Jacob, 1995). An estimated 16-50% of hypertension patients discontinue their anti-hypertension medications within the first year of therapy (Flack, Novikov &
Ferrario, 1996). Among those who continue with long-term therapy, a substantial number frequently miss doses. The reasons most often cited for non-adherence are complexity of medical therapy, inconvenience, duration of the treatment, side effects, cost of treatment, and skills needed for implementation of the treatment (Burke & Dunbar-Jacob, 1995).

Nurses are seen to be at the center of discharge planning. However, the majority of nurses were confused about how discharge planning was accomplished in their hospitals (Lowenstein & Hoff, 1994).

Newens et al. (1995) interviewed 202 male patients following an uncomplicated first MI. Although almost all patients (97%) reported that they had received some form of written information about their heart attack prior to discharge, much of which (77%) was provided by nurses. However, the quality of information varied considerable. Nurses or other hospital staff did not routinely discuss issues with patients either formally or opportunistically. It revealed that patients may lack discharge planning. Ways in which nurses can be encouraged to provide health education generally, ways in which patients are provided with health education and rehabilitation is needed for further evaluation. Thus, there is a critical need to develop and implement innovative approaches that provide elderly CHD patients with effective risk reduction interventions that are accessible and affordable (Allen, & Scott, 2003).
This chapter has reviewed literature related to the elderly with coronary heart disease, and with the management and effectiveness of discharge planning. The investigator obtained a deeper understanding of research methodologies that were applied in reviewed researches, for instance, management intervention; the effectiveness and measurement of CHD patient interventions. The literature review provided the investigator with insights to design this study.
### Table 2.1 Studies of continuing health intervention on patients with CHD

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Design</th>
<th>Intervention</th>
<th>Measurement</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fox, Wood, et al (2002)</td>
<td>318 (age not mentioned)</td>
<td>Group comparison</td>
<td>A cardiac prevention and rehabilitation (CP&amp;R) program consisting of an initial screening, a home visit and 8 weeks of multidisciplinary education including dietetic advice and supervised exercise sessions.</td>
<td>Smoking habits, BMI, blood pressure, total cholesterol and cardio protective drug usage.</td>
<td>Blood cholesterol is managed more effectively to target with a protocol based systematic follow-up compared with usual care. The majority of coronary patients can achieve recommended lifestyle, risk factor and therapeutic targets for coronary prevention compared with standard clinical practice.</td>
</tr>
<tr>
<td>Burney, Purden, McVey (2002)</td>
<td>161 (42% of the patients were less than 64 years of age)</td>
<td>Survey</td>
<td>Patient satisfaction survey (implemented 1 week after discharge), and nurse semi-structured interviews.</td>
<td>Quality of Care and the Users’ Satisfaction for patients; the semi-structured interview data for nurses.</td>
<td>Patients satisfied with care and not satisfied with the information they receive before discharge. Patients wanted more information regarding the management of symptoms and activity at home. Nurses and patients have different perceptions about the information patients need. Compared with control group, Patients in intervention group had significantly fewer primary end points (unplanned readmission or death), median event-free survival was more prolonged, fewer died, more prolonged survival, fewer unplanned readmissions, less cost of readmissions.</td>
</tr>
<tr>
<td>Stewart et al. (2002, 1999, 1998)</td>
<td>297; 200; 97. Aged 55 and older</td>
<td>Randomized study</td>
<td>A multidisciplinary home-based intervention (a structured home visit within 7 to 14 days of discharge, a report with recommendations was sent to the patient’s treating physicians and a combination of short- and long-term strategies applied.</td>
<td>Physical examination, patient’s adherence and knowledge, social support system, probability of readmission or death (A median of 4.2 years of follow-up)</td>
<td>Compared with usual care, the low-intensity smoking cessation intervention for cardiac inpatients was more effective in achieving smoking cessation.</td>
</tr>
<tr>
<td>Bolman, De Bries, and van Breukelen (2002)</td>
<td>789 (not mentioned)</td>
<td>pre-test- post-test quasi-experimental design</td>
<td>The Minimal Intervention Strategy for cardiac inpatients (C-MIS). The intervention was initiated at the hospital and continued after discharge. The core elements were stop-smoking advice from the cardiologist, a short bedside consultation with a nurse, administration of self-help materials and</td>
<td>Smoking cessation was assessed. Baseline measures were obtained within a few hours of the patients signing the informed consent. Outcome measures were assessed by means of questionnaires</td>
<td>Compared with usual care, the low-intensity smoking cessation intervention for cardiac inpatients was more effective in achieving smoking cessation.</td>
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</table>
Table 2.3: Summary of Literature

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Design</th>
<th>Participants</th>
<th>Interventions</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fox, Nuttall, et al. (2001)</td>
<td>A descriptive study</td>
<td>158 (Mean age=65, range 31-90 years)</td>
<td>The Change for Life cardiac prevention and rehabilitation program (ran for about 12 weeks after discharge)</td>
<td>Questions of lifestyle and drug treatment and measurements of BMI, blood pressure, and non-fasting total cholesterol (follow-up). Targets for achieving non-smoking status, blood pressure &lt; 140/90 mm Hg, and total cholesterol &lt; 4.8 mmol/l were achieved in 92%, 73%, and 62%, respectively, and the proportion on aspirin, [beta] blockers, and lipid lowering treatment was 95%, 58%, and 64% on referral back to general practice for continuing care.</td>
</tr>
<tr>
<td>Jackson, Daly, et al. (2000)</td>
<td>An exploratory descriptive design</td>
<td>10 female (ages ranged from 43 to 77)</td>
<td>Patients were interviewed using an open-ended semi-structured interview schedule administered at 7, 14 and 21 days post-hospital discharge</td>
<td>Explore the recovery experiences of a group of women survivors of first-time MI in the initial period following discharge from hospital. The importance of providing relevant information to be understood and retained by people experiencing crisis cannot be overstated. Equally important are the provision of opportunities for patients to have regular contact with health professionals to question and seek clarifying information. Fewer readmissions, hospital days, increasing time to first readmission, and lower total Medicare reimbursements for health services in intervention group by week 24 after discharge. No significant group differences in post-discharge acute care visits, functional status, depression, or patient satisfaction.</td>
</tr>
<tr>
<td>Naylor, Brooten, et al. (1999)</td>
<td>Randomized clinical trial</td>
<td>363 (aged 65 and older)</td>
<td>Comprehensive discharge planning and home follow-up protocol. Intervention extended from hospital admission through 4 weeks after discharge.</td>
<td>Readmissions, acute care visits after discharge, costs, functional status, depression, and satisfaction (2, 6, 12, and 24 weeks after discharge). Fewer readmissions, hospital days, increasing time to first readmission, and lower total Medicare reimbursements for health services in intervention group by week 24 after discharge. No significant group differences in post-discharge acute care visits, functional status, depression, or patient satisfaction.</td>
</tr>
<tr>
<td>Jolly, Bradley, et al. (1999)</td>
<td>Randomized controlled trial</td>
<td>559 (64±10 in control group; 63±10 in intervention group)</td>
<td>Intervention program to coordinate preventive care led by specialist liaison nurses which sought to improve communication between hospital and general practice and to encourage general practice nurses to provide</td>
<td>Serum total cholesterol concentration, blood pressure, distance walked in 6 minutes, confirmed smoking cessation, and body mass No significant difference between the intervention and control groups in smoking, lipid concentrations, blood pressure, and fitness. Body mass index was slightly lower in the intervention group.</td>
</tr>
</tbody>
</table>

Chapter Two Literature Review
<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Study Design</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell, Ritchie, et al. (1998)</td>
<td>1173 (mean age=66.1)</td>
<td>Randomized controlled trial</td>
<td>Nurse run clinics (for one year) promoted medical and lifestyle aspects of secondary prevention and offered regular follow up (every two to six months).</td>
<td>Structured follow up</td>
<td>Index measured at 1 year follow up aspirin use; blood pressure management; lipid management; physical activity; dietary fat; and smoking status</td>
</tr>
<tr>
<td>Carlsson, Lindberg, et al (1997)</td>
<td>168 (aged 50-70)</td>
<td>Randomized study</td>
<td>An exercise program and provision of cardiovascular risk factor (3 weeks follow-up after discharge). From 4 weeks after discharge, an education program over a three month period (smoking cessation, dietary, physical activity, and physical training)</td>
<td>Habital physical activity, food habits, and smoking habits were assessed from questionnaires at admission to the hospital, and at the one year follow up.</td>
<td></td>
</tr>
<tr>
<td>Allen (1996)</td>
<td>116 (aged 63±10, n=59 in study group; age 65±11, n=57 in control group)</td>
<td>Randomized study</td>
<td>The behavioral interventions offered to women in the intervention group, in addition to usual care.</td>
<td>Block Food Frequency Questionnaire, Current smoking status, BMI. Physical activity was measured by asking patients as the 7-day activity recall. (Baseline data collected 4 days after CABs or after before discharge, comparable data were collected 12 months after CABs).</td>
<td></td>
</tr>
<tr>
<td>Newens, Bond, et al (1995)</td>
<td>202 (aged 55.5 ± 10.3, male)</td>
<td>Structured interviews</td>
<td>The first interview took place in hospital; the second was carried out immediately following discharge, in the patient's own home.</td>
<td>Questions about information given to patients (the information on four topics: exercise, diet, sex</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Sample Size</td>
<td>Study Design</td>
<td>Intervention Details</td>
<td>Outcome Measures</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------</td>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Esposito (1995)</td>
<td>42 (aged 65 and older)</td>
<td>Randomized study, factorial design</td>
<td>Different medication education protocol on the day of discharge. Follow-up (home visits) are made 2 weeks, 1 month and 2 months post-discharge.</td>
<td>Medication fact sheet, Medication complexity index, Medication adherence score, Medication schedule, and Mini-mental test opportunistically. Patients may lack of discharge planning.</td>
<td></td>
</tr>
<tr>
<td>Naylor, Brooten, et al. (1994)</td>
<td>276 (aged 70 and older), and 125 care givers</td>
<td>Randomized clinical trial</td>
<td>Comprehensive discharge planning protocol. Intervention extended from hospital admission to 2 weeks after discharge</td>
<td>Length of hospital stay, length of time readmission, rehospitalization rate, and charge for care (at 2, 6, and 12 weeks after discharge). Fewer readmissions, fewer total days rehospitalized, lower readmission charges, and lower charges for health care services after discharge in the medical intervention group from discharge to 6 weeks after discharge.</td>
<td></td>
</tr>
<tr>
<td>DeBusk, Miller, et al. (1994)</td>
<td>585 (Mean age=57±8)</td>
<td>Randomized clinical trial</td>
<td>In the hospital, smoking cessation, exercise training, and diet-drug therapy. After discharge, telephone and mail contact in the homes; exercise training; smoking cessation intervention; dietary counseling and, if needed, lipid-lowering drug therapy.</td>
<td>Smoking prevalence, plasma low-density lipoprotein cholesterol (LDL) were measured 2 months after infarction, and functional capacity was measured 6 months after infarction. The special intervention group improved significantly on the cotinine-confirmed smoking cessation rates, plasma LDL cholesterol levels, and functional capacities, respectively.</td>
<td></td>
</tr>
</tbody>
</table>
Chapter Three Methodology

This study uses a randomized controlled trial design to compare the effectiveness of a discharge planning intervention program developed specifically for elderly Chinese CHD patients with the conventional care during the transitional period. Elderly patients in the study group received the discharge planning intervention by study nurses two days before they were discharged, and were followed-up for 4 weeks post-hospital discharge by community nurses. Data collection procedure was extended to 3 months post-hospitalization. Differences in patient outcomes were examined in both groups. Data in patients' outcomes was analyzed.

3.1 The study setting

The data collection in hospital took place in the cardiac medical unit of Tianjin The First Central Hospital. This hospital is one of the two largest comprehensive hospitals in Tianjin, and it is one of the teaching hospitals of School of Nursing, Tianjin Medical University. This hospital is capable of providing comprehensive services, as well as providing enough subjects for this study. Tianjin The First Central Hospital was established in 1949. There are 1100 beds in the hospital. It has 30 clinical departments, and 5 research institutes. The hospital is engaged in the clinical teaching tasks for Tianjin Medical University and Medical College of Nankai University. There are 29 beds with 14 nursing staff in the cardiac unit of the medical department.
3.2 Sampling

Subjects

All subjects screened for study participation were 60 and older, and were admitted from their homes to the study hospital between October 2001 and August 2003 with either of the following diagnosis, angina or myocardial infarction.

Criteria for subject recruitment

Inclusion criteria

- Elderly patients who were 60 and older;
- Admitted to the cardiac medical unit (excluding intensive care units) with confirmed diagnosis of angina or myocardial infarction;
- Mandarin speaking and able to respond to questions;
- Admitted from home and were discharged to home;
- Able to be reached by telephone during post-discharge.

Exclusion criteria

- Patients with psychosis, dementia, dying;
- Cannot communicate;
- Be transferred to another unit during their stay in hospital;
- Did not live within the Tianjin area;
- Cannot provide informed consent.

Sample size

The projected number of eligible cases for the timeline of the study permitted the investigators to detect $\alpha=0.05$ (at two tailed), $\beta=0.2$, $\delta=0.2$ for comprehensive
discharge planning protocol effects (Naylor, 1990). A sample of 91 subjects was needed in each of the two groups (Garb, 1996). An over sampling of 20% accounted for subject attrition and assured an adequate sample size. So, 110 subjects were recruited in each of the two groups. In total, 220 subjects were recruited for this study. Finally, 200 subjects actually participated in the study (100 subjects in each group).

Sampling method

Simple random sampling was applied in this study. A sample selected randomly was not subject to the bias of the researcher. There was no opportunity for the operation of personal preferences. In this study, patients who fitted the criteria were allocated randomly to the study or the control group.

The head nurse screened potential subjects who fitted the criteria, explained the study to the potential subjects and obtained the patients' consents after their condition was stabilized. Two days before the patients' discharge, the head nurse asked the eligible patients to draw sealed envelop that contained a slip indicating the group the patient be entered. The patients in the study group were rearranged into separate rooms from the patients in the control group in order to avoided the cross contaminant.

3.3 Developing an intervention program

Development of the discharge planning intervention program

The initial version of the discharge planning intervention program designed by the investigator for geriatric CHD patients in Tianjin China was based on:

- Literature review;
• The investigator’s experience in Hong Kong of clinical practice in the geriatric department in The United Christian Hospital and in The Community Service Center of Alice Ho Miu Ling Nethersole Hospital where the discharge planning program has been implemented for years;

• The follow-up experience was from the practices of geriatric patient follow-up in the community service department of the United Christian Hospital and the Community Nursing Service Department of Alice Ho Miu Ling Nethersole Hospital;

• The discharge planning intervention program specifically for geriatric CHD patients of Tianjin, China was modified by the investigator according to literature review, the local background and the situation of mainland China (human resources, budget, local health policy, hospital & community condition, condition of patients and their families).

• The suggestions were from the specialist nurses from the cardiac department of the Grantham Hospital and the geriatric department of the Unite Christian Hospital in Hong Kong;

• The suggestions were from doctors and nurses of the cardiac wards of Tianjin General Hospital, Tianjin The First Central Hospital, and Tianjin Wang Ding Di Community Hospital.

According to the health care delivery situation in Tianjin China, the discharge planning and follow-up support program was developed according to the literature review (Figure 3.1).
Figure 3.1 Discharge planning program for study in Tianjin China

Nurse participation in this study

- A clinical nurse from the cardiac medical unit of the study hospital- Tianjin The First Center Hospital was responsible for the discharge planning in this study and for insuring the quality control for the discharge planning program on the ward. She is an experienced cardiac nurse (she is also a professionally qualified clinical teacher at School of Nursing, Tianjin Medical University). This nurse was identified as the hospital study nurse in the study.

- The head nurse of the cardiac ward in the hospital. She was responsible for identifying suitable subjects who met the study criteria and getting their consent to participate.

- Two community nurses who work in Tianjin Wang Ding Di community hospital. They were responsible for patient follow-up. Both community nurses have several years experience of cardiac nursing in the local cardiac ward. The two community nurses are identified as community study nurses in this study.
All four nurses were registered nurses with high diploma degree in nursing.

The hospital study nurse fulfilled the discharge planning protocol for the subjects in the study group in the cardiac units, and the two community nurses carried out the follow-up on these subjects.

A single-blind study method was applied in this study. To avoid any bias in data collection, two research assistants (medical doctors) were also invited as measurement team to be responsible for data collection. The measurement team was blinded of which group the subjects were in.

Study training
The investigator organized and undertook the formal training for members involved in this study. The three study nurses, the head nurse, and the two research assistants received a lecture and documentation-training specifically for this study. The training content of the discharge planning intervention program in this study included:

• Introduction of the study;
• The discharge planning and follow-up support procedure in the study;
• Introduction of the Health Assessment Form; and
• Guidance for outcome measuring and data collection.

Intervention procedure (See Figure 3.2 on page 73)
Patients in both the study group and the control group received conventional care as the same as the other admitted cardiac patients. During the patients’ stay in hospital, the conventional care included general education and discharge education provided
for all patients by nurses. Before the patients were discharged, the doctors also talked to them about specific points needing attention after discharge. Free educational pamphlets were available for patients. After their discharge, patients in the control group did not receive the scheduled follow-up from the community study nurses. They received the normal health care service.

Subjects in the study group received the same conventional care as the control group during their admission. Additionally, they received the discharge planning and follow-up support program (designed specially for this study) by the study nurses.

After the two groups were assigned to different rooms, the research assistants collected the baseline data. Then, the discharge planning intervention was demonstrated for subjects in the study group.

The discharge planning intervention program for the study group included:

Step 1: In the two days before the subjects' discharge from hospital, the hospital study nurse discussed with the patients their knowledge about CHD and the risk factors involved based on each patient's individual assessment. Throughout the discussion the participant and the study nurse set up an appropriate discharge plan based on the needs and concerns of that participant, and agreed on any modifications necessary in relation to risk factors and participant knowledge deficit. The study nurse provided related health education and consultation to patients individually, according to the assessment results addressing each patient's weaknesses on CHD-related knowledge and possible difficulties in adhering to the health recommendations. The study nurse also introduced the follow-up program to patients in the study group. Participants in
the study group were made aware that the community study nurses from the local community hospital would make home visit to them after they had been discharged home.

24 hours prior to patient discharge, the referral document was transferred to the community study nurses. The referral documents included: the assessment information, clinical study nurse’s comments on patient’s potential problems, concerns about health recommendation adherence, and patient’s ignorance about CHD.

**Step 2:** Community nurses performed the follow-up for each participant in the study group for four weeks since discharged. During the four week follow-up, the community nurse made the first home visit within two-days after patient discharge. The community nurses assessed the patient’s adherence to the discharge planning program and provided related education and consultation according to their assessment and the referral documents. The community nurses made a second home visit in the third week after patient discharge. In the second and fourth week, the community nurses held patient consultations over the telephone.

**Content of discharge planning and follow-up intervention**

Participants in the study group followed a discharge planning program: patient assessment, discharge plan, patient education and consultation by the study nurse according to assessment results and patient’s existing or potential difficulties in adhering to the CHD-related health recommendations. The study nurse recorded the
assessment results and discharge planning on the discharge planning information sheet.

The assessment, focusing on discharge needs, was the basis of discharge planning by alerting the nurse to the patient’s post-discharge needs.

The community study nurses continued the discharge planning intervention through home visits and telephone contacts based on document referred by the hospital study nurse. The follow-up intervention included education and consultation related to patients’ ignorance of CHD-related matters, existing and potential difficulties in adhering to the health recommendations, and patients’ questions.

To ensure the quality of this study, the investigator conducted observation and surveillance of the discharge planning and follow-up support process, and the data collection process during the period of study period.

3.4 Instruments for patient assessment

The instruments for patient assessment used in the study are explained in this section. The objectives for these patient assessment instruments included eligibility screening and outcome measures.

The Mini-Mental State Examination (Appendix VI) was adopted for the eligibility screening in this study. The questionnaire for the elderly with coronary heart disease (Appendix IV) included a section entitled “Questionnaire of patient’s adherence of health recommendation” and a subsequent section “The chart related to patient
readmission" (used for obtaining the study outcomes). There was also a data sheet for general information, a record of perceived daily exertion activity, and a daily self-reporting heart discomfort record (used for collecting patients' demographic information, social background information, and fundamental health condition information).

Discharge tools were identified as being useful for a successful discharge. Interventions, targeting common understanding of, and agreed use of discharge tools may be instrumental in promoting an effective discharge. The inter-rater reliability and Cohen's Kappa score of instruments and questionnaires were tested in this study.

**Mini-Mental State Examination instrument**

This instrument was implemented to identify subjects with cognitive impairment for exclusion from the study. The Mini-Mental State Examination (MMSE) is a screening instrument of know reliability and validity that detects cognitive impairment which was developed by Folstein and associates (Folstein, Folstein & McHugh, 1975). Folstein determined the MMSE to be reliable on 24-hour and 28-day retest by single or multiple examiners. When given twice (24 hours apart by the same tester), the correlation by Pearson r was 0.887 (p<0.0001). The Pearson r also remained high at 0.827 (p<0.0001), when the test was given twice (24 hours apart) by two different examiners. The MMSE has become a popular screening instrument because it is short (requiring only 10 minutes or less to administer) and practical to use routinely and serially to demonstrate changes over time. It has been used widely to identify cognitive impairment (dementia and delirium) in adult patients in general hospitals, residents in long-term care facilities, and persons in the community (Clarke, et al.,

Chapter Three Methodology
1991; Foreman, 1989; Kafonek, et al., 1989; Fisk & Pannill, 1987; Lesher & Whelihan, 1986; Anthony, et al., 1982). The Chinese version of the Mini-Mental State Exam (MMSE) has been used widely in China. In this study, the inter-rater reliability was tested as 0.893.

The Mini-Mental State Exam (Chinese version) was used in this study to recognize patient's cognitive impairment as a criterion for exclusion. Patients with MMSE score 23 and lower were excluded from this study.

**Questionnaire for the Elderly with Coronary Heart Disease (Appendix IV)**

- **General information**

  The first section of the instrument assesses the subject's demographic characteristics and social background. The variables include: gender, age, marital status, children, religion, education, usual living arrangement, home condition, financial situation, community support, assessment date, place of assessment, date of admission, and date of discharge.

- **Physical assessment**

  The physical assessment includes primary diagnosis, secondary diagnosis, complications, medical history (including hospital and clinic utilization history), medication (including medication adherence history), vision (ability to see in adequate light and whether glasses used), continence (urinary incontinence in last 7 days; bowel in last 7 days), and skin (pressure sore; other skin problems).

- **Basic self-care ability (Appendix V)**

  The Barthel Index (BI): The Chinese version of BI has been used widely in China.
In this study, the BI score is included in the baseline data. The BI was used to measure patients’ daily living activities ability to see if there is an equivalent basic self-care ability in the study group and the control group. The inter-rater reliability of BI was tested as 0.881 in this study.

Questionnaire of patient’s adherence of health recommendations (in Appendix IV)

In developing and designing the direct measurement questionnaire for health recommendation adherence, a major consideration was, could this questionnaire evaluate whether the nursing intervention (the discharge planning program developed for this study) affect patients’ adherences to health recommendations. The 7-day recall questionnaire was anticipated to be both economical and practical. In the questionnaire items relating to dietary adherence, medication adherence, activity adherence, and daily living behavior adherence were developed from data collated from CHD patients.

To achieve the goal of risk factor management of elderly patients with established CHD, patient education in risk factor management by nursing intervention and the improvement of patients’ adherence to related treatment and health care recommendations are the key components. The successful outcome includes self-reported understanding on the following: CHD risk factors, CHD diet knowledge, CHD medication, CHD physical exercise plus self-reported compliance on: diet, medication, physical exercise, and health-related lifestyle behavior.

The validity of self-reported understanding of CHD-related knowledge and adherence measured in this study was confirmed, based on literature review and
recommendations by experts. The inter-rater reliabilities and test-retest reliabilities of items measuring the CHD related understanding and adherences have been tested (See table 3.2).

Appendix III is the guidance for data collection in evaluating patient's CHD-related knowledge and adherences.

| Table 3.1 Test-retest reliability/inter-rater reliability of instruments |
|-------------------------------------------------------|---------|---------|
| Measurement                                            | test-retest r | inter-rater r |
| Self-reported understanding of CHD risk factors*       | 0.765   | 0.887   |
| Self-reported understanding of CHD diet knowledge*     | 0.877   | 0.878   |
| Self-reported understanding of CHD medications*        | 0.768   | 0.771   |
| Self-reported understanding of CHD physical exercise*  | 0.789   | 0.896   |
| Self-reported diet adherence*                          | 0.899   | 0.890   |
| Self-reported medication adherence*                    | 0.868   | 0.872   |
| Self-reported physical exercise adherence*             | 0.729   | 0.881   |
| Self-reported health-related daily practice behavior adherence* | 0.872 | 0.881 |

* The inter-rater reliability and test-retest reliability of self-reported understanding CHD-related knowledge and adherences were tested by two research assistants. The inter-rater reliability and test-retest reliability are good at Cohen's kappa between 0.60–0.74, and are excellent at Cohen's kappa between 0.75–1.00 (Bowling, 2002).

The chart relating to patient readmission (in Appendix IV)

Readmission information, patient satisfaction with nursing care both in hospital and the community, patient's satisfaction with community support, and health expense after discharge (according to the receipts) are included in this chart.

There are additional questions about the patient's special health care requirements. Patients were asked if they have any additional nursing requirements or questions.
Daily activity record of rate of perceived exertion and daily self-reported heart discomfort (Appendix VII)

The daily activity record of rate of perceived exertion and daily self-reported heart discomfort was developed according to The Borg Scale for Rating Perceived Exertion (Borg, 1982; Borg & Ottoson, 1986). Individuals can judge the intensity of activity as the rating of perceived exertion, which can be equated to desirable heart rate during laboratory exercise and to their activities. The Borg Scale for Rating Perceived Exertion is a 15-grade category scale ranging from 6 to 20, with a verbal description at every odd number.

In this study, there are seven levels of exertion: 1--extremely light; 2--very light; 3--light; 4--somewhat hard; 5--hard; 6--very hard; and 7--extremely hard. Patients recorded their perceived daily activity exertion for 4 weeks after discharge. The test-retest reliability was 0.931.

Patients were asked to record the times of heart discomfort in the daily self-reported heart discomfort record for four weeks after their discharge.

Patients were also asked to record the name and the time taken, for each of the medications they used, in the daily medication record (Appendix VII).

3.5 Data collection

Figure 3.2 on page 73 shows the procedure of data collection.
Subjects recruited for this study were randomly placed in either the study or the control group two days before discharge. The head nurse then informed the research assistants for data collection purposes.

The research assistants collected data for the first time, 2 days prior patient to discharge to get the baseline information.

On the day of the patient’s discharge, the head nurse contacted each patient to confirm that a research assistant would visit them at home to collect data.

Post-discharge data was collected for the second time 2 days after the patient was discharged to home. Data was also collected at the end of the fourth and the twelfth week post-discharge by the research assistants.

3.6 Data analysis

Statistics have been used to describe the frequency distributions of baseline demographic data, summarizing patient perception, and summarizing nursing follow-up intervention on patients in the study group after their discharge. Inferential statistics of the Chi Squared Test and t-Tests were used to measure the equivalence of the two groups and test the research hypotheses. Advanced statistics of ordinal regression analysis were used to predict the effects of different variables on patient adherence. Ninety-five percent CIS were calculated for differences between means or differences between percentages. All p values are two-tailed.
3.7 Ethical approval

Ethical approval was obtained from The Hong Kong Polytechnic University and the study hospitals. Patients' and hospitals' rights were protected in this study. The clients were identified by a code which is only known to the research team. The codes were not associated with any personal name. The purpose of the study was explained to the clients, the hospitals, and the relevant staff. The clients were asked to sign a consent form and had complete freedom to withdraw from the study at any time.

3.8 Pilot study

The pilot study was a trial run for the main study, and was developed similarly to the proposed study. Compared with the main study, the pilot study used similar subjects (the subject inclusion criteria and exclusion criteria were the same as the main study), the same discharge planning and follow-up program, the same nurses both in clinical cardiac units and in the community, and the same data collection procedures.

The purpose of the pilot study was to assess the feasibility and effectiveness of the discharge planning program, the research method, and the instruments and data collection as proposed in the main study. Depending on the results in the pilot study, the investigator would then make necessary revisions or refinements to the plan for the main study.

The pilot study was conducted from October 2001 to January 2002. Originally, eighteen subjects were recruited to the study, but by the end of the data collection, two cases were lost to follow-up. So, sixteen subjects were recruited for the pilot study. Eight subjects were in the experimental group, and eight subjects were in the control
group. The subjects were obtained following the sampling criteria proposed in the main study.

This pilot study has given the investigator and members involved in this study experience with; implementing the discharge planning protocol; good cooperation between the clinical cardiac unit and community health service department; the subjects; and the study method and data collection procedures. The result of the pilot study satisfactorily confirmed the inter-rater reliabilities and test-retest reliabilities of the instruments and questionnaires implemented in this study.

The results of this pilot study demonstrated that no major problems were encountered.

The method and procedure was revised as follows after the pilot study, in consultation with the experts:

- The criteria include only patients living within the district area that is within the service of the community nurses.
- The CHD patients include only patients with angina, MI but not congestive heart failure (CHF).
- The nurses conducting the education program incorporated advice from professional groups in the multidisciplinary team.

The process of discharge planning and the follow-up support intervention program was tested, and then revised by the investigator. Through the pilot study, the three study nurses, including the head nurse and the two research assistants became familiar with their work in the study. The pilot study demonstrated the feasibility for the protocol to be implicated in the formal study.
Figure 3.2 Nursing intervention and data collection in this study

Subjects are randomized into the two groups. Data is collected the first time.

Subjects in study group receive the discharge planning program and routine care two days before discharge.  

Subjects are discharged. Data collection the second time within 2 days after discharge.  

Subjects receive the first home visit follow-up the first time within 2 days after discharge home.  

Subjects receive the telephone follow-up at least once in the second week after their discharge.  

Subjects receive the second home visit follow-up during the third week after their discharge.  

Subjects receive the telephone follow-up at least once during the fourth week after discharge.  

Data collection for the third time at the end of the fourth week after discharge.  

Data collection for the fourth time at the end of the twelfth week after discharge.

Subjects in control group receive routine care.
Chapter Four Results

4.1 Introduction

This chapter presents the findings of two hundred patients who completed the study. Originally, 220 subjects who met the inclusion criteria were recruited for this study. There were 107 subjects in the study group, and 113 subjects in the control group. Seven subjects in the study group and 13 subjects in the control group declined to continue with the investigator's home visit for data collection as the Severe Acute Respiratory Syndrome (SARS) was prevalent during April to June, 2003.

There is insignificant difference ($\chi^2=1.638, p=0.244$, 2-side) between the dropouts from either group in the study. So, the data on subjects who dropped out of the study was not included in the analysis because the event is believed unrelated to the intervention in this study (Schell, et al., 2001). Finally, two hundred patients who met the inclusion criteria for this study were recruited to participate between October 2001 and August 2003.

The findings presented below are based on the hypotheses in chapter one. The results based upon the background information of the patients' demographic characteristics are presented in the first section. Comparisons between the two groups of outcome indicators are presented in the following section.

4.2 Demographic characteristics

Among the 200 patients, 100 patients were in the study group and 100 patients were in the control group. Of the 200 patients, 102 were female (49 in the study group and
53 in the control group), 98 were male (51 in the study group and 47 in the control group). Their age range was from 61 to 90 (mean age =72.22). Results of demographic characteristics showed there was no statistical significant difference between the two groups because the significant level was greater than 0.05 in all aspects (table 4.1). Based on the statistical analysis results, the demographic characteristics of the two groups were equivalent.

Table 4.1. Comparison of demographic characteristics of the two groups (baseline)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>Chi-Square Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>102</td>
<td>(51.0)</td>
<td>53</td>
<td>(53.0)</td>
</tr>
<tr>
<td>Male</td>
<td>98</td>
<td>(49.0)</td>
<td>47</td>
<td>(47.0)</td>
</tr>
<tr>
<td>Marital status</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>134</td>
<td>(67.0)</td>
<td>68</td>
<td>(68.0)</td>
</tr>
<tr>
<td>Widow</td>
<td>51</td>
<td>(25.5)</td>
<td>28</td>
<td>(28.0)</td>
</tr>
<tr>
<td>Separate</td>
<td>6</td>
<td>(3.0)</td>
<td>3</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Alone</td>
<td>9</td>
<td>(4.5)</td>
<td>1</td>
<td>(1.0)</td>
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<td>Religion</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>No</td>
<td>193</td>
<td>(96.5)</td>
<td>97</td>
<td>(97.0)</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>(3.5)</td>
<td>3</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>None</td>
<td>30</td>
<td>(15.0)</td>
<td>13</td>
<td>(13.0)</td>
</tr>
<tr>
<td>Primary</td>
<td>83</td>
<td>(41.5)</td>
<td>49</td>
<td>(49.0)</td>
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<tr>
<td>Secondary &amp; above</td>
<td>87</td>
<td>(43.5)</td>
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<td>(38.0)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>72.22</td>
<td>(5.43)</td>
<td>71.58</td>
<td>(4.14)</td>
</tr>
<tr>
<td>[Range]</td>
<td>[61-90]</td>
<td>[62-82]</td>
<td>[61-90]</td>
<td></td>
</tr>
</tbody>
</table>

a. Fisher’s Exact Test  
b. Pearson Chi-Square Test  
c. Independent-Samples t-Test; * t value
Table 4.2 shows an analysis of the results of the social background of the two groups. The results of the variables between the two groups in table 4.2 were not significantly different except for the variable on shopping. For shopping, compared with patients in the control group, more patients in the study group self-reported that shopping was performed by others \( (\chi^2=6.082, p=0.048) \). A result related perhaps to age distribution. In the study group, there were 37 patients aged 76 and over. In the control group, there were just 13 patients aged 76 and over. Generally, the elderly think daily shopping is a burden in their daily life even if they can do it themselves. Also, the relatives show their respect for the elderly relatives by doing their shopping. There was no difference between the two groups in income \( (p>0.05) \).
### Table 4.2 Social background of the two groups (baseline)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>Chi-Square Test</th>
<th>p (2-side)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Living with</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>125 (62.5%)</td>
<td>68 (68.0%)</td>
<td>57 (57.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td>49 (24.5%)</td>
<td>21 (21.0%)</td>
<td>28 (28.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grandchild</td>
<td>13 (6.5%)</td>
<td>8 (8.0%)</td>
<td>5 (5.0%)</td>
<td>8.105</td>
<td>0.088*</td>
</tr>
<tr>
<td>Domestic helper</td>
<td>4 (2.0%)</td>
<td>2 (2.0%)</td>
<td>2 (2.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>9 (4.5%)</td>
<td>1 (1.0%)</td>
<td>8 (8.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self</td>
<td>65 (32.5%)</td>
<td>41 (41.0%)</td>
<td>24 (24.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spouse</td>
<td>74 (37.0%)</td>
<td>30 (30.0%)</td>
<td>44 (44.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child</td>
<td>52 (26.0%)</td>
<td>25 (25.0%)</td>
<td>27 (27.0%)</td>
<td>8.705</td>
<td>0.121*</td>
</tr>
<tr>
<td>Grandchild</td>
<td>3 (1.5%)</td>
<td>2 (2.0%)</td>
<td>1 (1.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic helper</td>
<td>5 (2.5%)</td>
<td>2 (2.0%)</td>
<td>3 (3.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>1 (0.5%)</td>
<td>1 (1.0%)</td>
<td>1 (1.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Feeling of the carer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td>167 (83.5%)</td>
<td>80 (80.0%)</td>
<td>87 (87.0%)</td>
<td>1.778</td>
<td>0.253*</td>
</tr>
<tr>
<td>Ordinary</td>
<td>33 (16.5%)</td>
<td>20 (20.0%)</td>
<td>13 (13.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td>0 (0.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Source of financial support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retirement fund</td>
<td>195 (97.5%)</td>
<td>99 (99.0%)</td>
<td>96 (96.0%)</td>
<td>1.846</td>
<td>0.369*</td>
</tr>
<tr>
<td>from relative</td>
<td>5 (2.5%)</td>
<td>1 (1.0%)</td>
<td>4 (4.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial pressure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No pressure</td>
<td>81 (40.5%)</td>
<td>41 (41.0%)</td>
<td>40 (40.0%)</td>
<td>5.453</td>
<td>0.065*</td>
</tr>
<tr>
<td>Moderate</td>
<td>95 (47.5%)</td>
<td>42 (42.0%)</td>
<td>53 (53.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heavy</td>
<td>24 (12.0%)</td>
<td>17 (17.0%)</td>
<td>7 (7.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Shopping</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By self</td>
<td>132 (66.0%)</td>
<td>74 (74.0%)</td>
<td>58 (58.0%)</td>
<td>6.082</td>
<td>0.048*</td>
</tr>
<tr>
<td>By self and other</td>
<td>18 (9.0%)</td>
<td>8 (8.0%)</td>
<td>10 (10.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By other</td>
<td>50 (25.0%)</td>
<td>18 (18.0%)</td>
<td>32 (32.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Place of shopping</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convenient</td>
<td>190 (95.0%)</td>
<td>98 (98.0%)</td>
<td>92 (92.0%)</td>
<td>3.789</td>
<td>0.101*</td>
</tr>
<tr>
<td>Inconvenient</td>
<td>10 (5.0%)</td>
<td>2 (2.0%)</td>
<td>8 (8.0%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>711.37 (293.36)</td>
<td>725 (212.90)</td>
<td>687.49 (356.29)</td>
<td>4205.00*</td>
<td>0.065*</td>
</tr>
<tr>
<td>[Range]</td>
<td>[0-2000]</td>
<td>[200-1500]</td>
<td>[0-2000]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* t value
a. Pearson Chi-Square Test
b. Fisher's Exact Test
c. Mann-Whitney U Test

Chapter Four Results

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The fundamental health condition of the two groups revealed that two patients in the study group had lost their hearing. In total, 25 patients (12.5%) experienced frequent insomnia. Although most items (except chronic diseases) in table 4.3 show that the results were not significantly different between the two groups, it seems that the patients in the study group had more fundamental health problems than patients in the control group. It may relate to the fact that there were more patients aged 76 and older in the study group. The variable number of other chronic disease related positively to the age in this study ($\alpha=0.05$, $r = 0.173$, $p = 0.014$). The score of Barthel Index related negatively to the age in this study ($\alpha=0.05$, $r = -0.165$, $p = 0.020$). Generally, the fundamental health conditions of two groups were equivalent.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>Chi-Square Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>p (2-side)</td>
</tr>
<tr>
<td>Hearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>177 (88.5)</td>
<td>91 (91.0)</td>
<td>86 (86.0)</td>
<td></td>
</tr>
<tr>
<td>Hear loud voice</td>
<td>21 (10.5)</td>
<td>9 (9.0)</td>
<td>12 (12.0)</td>
<td>2.570</td>
</tr>
<tr>
<td>Lost hearing</td>
<td>2 (1.0)</td>
<td>0 (0.0)</td>
<td>2 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Vision</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clear</td>
<td>169 (84.5)</td>
<td>88 (88.0)</td>
<td>81 (81.0)</td>
<td></td>
</tr>
<tr>
<td>Not Clear</td>
<td>31 (15.5)</td>
<td>12 (12.0)</td>
<td>19 (19.0)</td>
<td>1.871</td>
</tr>
<tr>
<td>Lost vision</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Sleeping pattern</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>101 (50.5)</td>
<td>47 (47.0)</td>
<td>54 (54.0)</td>
<td></td>
</tr>
<tr>
<td>Occasional insomnia</td>
<td>74 (37.0)</td>
<td>42 (42.0)</td>
<td>32 (32.0)</td>
<td>2.196</td>
</tr>
<tr>
<td>Frequent insomnia</td>
<td>25 (12.5)</td>
<td>11 (11.0)</td>
<td>14 (14.0)</td>
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</tr>
<tr>
<td>Medication for Insomnia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>110 (55.0)</td>
<td>50 (50.0)</td>
<td>60 (60.0)</td>
<td></td>
</tr>
<tr>
<td>Seldom</td>
<td>79 (39.5)</td>
<td>46 (46.0)</td>
<td>33 (33.0)</td>
<td>4.848</td>
</tr>
<tr>
<td>Often</td>
<td>6 (3.0)</td>
<td>3 (3.0)</td>
<td>3 (3.0)</td>
<td></td>
</tr>
<tr>
<td>Everyday</td>
<td>5 (2.5)</td>
<td>1 (1.0)</td>
<td>4 (4.0)</td>
<td></td>
</tr>
<tr>
<td>Appetite</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>183 (91.5)</td>
<td>92 (92.0)</td>
<td>91 (45.5)</td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>16 (8.0)</td>
<td>8 (8.0)</td>
<td>8 (4.0)</td>
<td>1.005</td>
</tr>
<tr>
<td>Eating difficulty</td>
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<td>0 (0.0)</td>
<td>1 (0.5)</td>
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</tr>
<tr>
<td>Mouth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean</td>
<td>188 (94.0)</td>
<td>93 (93.0)</td>
<td>95 (95.0)</td>
<td></td>
</tr>
<tr>
<td>Not Clean</td>
<td>9 (4.5)</td>
<td>6 (6.0)</td>
<td>3 (3.0)</td>
<td>1.355</td>
</tr>
<tr>
<td>Ulcer</td>
<td>3 (1.5)</td>
<td>1 (1.0)</td>
<td>2 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Urine</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>187 (93.5)</td>
<td>96 (96.0)</td>
<td>91 (91.0)</td>
<td></td>
</tr>
<tr>
<td>Frequent micturition</td>
<td>13 (6.5)</td>
<td>4 (4.0)</td>
<td>9 (9.0)</td>
<td>2.057</td>
</tr>
<tr>
<td>Incontinent</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Stool</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>174 (87.0)</td>
<td>89 (89.0)</td>
<td>85 (85.0)</td>
<td></td>
</tr>
<tr>
<td>Constipation</td>
<td>26 (13.0)</td>
<td>11 (11.0)</td>
<td>15 (15.0)</td>
<td>0.707</td>
</tr>
<tr>
<td>Incontinent</td>
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<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Integument</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>183 (91.5)</td>
<td>95 (95.0)</td>
<td>88 (88.0)</td>
<td></td>
</tr>
<tr>
<td>Dry</td>
<td>14 (7.0)</td>
<td>5 (5.0)</td>
<td>9 (9.0)</td>
<td>4.411</td>
</tr>
<tr>
<td>Swelling</td>
<td>3 (1.5)</td>
<td>0 (0.0)</td>
<td>3 (13.0)</td>
<td></td>
</tr>
<tr>
<td>Not intact</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No help</td>
<td>161 (80.5)</td>
<td>85 (85.0)</td>
<td>76 (76.0)</td>
<td></td>
</tr>
<tr>
<td>Little help</td>
<td>23 (11.5)</td>
<td>10 (10.0)</td>
<td>13 (13.0)</td>
<td>3.144</td>
</tr>
<tr>
<td>Great help</td>
<td>16 (8.0)</td>
<td>5 (5.0)</td>
<td>11 (11.0)</td>
<td></td>
</tr>
<tr>
<td>Number of other chronic diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>98 (49.0)</td>
<td>51 (51.0)</td>
<td>47 (47.0)</td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>81 (40.5)</td>
<td>47 (47.0)</td>
<td>34 (34.0)</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>12 (6.0)</td>
<td>1 (1.0)</td>
<td>11 (11.0)</td>
<td>16.083</td>
</tr>
<tr>
<td>Three and above</td>
<td>8 (4.0)</td>
<td>1 (1.0)</td>
<td>7 (7.0)</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>0 (0.5)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td></td>
</tr>
<tr>
<td>Barthel Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean(SD)</td>
<td>94.52 (14.27)</td>
<td>97.1 (18.88)</td>
<td>91.95 (15.10)</td>
<td>4610.59&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Range</td>
<td>[15-100]</td>
<td>[60-100]</td>
<td>[15-100]</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup> Fisher's Exact Test  
<sup>b</sup> Pearson Chi-Square Test  
<sup>c</sup> Mann-Whitney U Test

* p-value

Chapter Four Results

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Patients in both groups had no significant difference in their understanding of, and their use of the community health services (table 4.4). About one third of the two hundred patients understood well about the community health service, and just 15% of subjects often used the community health services. More than 40% of subjects had never used the services before.

Table 4.4 Self-reported understanding and use of community health services

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>Chi-Square Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Understanding community health services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Understand well</td>
<td>71 (35.5)</td>
<td>34 (34.0)</td>
<td>37 (37.0)</td>
<td></td>
</tr>
<tr>
<td>Understand some</td>
<td>76 (38.0)</td>
<td>44 (44.0)</td>
<td>32 (32.0)</td>
<td>3.550</td>
</tr>
<tr>
<td>Don't understand</td>
<td>53 (26.5)</td>
<td>22 (22.0)</td>
<td>31 (31.0)</td>
<td></td>
</tr>
<tr>
<td>Use of community health services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Often</td>
<td>30 (15.0)</td>
<td>17 (17.0)</td>
<td>13 (13.0)</td>
<td></td>
</tr>
<tr>
<td>Seldom</td>
<td>85 (42.5)</td>
<td>48 (48.0)</td>
<td>37 (37.0)</td>
<td>4.604</td>
</tr>
<tr>
<td>None</td>
<td>85 (42.5)</td>
<td>35 (35.0)</td>
<td>50 (50.0)</td>
<td></td>
</tr>
</tbody>
</table>

* Pearson Chi-Square Test

Chapter Four Results
4.3 Comparison of outcome indicators

Results in table 4.5 taken at 2 days, 4 weeks and 12 weeks after patients were discharged home show there were significant differences between the study group and the control group concerning self-reported understanding of CHD risk factors (p<0.01). (See table 4.5)

In the study group, there was a significant difference in the level of patient's understanding of CHD risk factors between the baseline and 2 days after discharge (p<0.01). A similar change was found between at 2 days and at 4 weeks after discharge (p<0.01). There was no significant difference in this indicator between 4 weeks and 12 weeks after discharge (p>0.05). In the control group, the difference was significant between the baseline and 2 days after discharge, also between 2 days and 4 weeks after discharge (p<0.05). Between 4 weeks and 12 weeks after discharge, the difference was not significant (p>0.05). (See table 4.6, Figure 4.1)
Table 4.5 Self-reported understanding of CHD risk factors-repeated measurement comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD #</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>5 (2.5)</td>
<td>63 (31.5)</td>
<td>86 (43.0)</td>
<td>91 (45.5)</td>
</tr>
<tr>
<td>Moderate</td>
<td>162 (81.0)</td>
<td>129 (64.5)</td>
<td>107 (53.5)</td>
<td>101 (50.5)</td>
</tr>
<tr>
<td>Low</td>
<td>33 (16.5)</td>
<td>8 (4.0)</td>
<td>7 (3.5)</td>
<td>8 (4.0)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>4 (4.0)</td>
<td>5 (5.0)</td>
<td>9 (9.0)</td>
<td>9 (9.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>85 (85.0)</td>
<td>89 (89.0)</td>
<td>85 (85.0)</td>
<td>85 (85.0)</td>
</tr>
<tr>
<td>Low</td>
<td>11 (11.0)</td>
<td>6 (6.0)</td>
<td>6 (6.0)</td>
<td>6 (6.0)</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>1 (1.0)</td>
<td>58 (58.0)</td>
<td>77 (77.0)</td>
<td>82 (82.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>77 (77.0)</td>
<td>40 (40.0)</td>
<td>22 (22.0)</td>
<td>16 (16.0)</td>
</tr>
<tr>
<td>Low</td>
<td>22 (22.0)</td>
<td>2 (2.0)</td>
<td>1 (1.0)</td>
<td>2 (2.0)</td>
</tr>
</tbody>
</table>

χ² (2-side)  
P

A 5.862  0.053
B 65.200  0.000**
C 94.43  0.000**
D 107.699  0.000**

Pearson Chi-Square Test
A, Comparison of the variable-self-reported understanding of CHD risk factors of the two groups (base line)
B, Comparison of the variable-self-reported understanding of CHD risk factors of the two groups at 2 days after discharge
C, Comparison of the variable-self-reported understanding of CHD risk factors of the two groups at 4 weeks after discharge
D, Comparison of the variable-self-reported understanding of CHD risk factors of the two groups at 12 weeks after discharge

#AD: after discharge
Table 4.6 Self-reported understanding of CHD risk factors-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td>-2.449</td>
<td>0.014*</td>
<td>-2.000</td>
<td>0.046*</td>
<td>-2.000</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-8.663</td>
<td>0.000**</td>
<td>-4.082</td>
<td>0.000**</td>
<td>-1.414</td>
</tr>
</tbody>
</table>

Wilcoxon test
A, Comparison of the variable-self-reported understanding of CHD risk factors of base line vs 2 days after discharge
B, Comparison of the variable-self-reported understanding of CHD risk factors 2 days after discharge vs 4 weeks after discharge
C, Comparison of the variable-self-reported understanding of CHD risk factors 4 weeks after discharge vs 12 weeks after discharge
D, Comparison of the variable-self-reported understanding of CHD risk factors of base line vs 4 weeks after discharge
E, Comparison of the variable-self-reported understanding of CHD risk factors of base line vs 12 weeks after discharge

Figure 4.1 Trend of self-reported understanding of CHD risk factors

![Trend of self-reported understanding of CHD risk factors between groups](image1)

![Trend of self-reported understanding of CHD risk factors between groups](image2)

Chapter Four Results
The results (table 4.7) show that patients' knowledge level was similar between the study group and the control group on self-reported understanding of CHD diet at baseline ($p > 0.05$). However, compared with the control group, patients in the study group had a higher knowledge level about CHD diet assessed at 2 days, 4 weeks and 12 weeks after discharge ($p < 0.01$).

There was a significant change in patients' understanding of CHD diet knowledge level in the control group between baseline and 2 days post-discharge ($p < 0.01$). But there was no significant change between 2 days and 4 weeks post-discharge, and 4 weeks and 12 weeks post-discharge ($p > 0.05$). In the study group, patients' CHD diet knowledge level increased continually after being assessed at baseline, at 2 days post-discharge, and at 4 weeks post-discharge ($p < 0.01$). (See table 4.8, Figure 4.2)
Table 4.7 Self-reported understanding of CHD diet knowledge-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD #</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Total (n=200)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>8 (4.0)</td>
<td>56 (28.0)</td>
<td>79 (39.5)</td>
<td>89 (44.5)</td>
</tr>
<tr>
<td>Moderate</td>
<td>146 (73.0)</td>
<td>140 (70.0)</td>
<td>116 (58.0)</td>
<td>104 (52.0)</td>
</tr>
<tr>
<td>Low</td>
<td>46 (23.0)</td>
<td>4 (2.0)</td>
<td>5 (2.5)</td>
<td>7 (3.5)</td>
</tr>
<tr>
<td><strong>Control (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>3 (3.0)</td>
<td>4 (4.0)</td>
<td>4 (4.0)</td>
<td>4 (4.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>71 (71.0)</td>
<td>92 (92.0)</td>
<td>89 (89.0)</td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>26 (26.0)</td>
<td>4 (4.0)</td>
<td>4 (4.0)</td>
<td>7 (7.0)</td>
</tr>
<tr>
<td><strong>Study (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>5 (5.0)</td>
<td>52 (52.0)</td>
<td>75 (75.0)</td>
<td>85 (85.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>75 (75.0)</td>
<td>48 (48.0)</td>
<td>24 (24.0)</td>
<td>15 (15.0)</td>
</tr>
<tr>
<td>Low</td>
<td>20 (20.0)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

\[
\chi^2 \quad \text{p (2-side)}
\]

A  1.392  0.499
B  58.971  0.000**
C  105.472  0.000**
D  133.373  0.000**

Pearson Chi-Square Test

A, Comparison of the variable-self-reported understanding of CHD diet knowledge between the two groups (base line)

B, Comparison of the variable-self-reported understanding of CHD diet knowledge of the two groups at 2 days after discharge

C, Comparison of the variable-self-reported understanding of CHD diet knowledge of the two groups at 4 weeks after discharge

D, Comparison of the variable-self-reported understanding of CHD diet knowledge of the two groups at 12 weeks after discharge

# AD: after discharge

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### Table 4.8 Self-reported understanding of CHD diet knowledge—repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A (Z p (2-side))</th>
<th>B (Z p (2-side))</th>
<th>C (Z p (2-side))</th>
<th>D (Z p (2-side))</th>
<th>E (Z p (2-side))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n=100)</td>
<td>-4.796 0.000**</td>
<td>-4.796 0.000**</td>
<td>-1.732 0.083</td>
<td>-4.796 0.000**</td>
<td>-4.264 0.000**</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-7.948 0.000**</td>
<td>-3.889 0.000**</td>
<td>-2.840 0.005**</td>
<td>-8.464 0.000**</td>
<td>-8.819 0.000**</td>
</tr>
</tbody>
</table>

Wilcoxon test
A. Comparison of the variable—self-reported understanding of CHD diet knowledge of baseline vs 2 days after discharge
B. Comparison of the variable—self-reported understanding of CHD diet knowledge 2 days after discharge vs 4 weeks after discharge
C. Comparison of the variable—self-reported understanding of CHD diet knowledge 4 weeks after discharge vs 12 weeks after discharge
D. Comparison of the variable—self-reported understanding of CHD diet knowledge of baseline vs 4 weeks after discharge
E. Comparison of the variable—self-reported understanding of CHD diet knowledge of baseline vs 12 weeks after discharge

### Figure 4.2 Trend of self-reported understanding of CHD diet knowledge

- **Trend of self-reported understanding of CHD diet knowledge between groups high level:**
  - **Trend of self-reported understanding of CHD diet knowledge between groups low level:**

**Chapter Four Results**

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Although patients' knowledge level was not significantly different between the study group and the control group on self-reported understanding of CHD medications at baseline, patients' knowledge level in the study group increased more significantly than the control group at 2 days, 4 weeks and 12 weeks after discharge (p<0.01). (See table 4.9)

In the control group, patients' understanding of knowledge of CHD medications showed a significant increase trend 2 days after discharge versus baseline (p<0.01). However, the control group's knowledge level was no different at 4 weeks or at 12 weeks post-discharge compared with the 2 days post-discharge figures (p>0.05). In the study group, the patients' knowledge level had increased since the baseline assessment, and was higher at 2 days post-discharge, and again at 4 weeks post-discharge (p<0.01). Even though patients' CHD diet knowledge level at 12 weeks post-discharge did not increase significantly from the 4 weeks post-discharge (p>0.05), it was still significantly higher than at baseline (p<0.01). (See table 4.10, Figure 4.3)
### Table 4.9 Self-reported understanding of knowledge of CHD medications-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>15 (7.5)</td>
<td>57 (28.5)</td>
<td>78 (39.0)</td>
<td>85 (42.5)</td>
</tr>
<tr>
<td>Moderate</td>
<td>135 (67.5)</td>
<td>126 (63.0)</td>
<td>108 (54.0)</td>
<td>101 (50.5)</td>
</tr>
<tr>
<td>Low</td>
<td>50 (25.0)</td>
<td>17 (8.5)</td>
<td>14 (7.0)</td>
<td>14 (7.0)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>71 (71.0)</td>
<td>84 (84.0)</td>
<td>84 (84.0)</td>
<td>84 (84.0)</td>
</tr>
<tr>
<td>Low</td>
<td>24 (24.0)</td>
<td>11 (11.0)</td>
<td>11 (11.0)</td>
<td>11 (11.0)</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>10 (10.0)</td>
<td>52 (52.0)</td>
<td>73 (73.0)</td>
<td>80 (80.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>64 (64.0)</td>
<td>42 (42.0)</td>
<td>24 (24.0)</td>
<td>17 (17.0)</td>
</tr>
<tr>
<td>Low</td>
<td>26 (26.0)</td>
<td>6 (6.0)</td>
<td>3 (3.0)</td>
<td>3 (3.0)</td>
</tr>
</tbody>
</table>

\[ \chi^2 \quad p \text{ (2-sided)} \]

A 2.110 0.348
B 54.225 0.000**
C 97.187 0.000**
D 115.193 0.000**

Pearson Chi-Square Test

A, Comparison of the variable self-reported understanding of knowledge of CHD medications of the two groups (base line)

B, Comparison of the variable self-reported understanding of knowledge of CHD medications of the two groups at 2 days after discharge

C, Comparison of the variable self-reported understanding of knowledge of CHD medications of the two groups at 4 weeks after discharge

D, Comparison of the variable self-reported understanding of knowledge of CHD medications of the two groups at 12 weeks after discharge

# AD: after discharge

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Table 4.10 Self-reported understanding of knowledge of CHD medications—repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n=100)</td>
<td>3.606</td>
<td>0.000**</td>
<td>-3.606</td>
<td>1.000</td>
<td>-3.606</td>
<td>1.000</td>
<td>-3.606</td>
<td>0.000**</td>
<td>-3.606</td>
<td>0.000**</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-7.508</td>
<td>0.000**</td>
<td>-4.523</td>
<td>0.000**</td>
<td>-1.578</td>
<td>0.115</td>
<td>-8.084</td>
<td>0.000**</td>
<td>-8.121</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

Wilcoxon test
A. Comparison of the variable-self-reported understanding of knowledge of CHD medications of base line vs 2 days after discharge
B. Comparison of the variable-self-reported understanding of knowledge of CHD medications 2 days after discharge vs 4 weeks after discharge
C. Comparison of the variable-self-reported understanding of knowledge of CHD medications 4 weeks after discharge vs 12 weeks after discharge
D. Comparison of the variable-self-reported understanding of knowledge of CHD medications of base line vs 4 weeks after discharge
E. Comparison of the variable-self-reported understanding of knowledge of CHD medications of base line vs 12 weeks after discharge

Figure 4.3 Trend of self-reported understanding of knowledge of CHD medications

*Table of self-reported understanding of knowledge of CHD medications between groups (high level)*

*Table of self-reported understanding of knowledge of CHD medications between groups (low level)*

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Compared with the control group, patients in the study group had higher levels of self-reported understanding of CHD physical exercise at 4 weeks and 12 weeks after their discharge (p<0.01). At baseline and 2 days after discharge, there were no significant differences between the two groups (p>0.05). (See table 4.11)

Patients in the control group had a significant change in understanding of knowledge of CHD physical exercise between the baseline and 2 days after discharge. However, from 2 days after discharge to the time of 12 weeks after discharge, the control group makes no further significant changes (p>0.05). Comparably, patients in the study group who were assessed each interval showed a significant increase in their understanding the knowledge from the previous time (p<0.01). (See table 4.12, Figure 4.4)
Table 4.11 Self-reported understanding of knowledge of CHD physical exercise-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>29 (14.5)</td>
<td>56 (28.0)</td>
<td>99 (49.5)</td>
<td>112 (56.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>157 (78.5)</td>
<td>135 (67.5)</td>
<td>91 (45.5)</td>
<td>79 (39.5)</td>
</tr>
<tr>
<td>Low</td>
<td>14 (7.0)</td>
<td>9 (4.5)</td>
<td>10 (5.0)</td>
<td>9 (4.5)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>20 (20.0)</td>
<td>25 (25.0)</td>
<td>23 (23.0)</td>
<td>23 (23.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>75 (75.0)</td>
<td>70 (70.0)</td>
<td>70 (70.0)</td>
<td>70 (70.0)</td>
</tr>
<tr>
<td>Low</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>7 (7.0)</td>
<td>7 (7.0)</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>9 (9.0)</td>
<td>31 (31.0)</td>
<td>76 (76.0)</td>
<td>89 (89.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>82 (82.0)</td>
<td>65 (65.0)</td>
<td>21 (21.0)</td>
<td>9 (9.0)</td>
</tr>
<tr>
<td>Low</td>
<td>9 (9.0)</td>
<td>4 (4.0)</td>
<td>3 (3.0)</td>
<td>2 (2.0)</td>
</tr>
</tbody>
</table>

\[
\chi^2 \quad p \text{ (2-side)}
\]

A 5.672 0.060
B 0.939 0.625
C 56.385 0.000**
D 88.772 0.000**

Pearson Chi-Square Test
A, Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of the two groups (base line)
B, Comparison of the variables-self-reported understanding of knowledge of CHD physical exercise of the two groups at 2 days after discharge
C, Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of the two groups at 4 weeks after discharge
D, Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of the two groups at 12 weeks after discharge

# AD: after discharge

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Table 4.12 Self-reported understanding of knowledge of CHD physical exercise-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td>-2.236</td>
<td>0.025*</td>
<td>-1.633</td>
<td>0.102</td>
<td>-1.633</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-5.196</td>
<td>0.000**</td>
<td>-6.379</td>
<td>0.000**</td>
<td>-2.977</td>
</tr>
</tbody>
</table>

Wilcoxon test

A. Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of baseline vs 2 days after discharge
B. Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise 2 days after discharge vs 4 weeks after discharge
C. Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise 4 weeks after discharge vs 12 weeks after discharge
D. Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of baseline vs 4 weeks after discharge
E. Comparison of the variable-self-reported understanding of knowledge of CHD physical exercise of baseline vs 12 weeks after discharge

Figure 4.4 Trend of self-reported understanding of CHD physical exercise knowledge

<table>
<thead>
<tr>
<th>Count</th>
<th>GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>study group</td>
</tr>
<tr>
<td>1</td>
<td>control group</td>
</tr>
</tbody>
</table>

DATATIME

0 baseline: 1.2 days after discharge
2.4 weeks after discharge: 3.11 weeks after discharge

Chapter Four Results
Results in table 4.13 show that patients in the study group had better health behavior than patients in the control group for self-reported diet adherence assessed at two days, four weeks and twelve weeks after discharge (p<0.05).

Compared with the baseline, patients in the control group showed better diet adherence at two days, four weeks, and twelve weeks after discharge (p<0.05). Compared with the baseline, patients in the study group had significantly better diet adherence assessed at two days, four weeks and twelve weeks after discharge (p<0.01). Also, there was significant change between 2 days and 4 weeks, and between 4 weeks and 12 weeks after discharge (p<0.01). (See table 4.14, Figure 4.5)
### Table 4.13 Self-reported diet compliance-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Total (n=200)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>62 (31.0)</td>
<td>92 (46.0)</td>
<td>103 (51.5)</td>
<td>83 (41.5)</td>
</tr>
<tr>
<td>Moderate</td>
<td>94 (47.0)</td>
<td>98 (49.0)</td>
<td>89 (44.5)</td>
<td>80 (40.0)</td>
</tr>
<tr>
<td>Low</td>
<td>44 (22.0)</td>
<td>10 (5.0)</td>
<td>8 (4.0)</td>
<td>37 (18.5)</td>
</tr>
<tr>
<td><strong>Control (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>35 (35.0)</td>
<td>36 (36.0)</td>
<td>36 (36.0)</td>
<td>33 (33.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>45 (45.0)</td>
<td>61 (61.0)</td>
<td>57 (57.0)</td>
<td>49 (49.0)</td>
</tr>
<tr>
<td>Low</td>
<td>20 (20.0)</td>
<td>3 (3.0)</td>
<td>7 (7.0)</td>
<td>18 (18.0)</td>
</tr>
<tr>
<td><strong>Study (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>27 (27.0)</td>
<td>56 (56.0)</td>
<td>67 (67.0)</td>
<td>50 (50.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>49 (49.0)</td>
<td>37 (37.0)</td>
<td>32 (32.0)</td>
<td>31 (31.0)</td>
</tr>
<tr>
<td>Low</td>
<td>24 (24.0)</td>
<td>7 (7.0)</td>
<td>1 (1.0)</td>
<td>19 (19.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>χ²</th>
<th>p (2-side)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1.566</td>
</tr>
<tr>
<td>B</td>
<td>11.825</td>
</tr>
<tr>
<td>C</td>
<td>20.853</td>
</tr>
<tr>
<td>D</td>
<td>7.559</td>
</tr>
</tbody>
</table>

**Pearson Chi-Square Test**

A. Comparison of the variable-self-reported of diet compliance of the two groups (base line)
B. Comparison of the variable self-reported of diet compliance of the two groups at 2 days after discharge
C. Comparison of the variable-self-reported of diet compliance of the two groups at 4 weeks after discharge
D. Comparison of the variable-self-reported of diet compliance of the two groups at 12 weeks after discharge

# AD: after discharge
Table 4.14 Self-reported diet compliance-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z p (2-side)</td>
<td>-4.243</td>
<td>0.000**</td>
<td>0.046*</td>
<td>-3.638</td>
<td>0.000**</td>
</tr>
<tr>
<td>Z p (2-side)</td>
<td>-2.000</td>
<td>-3.5</td>
<td>0.000**</td>
<td>-0.180</td>
<td>0.857</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td>0.000**</td>
<td>-3.400</td>
<td>0.001**</td>
<td>-4.843</td>
<td>0.000**</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>0.000**</td>
<td>-3.335</td>
<td>0.001**</td>
<td>-7.008</td>
<td>0.000**</td>
</tr>
</tbody>
</table>

Wilcoxon test
A. Comparison of the variable-self-reported diet compliance of baseline vs 2 days after discharge
B. Comparison of the variable-self-reported diet compliance 2 days after discharge vs 4 weeks after discharge
C. Comparison of the variable-self-reported diet compliance 4 weeks after discharge vs 12 weeks after discharge
D. Comparison of the variable-self-reported diet compliance of baseline vs 4 weeks after discharge
E. Comparison of the variable-self-reported diet compliance of baseline vs 12 weeks after discharge

Figure 4.5 Trend of self-reported diet compliance

Chapter Four Results
At 4 weeks and 12 weeks after discharge, patients in the study group were better at medication adherence than patients in the control group. (See table 4.15)

In the control group, there was no significant difference on self-reported medication adherence at baseline versus 2 days after discharge, or at 2 days versus 4 weeks after discharge, or at 4 weeks versus at 12 weeks after discharge (p>0.05). In the study group, results showed that the increase of medication adherence was not statistically significant 2 days after discharge versus baseline (p>0.05). However, the difference between patients' medication adherence level measured at 4 weeks versus 2 days after discharge, and at 12 weeks versus 4 weeks after discharge was significant (p<0.05). (See table 4.16, Figure 4.6)
Table 4. 15 Self-reported medication compliance-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD #</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td><strong>Total (n=200)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>112 (56.0)</td>
<td>112 (56.0)</td>
<td>122 (61.0)</td>
<td>137 (68.5)</td>
</tr>
<tr>
<td>Moderate</td>
<td>84 (42.0)</td>
<td>85 (42.5)</td>
<td>72 (36.0)</td>
<td>57 (28.5)</td>
</tr>
<tr>
<td>Low</td>
<td>4 (2.0)</td>
<td>3 (1.5)</td>
<td>6 (3.0)</td>
<td>6 (3.0)</td>
</tr>
<tr>
<td><strong>Control (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>54 (54.0)</td>
<td>54 (54.0)</td>
<td>51 (51.0)</td>
<td>51 (51.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>45 (45.0)</td>
<td>45 (45.0)</td>
<td>46 (46.0)</td>
<td>46 (46.0)</td>
</tr>
<tr>
<td>Low</td>
<td>1 (1.0)</td>
<td>1 (1.0)</td>
<td>3 (3.0)</td>
<td>3 (3.0)</td>
</tr>
<tr>
<td><strong>Study (n=100)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>58 (58.0)</td>
<td>58 (58.0)</td>
<td>71 (71.0)</td>
<td>86 (86.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>39 (39.0)</td>
<td>40 (40.0)</td>
<td>26 (26.0)</td>
<td>11 (11.0)</td>
</tr>
<tr>
<td>Low</td>
<td>3 (3.0)</td>
<td>2 (2.0)</td>
<td>3 (3.0)</td>
<td>3 (3.0)</td>
</tr>
</tbody>
</table>

χ²  p (2-side)
A  1.571  0.456
B  0.770  0.680
C  8.834  0.012*
D  30.433  0.000**

Pearson Chi-Square Test
A. Comparison of the variable self-reported medication compliance of the two groups (base line)
B. Comparison of the variable self-reported medication compliance of the two groups at 2 days after discharge
C. Comparison of the variable self-reported medication compliance of the two groups at 4 weeks after discharge
D. Comparison of the variable self-reported medication compliance of the two groups at 12 weeks after discharge

# AD: after discharge

Chapter Four Results
Table 4.16 Self-reported medication compliance-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
<td>p (2-side)</td>
<td>Z</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td>0.000</td>
<td>1.000</td>
<td>-1.890</td>
<td>0.059</td>
<td>-1.890</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-0.302</td>
<td>0.763</td>
<td>-2.449</td>
<td>0.014*</td>
<td>-2.884</td>
</tr>
</tbody>
</table>

Wilcoxon test
A, Comparison of the variable-self-reported medication compliance of baseline vs 2 days after discharge
B, Comparison of the variable-self-reported medication compliance 2 days after discharge vs 4 weeks after discharge
C, Comparison of the variable-self-reported medication compliance 4 weeks after discharge vs 12 weeks after discharge
D, Comparison of the variable-self-reported medication compliance of baseline vs 4 weeks after discharge
E, Comparison of the variable-self-reported medication compliance of baseline vs 12 weeks after discharge

Figure 4.6 Trend of self-reported medication compliance

Chapter Four Results
The Chi-square test (table 4.17) revealed no significant difference between the study and the control group on self-reported physical exercise adherence either at baseline, 2 days or 4 weeks after discharge. However, it revealed a significant difference between the two groups at 12 weeks after discharge. The adherence rate of high level, moderate level, and low level for the study group were 90%, 7% and 3%, and for the control group were 62%, 32% and 6%.

Repeated measure of self-reported physical exercise adherence found no significant differences at baseline versus 2 days after discharge, at 2 days after discharge versus 4 weeks after discharge, and at 4 weeks versus 12 weeks after discharge for the control group. For the study group, a significant difference of adherence was found at 2 days after discharge versus baseline, at 4 weeks versus 2 days after discharge, at 12 weeks versus 4 weeks after discharge, and at 4 weeks and 12 weeks after discharge versus baseline (p<0.01). (See table 4.18, Figure 4.7)
### Table 4.17 Self-reported physical exercise compliance-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD #</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>119 (59.5)</td>
<td>126 (63.0)</td>
<td>136 (68.0)</td>
<td>152 (76.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>72 (36.0)</td>
<td>67 (33.5)</td>
<td>55 (27.5)</td>
<td>39 (19.5)</td>
</tr>
<tr>
<td>Low</td>
<td>9 (4.5)</td>
<td>7 (3.5)</td>
<td>9 (4.5)</td>
<td>9 (4.5)</td>
</tr>
</tbody>
</table>

| Control (n=100) |           |             |            |             |
| High   | 63 (63.0)  | 63 (63.0)   | 62 (62.0)  | 62 (62.0)   |
| Moderate | 33 (33.0)  | 33 (33.0)   | 32 (32.0)  | 32 (32.0)   |
| Low    | 4 (4.0)    | 4 (4.0)     | 6 (6.0)    | 6 (6.0)     |

| Study (n=100) |           |             |            |             |
| High   | 56 (56.0)  | 63 (63.0)   | 74 (74.0)  | 90 (90.0)   |
| Moderate | 39 (39.0)  | 34 (34.0)   | 23 (23.0)  | 7 (7.0)     |
| Low    | 5 (5.0)    | 3 (3.0)     | 3 (3.0)    | 3 (3.0)     |

\[
\chi^2 = \text{p (2-side)}
\]

A, Comparison of the variable-self-reported physical exercise compliance of the two groups (base line)

B, Comparison of the variable self-reported physical exercise compliance of the two groups at 2 days after discharge

C, Comparison of the variable-self-reported physical exercise compliance of the two groups at 4 weeks after discharge

D, Comparison of the variable-self-reported physical exercise compliance of the two groups at 12 weeks after discharge

# AD: after discharge
Table 4.18 Self-reported physical exercise compliance-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A Z</th>
<th>B Z</th>
<th>C Z</th>
<th>D Z</th>
<th>E Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>p (2-side)</td>
<td>p (2-side)</td>
<td>p (2-side)</td>
<td>p (2-side)</td>
<td>p (2-side)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td>0.000</td>
<td>1.000</td>
<td>-1.732</td>
<td>0.083</td>
<td>1.732</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-3.000</td>
<td>0.003**</td>
<td>-2.400</td>
<td>0.016*</td>
<td>-3.258</td>
</tr>
</tbody>
</table>

Wilcoxon test
A, Comparison of the variable-self-reported physical exercise compliance of base line vs 2 days after discharge
B, Comparison of the variable self-reported physical exercise compliance 2 days after discharge vs 4 weeks after discharge
C, Comparison of the variable-self-reported physical exercise compliance 4 weeks after discharge vs 12 weeks after discharge
D, Comparison of the variable-self-reported physical exercise compliance of base line vs 4 weeks after discharge
E, Comparison of the variable-self-reported physical exercise compliance of base line vs 12 weeks after discharge

Figure 4.7 Trend of self-reported physical exercise compliance

Chapter Four Results
Significant differences between the two groups of patients were detected in the levels of self-reported health-related lifestyle behavior adherence by the Chi-square test at 2 days, 4 weeks and 12 weeks after discharge. Patients in the study group were found to have significantly higher level of adherence than patients in the control group at these three times. No significant difference was found between the two groups measured at baseline. (See table 4.19)

Compared with the baseline for the control group, patients’ level of adherence dropped significantly at 4 weeks post-discharge ($p<0.05$) and again at 12 weeks post-discharge ($p<0.05$). For the study group, patients with a higher level of adherence increased significantly 2 days after discharge vs. baseline and again at 4 weeks vs. 2 days after discharge. Comparably, the level of self-reported health-related lifestyles behavior adherence dropped significantly 12 weeks vs. 4 weeks after discharge ($p<0.05$). (See table 4.20, Figure 4.8)
### Table 4. 19 Self-reported health-related lifestyles behavior compliance-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line n (%)</th>
<th>2 days AD n (%)</th>
<th>4 Weeks AD n (%)</th>
<th>12 weeks AD n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>74 (37.0)</td>
<td>97 (48.5)</td>
<td>113 (56.5)</td>
<td>108 (54.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>107 (53.5)</td>
<td>91 (45.5)</td>
<td>62 (31.0)</td>
<td>52 (26.0)</td>
</tr>
<tr>
<td>Low</td>
<td>19 (9.5)</td>
<td>12 (6.0)</td>
<td>25 (12.5)</td>
<td>40 (20.0)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>40 (40.0)</td>
<td>40 (40.0)</td>
<td>37 (37.0)</td>
<td>36 (36.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>55 (55.0)</td>
<td>55 (55.0)</td>
<td>47 (47.0)</td>
<td>42 (42.0)</td>
</tr>
<tr>
<td>Low</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>16 (16.0)</td>
<td>22 (22.0)</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>34 (34.0)</td>
<td>57 (57.0)</td>
<td>76 (78.0)</td>
<td>72 (72.0)</td>
</tr>
<tr>
<td>Moderate</td>
<td>52 (52.0)</td>
<td>36 (36.0)</td>
<td>15 (17.0)</td>
<td>10 (10.0)</td>
</tr>
<tr>
<td>Low</td>
<td>14 (14.0)</td>
<td>7 (7.0)</td>
<td>9 (5.0)</td>
<td>18 (18.0)</td>
</tr>
</tbody>
</table>

\[ \chi^2 \text{ p (2-side)} \]

A: 4.834 0.089
B: 7.280 0.026*
C: 31.936 0.000**
D: 32.092 0.000**

Pearson Chi-Square Test

A, Comparison of the variable-self-reported health-related behavior compliance of the two groups (base line)
B, Comparison of the variable self-reported health-related behavior compliance of the two groups at 2 days after discharge
C, Comparison of the variable-self-reported health-related behavior compliance of the two groups at 4 weeks after discharge
D, Comparison of the variable-self-reported health-related behavior compliance of the two groups at 12 weeks after discharge

# AD: after discharge

Chapter Four Result 103
Table 4.20 Self-reported health-related lifestyles behavior compliance—repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n=100)</td>
<td>0.000</td>
<td>1.000</td>
<td>506</td>
<td>0.000**</td>
<td>-2.333</td>
<td>0.020*</td>
<td>-3.5</td>
<td>0.000**</td>
<td>-3.83</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-5.145</td>
<td>0.000**</td>
<td>-3.514</td>
<td>0.002**</td>
<td>-2.202</td>
<td>0.028*</td>
<td>-6.1</td>
<td>0.000**</td>
<td>42.57</td>
<td>0.000**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wilcoxon test

A. Comparison of the variable—self-reported health-related behavior compliance of base line vs 2 days after discharge

B. Comparison of the variable—self-reported health-related behavior compliance 2 days after discharge vs 4 weeks after discharge

C. Comparison of the variable—self-reported health-related behavior compliance 4 weeks after discharge vs 12 weeks after discharge

D. Comparison of the variable—self-reported health-related behavior compliance of base line vs 4 weeks after discharge

E. Comparison of the variable—self-reported health-related behavior compliance of base line vs 12 weeks after discharge

Figure 4.8 Trend of self-reported health-related behavior compliance

Trend of self-reported of health-related behavior compliance
between groups (high level)

Trend of self-reported of health-related behavior compliance
between groups (low level)

Chapter Four Result 104
Table 4.21 shows that patients in both groups had no significant difference for self-reported smoking at base line ($\chi^2=3.366$, $p=0.186$). In the study group, the result showed that 18 out of 21 patients who self-reported smoking at base line had quit smoking two days after discharge ($\chi^2=23.029$, $p=0.000$). There were 3 patients who began smoking again at 4 weeks after discharge. Compared to the smoking cases at two days after discharge, the number of smoking cases at 4 weeks after discharge showed no significant change ($\chi^2=1.184$, $p=0.553$). The smoking cases at 4 weeks was still significantly less than cases at base line ($\chi^2=15.591$, $p=0.000$). However, compared with the base line, there were 15 patients who began smoking again at 12 weeks after discharge. Twelve patients failed to quit smoking 12 weeks versus 4 weeks after discharge ($\chi^2=9.464$, $p=0.009$), and there was no significant difference in the number of smokers at 12 weeks after discharge versus baseline ($\chi^2=1.038$, $p=0.595$). There was even a case who self-reported not smoking at baseline till 4 weeks after discharge who began smoking at 12 weeks after discharge. In the control group, there were no changes to the number of non-smoking cases, or quit cases at baseline, 2 days, 4 weeks, and 12 weeks after discharge. (See table 4.22, Figure 4.9)
Table 4. 21 Smoking-repeated measured comparison of the CHD-related health behavior of the two groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Base line</th>
<th>2 days AD</th>
<th>4 Weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>Total (n=200)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>153 (76.5)</td>
<td>153 (76.5)</td>
<td>153 (76.5)</td>
<td>152 (76.0)</td>
</tr>
<tr>
<td>Quit</td>
<td>13 (6.5)</td>
<td>31 (15.5)</td>
<td>28 (14.0)</td>
<td>17 (8.5)</td>
</tr>
<tr>
<td>Continue</td>
<td>34 (17.0)</td>
<td>16 (8.0)</td>
<td>19 (9.5)</td>
<td>31 (15.5)</td>
</tr>
<tr>
<td>Control (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>82 (82.0)</td>
<td>82 (82.0)</td>
<td>82 (82.0)</td>
<td>82 (82.0)</td>
</tr>
<tr>
<td>Quit</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
<td>5 (5.0)</td>
</tr>
<tr>
<td>Continue</td>
<td>13 (13.0)</td>
<td>13 (13.0)</td>
<td>13 (13.0)</td>
<td>13 (13.0)</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>71 (71.0)</td>
<td>71 (71.0)</td>
<td>71 (71.0)</td>
<td>70 (70.0)</td>
</tr>
<tr>
<td>Quit</td>
<td>8 (8.0)</td>
<td>26 (26.0)</td>
<td>23 (23.0)</td>
<td>12 (12.0)</td>
</tr>
<tr>
<td>Continue</td>
<td>21 (21.0)</td>
<td>3 (3.0)</td>
<td>6 (6.0)</td>
<td>18 (18.0)</td>
</tr>
</tbody>
</table>

\[\chi^2\]  
A: 3.366  p (2-side): 0.186  
B: 21.267  0.000**  
C: 14.941  0.001  
D: 4.656  0.098

Pearson Chi-Square Test  
A, Comparison of the variable-smoking of the two groups (base line)  
B, Comparison of the variable-smoking of the two groups at 2 days after discharge  
C, Comparison of the variable-smoking of the two groups at 4 weeks after discharge  
D, Comparison of the variable-smoking of the two groups at 12 weeks after discharge

Chapter Four Results
Table 4.22 Smoking-repeated measured comparison of the CHD-related health behavior within groups

<table>
<thead>
<tr>
<th>Group</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (n=100)</td>
<td>0.000</td>
<td>1.000</td>
<td>0.000</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Study (n=100)</td>
<td>-4.234**</td>
<td>0.000**</td>
<td>-1.732</td>
<td>0.083</td>
<td>-3.357</td>
</tr>
<tr>
<td></td>
<td>0.001**</td>
<td>-3.873</td>
<td>0.000**</td>
<td>0.000</td>
<td>-0.707</td>
</tr>
<tr>
<td></td>
<td>0.480</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wilcoxon test
A. Comparison of the variable-smoking at baseline vs 2 days after discharge
B. Comparison of the variable-smoking at 2 days after discharge vs 4 weeks after discharge
C. Comparison of the variable-smoking at 4 weeks after discharge vs 12 weeks after discharge
D. Comparison of the variable-smoking at baseline vs 4 weeks after discharge
E. Comparison of the variable-smoking at baseline vs 12 weeks after discharge

Figure 4.9 Trend of smoking cessation

Trend of quit smoking rate between groups

DATETIME
0: baseline; 1: 2 days after discharge; 2: 4 weeks after discharge; 3: 12 weeks after discharge

Trend of smoking rate between groups

DATETIME
0: baseline; 1: 2 days after discharge; 2: 4 weeks after discharge; 3: 12 weeks after discharge

Chapter Four Results

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Table 4.23 shows that patients in the study group were more willing to receive CNS follow-up than patients in the control group ($p<0.01$) when assessed at 4 weeks and at 12 weeks after discharge. More than 80% of patients in the study group thought CNS' follow-up was very helpful for them when assessed at 4 weeks and at 12 weeks after discharge. Also 80% of patients in the study group were satisfied with CNS follow-up detected at 4 weeks after discharge.

However, patients in both groups did not show more willingness to pay for the CNS follow-up. Totally, just 7% of patients reported a willingness to pay for CNS, identified at the 4 week follow-up after discharge, and also just 11% of patients were willing to pay for CNS, identified at 12 weeks follow-up after discharge.
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Willingness to accept CNS follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>138 (69.0)</td>
<td>61 (61.0)</td>
<td>77 (77.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>63 (31.5)</td>
<td>39 (39.0)</td>
<td>24 (24.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>145 (72.5)</td>
<td>75 (75.0)</td>
<td>60 (60.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>54 (27.0)</td>
<td>36 (36.0)</td>
<td>18 (18.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Willingness to pay for CNS follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>14 (7.0)</td>
<td>7 (7.0)</td>
<td>7 (7.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>186 (93.0)</td>
<td>93 (93.0)</td>
<td>93 (93.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>22 (11.0)</td>
<td>10 (10.0)</td>
<td>12 (12.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>178 (89.0)</td>
<td>92 (92.0)</td>
<td>86 (86.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived helpfulness of the CNS follow-up by the study group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>82 (41.0)</td>
<td>43 (43.0)</td>
<td>39 (39.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>17 (8.5)</td>
<td>9 (9.0)</td>
<td>8 (8.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>83 (41.5)</td>
<td>43 (43.0)</td>
<td>40 (40.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>11 (5.5)</td>
<td>5 (5.0)</td>
<td>6 (6.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>1 (0.5)</td>
<td>0 (0.0)</td>
<td>1 (1.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction of the CNS follow-up by the study group</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>80 (40.0)</td>
<td>40 (40.0)</td>
<td>40 (40.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>18 (9.0)</td>
<td>9 (9.0)</td>
<td>9 (9.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2 (1.0)</td>
<td>1 (1.0)</td>
<td>1 (1.0)</td>
<td></td>
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<td>12 weeks after discharge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>85 (42.5)</td>
<td>43 (43.0)</td>
<td>42 (42.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td>13 (6.5)</td>
<td>6 (6.0)</td>
<td>7 (7.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>2 (1.0)</td>
<td>1 (1.0)</td>
<td>1 (1.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a, Pearson Chi-Square Test

b, Fisher's Exact Test

A, Comparison of the two groups at 4 weeks after discharge

B, Comparison of the two groups at 12 weeks after discharge

C, Comparison within the control group at 4 weeks after discharge vs 12 weeks after discharge

D, Comparison within the study group at 4 weeks after discharge vs 12 weeks after discharge

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The results of table 4.24 show that the average grade for patients' perceived daily activity exertion in the study group was 2.072. This means that the average grade was a little higher than the second grade of very light. For the control group, the average grade was 3.035, just a little higher than the third grade of fairly light. The average grade for the study group was significantly lower than that of the control group (p<0.01) according to The Borg 15-Graded Scale.

Patients in the study group had a lower average heart discomfort occurrence than patients in the control group, within four weeks after discharge (p<0.05), as evaluated from daily heart discomfort records.

**Table 4.24 Comparison self-reported of daily feeling of the two groups 4 weeks after discharge**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total(n=200) Mean (SD) Range</th>
<th>Control(n=100) Mean (SD) Range</th>
<th>Study(n=100) Mean (SD) Range</th>
<th>Mann-Whitney U Test t  p (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily activity</td>
<td>2.566 (0.823) (1-5)</td>
<td>3.035 (0.766) (2-5)</td>
<td>2.072 (0.547) (1-3.5)</td>
<td>1648.000 0.000**</td>
</tr>
<tr>
<td>Daily heart discomfort</td>
<td>1.044 (0.000) (1.00-1.50)</td>
<td>1.059 (0.000) (1.00-1.50)</td>
<td>1.029 (0.000) (1.00-1.50)</td>
<td>4201.500 0.014*</td>
</tr>
</tbody>
</table>

Chapter Four Results
Table 4.25 shows that totally, 13% of 200 patients were readmitted to hospital because of CHD within 12 weeks after the first discharge, and 3 patients were readmitted to hospital twice. There was no significant difference between the study group and the control group on the CHD readmission rates within 12 weeks after discharge.

There were thirteen patients who were readmitted to hospital due to other diseases. Among these patients, three were readmitted twice, and one was readmitted three times. Also, no significant different was revealed between the two groups in the rate of readmission due to other diseases (p>0.05).

Patients in the study group revealed more clinic visits than patients in the control group because of CHD (p<0.05) and other diseases (p<0.01).
Table 4. 25 Comparison of health service utilization of the two groups 12 weeks after discharge

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Total (n=200)</th>
<th>Control (n=100)</th>
<th>Study (n=100)</th>
<th>Chi-Square Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>(%)</td>
<td>n</td>
<td>(%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readmission related to CHD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>174</td>
<td>(87.0)</td>
<td>87</td>
<td>(87.0)</td>
</tr>
<tr>
<td>One</td>
<td>23</td>
<td>(11.5)</td>
<td>12</td>
<td>(12.0)</td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
<td>(1.5)</td>
<td>1</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Three and above</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic visit related to CHD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>107</td>
<td>(53.5)</td>
<td>64</td>
<td>(64.0)</td>
</tr>
<tr>
<td>One</td>
<td>69</td>
<td>(34.5)</td>
<td>28</td>
<td>(28.0)</td>
</tr>
<tr>
<td>Two</td>
<td>18</td>
<td>(9.0)</td>
<td>6</td>
<td>(6.0)</td>
</tr>
<tr>
<td>Three and above</td>
<td>6</td>
<td>(3.0)</td>
<td>2</td>
<td>(2.0)</td>
</tr>
<tr>
<td>Readmission related to other diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>187</td>
<td>(93.5)</td>
<td>93</td>
<td>(93.0)</td>
</tr>
<tr>
<td>One</td>
<td>9</td>
<td>(4.5)</td>
<td>4</td>
<td>(4.0)</td>
</tr>
<tr>
<td>Two</td>
<td>3</td>
<td>(1.5)</td>
<td>3</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Three and above</td>
<td>1</td>
<td>(0.5)</td>
<td>0</td>
<td>(0.0)</td>
</tr>
<tr>
<td>Clinic visit related to other diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>141</td>
<td>(70.5)</td>
<td>82</td>
<td>(82.0)</td>
</tr>
<tr>
<td>One</td>
<td>39</td>
<td>(19.5)</td>
<td>11</td>
<td>(11.0)</td>
</tr>
<tr>
<td>Two</td>
<td>9</td>
<td>(4.5)</td>
<td>3</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Three and above</td>
<td>11</td>
<td>(5.5)</td>
<td>4</td>
<td>(4.0)</td>
</tr>
</tbody>
</table>

Pearson Chi-Square Test

Chapter Four Result
4.4 Ordinal regression results for factors associated with the outcome indicators

At twelve weeks after discharge, eating habits and self-reported understanding of CHD diet knowledge were variables detected (p<0.05) by univariate analysis. They were potential contributory factors for CHD diet adherence in the ordinal regression model. The Barthel Index score variable and the self-reported understanding of CHD medication knowledge were identified as potential contributory factors (p<0.05) for medication adherence. The following variables: the Barthel Index score variable, the self-reported understanding of CHD physical exercise knowledge variable, CHD stability variable and the number of clinic visits variable were all potential contributory factors (p<0.05) for the indicator for physical exercise adherence in the ordinal regression model. Also, the following variables: gender variable, self-reported understanding of CHD risk factors variable, times of clinic visits variable and the number of other chronic diseases variable were identified as potential contributory factors (p<0.05) for CHD-related health behavior adherence. (See table 4.26)

<table>
<thead>
<tr>
<th>Table 4.26 Association of variables with compliances at 12 weeks post-discharge - univariate analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Education Level</td>
</tr>
<tr>
<td>Income</td>
</tr>
<tr>
<td>Eating Habit</td>
</tr>
<tr>
<td>Barthel Index</td>
</tr>
<tr>
<td>Knowledge*</td>
</tr>
<tr>
<td>Stability of CHD</td>
</tr>
<tr>
<td>Times of Clinic visit</td>
</tr>
<tr>
<td>Number of other chronic disease</td>
</tr>
</tbody>
</table>

* Self-reported understanding of related Knowledge

Potential contributory factors in ordinal regression model are detected by Chi-Square test.

Chapter Four Result
At 12 weeks after the patients’ discharge, the following two factors, eating habits and self-reported understanding of CHD diet were included in the ordinal regression model with self-reported diet adherence as the dependent variable (table 4.27). The results of tests for modeling fitting were \((-2 \log \text{likelihood final model} = 59.611, \chi^2 = 105.708, \text{df} = 3, p = 0.000)\). Goodness of fit was \((\text{Pearson } \chi^2 = 27.011, \text{df} = 19, p = 0.104)\). Both indicated the data fitted this ordinal regression model. Both eating habits and self-reported understanding of CHD diet were two significant factors in association with self-reported diet adherence \((p<0.01)\). Self-reported diet adherence increased with better eating habits for CHD and better self-reported understanding of CHD diet knowledge.

Table 4.27 Factors that contribute to self-reported diet compliance 12 weeks after discharge detected by ordinal regression (Logit) model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-0.069</td>
<td>0.291</td>
<td>0.056</td>
<td>0.814</td>
<td>-0.639</td>
</tr>
<tr>
<td>Eating habit</td>
<td>3.782</td>
<td>0.478</td>
<td>62.490</td>
<td>0.000**</td>
<td>2.844</td>
</tr>
<tr>
<td>Self-reported understanding of CHD diet</td>
<td>0.839</td>
<td>0.269</td>
<td>9.738</td>
<td>0.002**</td>
<td>0.312</td>
</tr>
</tbody>
</table>

Chapter Four Result

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The two factors: Barthel Index and self-reported understanding of knowledge of CHD medication, were included in the ordinal regression model at 12 weeks after patients' discharge. The Barthel Index was not found in association with self-reported medication adherence. The factor self-reported understanding of CHD medication was positive in association with self-reported medication adherence (p<0.01). Self-reported medication adherence increased in association with the level of self-reported understanding of CHD medication. Modeling fitting (-2 log likelihood final model = 56.666, $\chi^2 = 66.078$, df = 2, p = 0.000) and goodness of fit (Pearson $\chi^2 = 39.274$, df = 50, p = 0.863) indicated that data fit this model. (See table 4.28)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barthel Index</td>
<td>-0.006</td>
<td>0.014</td>
<td>0.171</td>
<td>0.679</td>
<td>-0.033</td>
<td>0.022</td>
<td></td>
</tr>
<tr>
<td>Self-reported understanding of knowledge of CHD medication</td>
<td>2.481</td>
<td>0.379</td>
<td>42.863</td>
<td>0.000**</td>
<td>1.738</td>
<td>3.277</td>
<td></td>
</tr>
</tbody>
</table>
In the ordinal regression model with self-reported physical exercise adherence as the dependent variable at 12 weeks after patients discharge; the Barthel Index, self-reported understanding of CHD physical exercise, and times of clinic visit were included as the factors. Tests of modeling fitting (-2 log likelihood final model = 59.821, $\chi^2 = 166.826$, df = 4, $p = 0.000$) and goodness of fit (Pearson $\chi^2 = 97.232$, df = 110, $p = 0.803$) indicated the data fitted this model. The Barthel Index, the self-reported understanding of CHD physical exercise, and the times of clinic visits were significantly associated with self-reported physical exercise adherence. The Barthel Index was negative in association with the dependent variable, which means that better self-reported physical exercise adherence was associated with a higher Barthel Index score ($p<0.05$). Self-reported physical exercise adherence decreased with lower self-reported understanding of CHD physical exercise, and self-reported physical exercise adherence decreased in association with more frequent clinic visits ($p<0.01$). Self-reported physical exercise adherence was not found to be associated with the stability factor for CHD ($p=0.658$). (See table 4.29)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>Barthel Index</td>
<td>-0.056</td>
<td>0.024</td>
<td>5.615</td>
<td>0.018*</td>
<td>-0.102, -0.010</td>
</tr>
<tr>
<td>Self-reported understanding of CHD physical exercise</td>
<td>7.683</td>
<td>1.487</td>
<td>26.714</td>
<td>0.000**</td>
<td>4.770, 10.597</td>
</tr>
<tr>
<td>Stability of CHD</td>
<td>0.195</td>
<td>0.441</td>
<td>0.196</td>
<td>0.658</td>
<td>-0.669, 1.060</td>
</tr>
<tr>
<td>Times of clinic visits</td>
<td>1.804</td>
<td>0.460</td>
<td>16.956</td>
<td>0.000**</td>
<td>0.992, 2.795</td>
</tr>
</tbody>
</table>

Chapter Four Result
At 12 weeks after the patients' discharge, the following factors: gender, carer, self-reported understanding of CHD risk factors, number of clinic visits and the number of other chronic diseases were in the ordinal regression model with self-reported health-related behavior adherence as the dependent variable. Only the factor of self-reported understanding of CHD risk factors was associated significantly with the dependent variable. Self-reported health-related behavior adherence was not associated with the other four factors: gender, income, number of clinic visits and number of with other chronic diseases (p>0.05). Tests of modeling fitting (-2 log likelihood final model = 283.071, $\chi^2 = 31.249, df = 5, p = 0.000$) and goodness of fit (Pearson $\chi^2 = 247.300, df = 235, p = 0.278$) indicated the data fitted well. (See table 4.30)

Table 4.30 Factors that contribute to self-reported health-related behavior compliance 12 weeks after discharge detected by ordinal regression (Logit) model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-0.583</td>
<td>0.313</td>
<td>3.476</td>
<td>0.062</td>
<td>-1.196</td>
<td>0.030</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>0.001</td>
<td>0.001</td>
<td>0.071</td>
<td>0.781</td>
<td>-0.001</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Self-reported understanding of CHD risk factors</td>
<td>1.309</td>
<td>0.269</td>
<td>23.674</td>
<td>0.000**</td>
<td>0.781</td>
<td>1.836</td>
<td></td>
</tr>
<tr>
<td>Number of clinic visits</td>
<td>-0.081</td>
<td>0.191</td>
<td>0.183</td>
<td>0.669</td>
<td>-0.456</td>
<td>0.293</td>
<td></td>
</tr>
<tr>
<td>Number of with other chronic diseases</td>
<td>-0.305</td>
<td>0.197</td>
<td>2.386</td>
<td>0.122</td>
<td>-0.691</td>
<td>0.082</td>
<td></td>
</tr>
</tbody>
</table>

Chapter Four Result
The twelve variables listed in table 4.31 were tested by univariate analysis to find the potential contributory factors in the ordinal regression model with self-reported heart discomfort within 4 weeks after patients’ discharge as the dependent variable. Age, self-reported diet adherence, self-reported physical exercise adherence and number of clinic visits were identified as potential contributory factors (p<0.05).

<table>
<thead>
<tr>
<th>Variable</th>
<th>CHD Readmission</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>9.314</td>
<td>0.316</td>
</tr>
<tr>
<td>Age</td>
<td>252.070</td>
<td>0.002**</td>
</tr>
<tr>
<td>Education Level</td>
<td>17.591</td>
<td>0.348</td>
</tr>
<tr>
<td>Income</td>
<td>120.557</td>
<td>0.991</td>
</tr>
<tr>
<td>Barthel Index</td>
<td>133.169</td>
<td>0.084</td>
</tr>
<tr>
<td>Self-reported diet compliance</td>
<td>29.510</td>
<td>0.021*</td>
</tr>
<tr>
<td>Self-reported medication compliance</td>
<td>11.886</td>
<td>0.752</td>
</tr>
<tr>
<td>Self-reported physical exercise compliance</td>
<td>28.849</td>
<td>0.025*</td>
</tr>
<tr>
<td>Self-reported health-related behavior compliance</td>
<td>20.384</td>
<td>0.203</td>
</tr>
<tr>
<td>Stability of CHD</td>
<td>14.333</td>
<td>0.574</td>
</tr>
<tr>
<td>Number of Clinic visits</td>
<td>57.186</td>
<td>0.000**</td>
</tr>
<tr>
<td>Number of other Chronic diseases</td>
<td>22.919</td>
<td>0.525</td>
</tr>
</tbody>
</table>
Results in table 4.32 revealed that the factors for self-reported diet adherence and the
number of clinic visit were associated with the dependent variable for self-reported
heart discomfort at four weeks after patient discharge in the ordinal regression model.
Modeling tests fitting (-2 log likelihood final model = 346.457, \( \chi^2 = 19.028 \), df = 5, p = 0.002) and goodness of fit (Pearson \( \chi^2 = 1186.891 \), df = 1123, p = 0.091) indicated
the data fitted this model. The variables for age and self-reported physical exercise
adherence were not found to be significantly associated with self-reported heart
discomfort at four weeks post-discharge.

Patients' self-reported heart discomfort increase was linked to patients who had a
lower level of self-reported diet adherence (p<0.05) and with more clinic visits
(p<0.01).

Table 4.32 Factors that contribute to self-reported heart discomfort 4 weeks after discharge detected by
ordinal regression (Logit) model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>Std. Error</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.004</td>
<td>0.031</td>
<td>0.017</td>
<td>0.895</td>
<td>-0.065</td>
<td>0.057</td>
<td></td>
</tr>
<tr>
<td>Self-reported diet compliance</td>
<td>0.600</td>
<td>0.297</td>
<td>4.078</td>
<td>0.043*</td>
<td>0.018</td>
<td>1.182</td>
<td></td>
</tr>
<tr>
<td>Self-reported physical exercise compliance</td>
<td>-0.039</td>
<td>0.297</td>
<td>0.017</td>
<td>0.896</td>
<td>-0.621</td>
<td>0.543</td>
<td></td>
</tr>
<tr>
<td>Barthel Index</td>
<td>-0.015</td>
<td>0.010</td>
<td>2.124</td>
<td>0.145</td>
<td>-0.035</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Number of clinic visits</td>
<td>0.728</td>
<td>0.206</td>
<td>12.535</td>
<td>0.000**</td>
<td>0.325</td>
<td>1.131</td>
<td></td>
</tr>
</tbody>
</table>
At 12 weeks post-discharge, the variables for education level, income, self-reported physical exercise adherence, stability of CHD, and number of clinic visits were detected (p<0.05) in the 12 variables listed in table 4.33, by univariate analysis as being potential contributory factors for CHD readmission.

Table 4.33 Factors significant with CHD readmission 12 weeks after discharge—univariate analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>1.916</td>
<td>0.384</td>
</tr>
<tr>
<td>Age</td>
<td>53.352</td>
<td>0.276</td>
</tr>
<tr>
<td>Education Level</td>
<td>11.379</td>
<td>0.023*</td>
</tr>
<tr>
<td>Income</td>
<td>106.770</td>
<td>0.000*</td>
</tr>
<tr>
<td>Barthel Index</td>
<td>34.386</td>
<td>0.266</td>
</tr>
<tr>
<td>Self-reported diet compliance</td>
<td>6.274</td>
<td>0.180</td>
</tr>
<tr>
<td>Self-reported medication compliance</td>
<td>2.458</td>
<td>0.652</td>
</tr>
<tr>
<td>Self-reported physical exercise compliance</td>
<td>16.318</td>
<td>0.003*</td>
</tr>
<tr>
<td>Self-reported health-related behavior compliance</td>
<td>0.997</td>
<td>0.910</td>
</tr>
<tr>
<td>Stability of CHD</td>
<td>11.841</td>
<td>0.019*</td>
</tr>
<tr>
<td>Number of Clinic visits</td>
<td>44.551</td>
<td>0.000*</td>
</tr>
<tr>
<td>Number of other Chronic diseases</td>
<td>4.072</td>
<td>0.667</td>
</tr>
</tbody>
</table>
The ordinal regression model, identified the education level, and number of clinic visit were factors that significantly contribute to CHD readmission. Modeling tests fitting (-2 log likelihood final model = 115.37, $\chi^2 = 42.948$, df = 5, $p = 0.000$) and goodness of fit (Pearson $\chi^2 = 180.154$, df = 213, $p = 0.950$) indicated the data fitted this model. Variables for income, self-reported physical exercise adherence and CHD stability were not found to be associated with CHD readmission at 12 weeks after discharge. Readmission of patients within 12 weeks after discharge increased significantly in those patients who had a higher level of educational background and more clinic visits. (See table 4.34)

Table 4.34 Factors that contribute to CHD readmission 12 weeks after discharge detected by ordinal regression (n=200)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimate</th>
<th>S.E.</th>
<th>Wald</th>
<th>Sig.</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Lower Bound</strong></td>
</tr>
<tr>
<td>Education level</td>
<td>-0.881</td>
<td>0.394</td>
<td>4.993</td>
<td>0.025*</td>
<td>-1.655</td>
</tr>
<tr>
<td>Income</td>
<td>-0.001</td>
<td>0.001</td>
<td>0.167</td>
<td>0.683</td>
<td>-0.002</td>
</tr>
<tr>
<td>Self-reported physical exercise compliance</td>
<td>0.510</td>
<td>0.407</td>
<td>1.573</td>
<td>0.210</td>
<td>-0.287</td>
</tr>
<tr>
<td>Stability of CHD</td>
<td>0.573</td>
<td>0.410</td>
<td>1.952</td>
<td>0.162</td>
<td>-0.231</td>
</tr>
<tr>
<td>Number of clinic visits</td>
<td>1.327</td>
<td>0.290</td>
<td>20.968</td>
<td>0.000**</td>
<td>0.759</td>
</tr>
</tbody>
</table>

Chapter Four Result
Table 4.35 shows that self-reported CHD-related compliances are associated with understanding of related knowledge except understanding risk factors and smoking.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Base line</th>
<th>2 days AD</th>
<th>4 weeks AD</th>
<th>12 weeks AD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Control</td>
<td>Study</td>
<td>Total</td>
</tr>
<tr>
<td>understanding risk factors and smoking</td>
<td>0.078</td>
<td>0.081</td>
<td>0.153</td>
<td>0.040</td>
</tr>
<tr>
<td>understanding risk factors and lifestyle behavior compliance</td>
<td>0.205**</td>
<td>0.095</td>
<td>0.275**</td>
<td>0.283**</td>
</tr>
<tr>
<td>understanding diet knowledge and compliance</td>
<td>0.296**</td>
<td>0.405**</td>
<td>0.396</td>
<td>0.434**</td>
</tr>
<tr>
<td>understanding medication knowledge and compliance</td>
<td>0.305**</td>
<td>0.262**</td>
<td>0.342**</td>
<td>0.476**</td>
</tr>
<tr>
<td>understanding physical exercise knowledge and compliance</td>
<td>0.451**</td>
<td>0.440*</td>
<td>0.457**</td>
<td>0.528**</td>
</tr>
</tbody>
</table>

Spearman's correlation

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

# AD: after discharge

Chapter Four Result
4.5 Classification of CNS intervention and patients' description

In the present study, the Omaha system's Problem Classification Scheme was used to help classify the community nurses' follow-up on CHD elderly patients in the study group from hospital discharge through the 4 weeks post-discharge. In order to fit the present study, two problems, disease prevention and health maintenance were added in the original Omaha Problem Classification Scheme.

In this study, when reviewing the CNS intervention according to the CNS Intervention Scheme, it revealed that all CNS interventions for elderly CHD patients in the study group related to health education, guidance and counseling. Classification of the four domains in the CNS Intervention Scheme is the same as in the Omaha Problem Classification Scheme which represents the full spectrum of community health nursing practice. During four weeks of CNS follow-up of the study group patients, there were 13 occasions (0.73%) of health teaching, guidance and counseling related to the environmental domain, 235 (13.19%) related to the psychosocial domain, 625 (35.07%) related to the physiological domain, and 909 (51.01%) concerning health related behavior. The ten most frequent problems which CNS intervention covers in this study were related to CHD. (See table 4.36)

Figure 4.10 shows the ten most frequent problems that CNS covered during the follow up in the study.
Table 4.36 Summary of CNS Intervention Scheme* (study group n=100)

<table>
<thead>
<tr>
<th>Health teaching, Guidance and counseling</th>
<th>1st home visit</th>
<th>1st call</th>
<th>2nd home visit</th>
<th>2nd call</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Incense</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Sanitation</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>3. Residence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Neighborhood/workplace safety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Communication with community resources</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Social contact</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Role change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Interpersonal relationship</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Spiritual distress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Grief</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Emotional stability</td>
<td>69</td>
<td>53</td>
<td>31</td>
<td>51</td>
<td>204</td>
</tr>
<tr>
<td>12. Human sexuality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Care taking</td>
<td>11</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>31</td>
</tr>
<tr>
<td>14. Neglected child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Abused child</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Growth and development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. Hearing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Vision</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>19. Speech and language</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Dentition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Cognition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. Pain</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>23. Consciousness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Integument</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>25. Neuro-musculo-skeletal function</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. Respiration</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>12</td>
<td>42</td>
</tr>
<tr>
<td>27. Circulation</td>
<td>92</td>
<td>100</td>
<td>90</td>
<td>100</td>
<td>382</td>
</tr>
<tr>
<td>28. Digestion-hydration</td>
<td>11</td>
<td>11</td>
<td>8</td>
<td>5</td>
<td>35</td>
</tr>
<tr>
<td>29. Bowel function</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>20</td>
<td>116</td>
</tr>
<tr>
<td>30. Genito-urinary function</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>31. Antepartum/postpartum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Related Behaviour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Nutrition</td>
<td>82</td>
<td>60</td>
<td>78</td>
<td>78</td>
<td>298</td>
</tr>
<tr>
<td>33. Sleep and rest patterns</td>
<td>19</td>
<td>18</td>
<td>10</td>
<td>6</td>
<td>53</td>
</tr>
<tr>
<td>34. Physical activity</td>
<td>86</td>
<td>82</td>
<td>86</td>
<td>86</td>
<td>340</td>
</tr>
<tr>
<td>35. Personal hygiene</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>36. Substance use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Family planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. Health care supervision</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Prescribed medication regimen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Technical procedure</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>41. Disease prevention</td>
<td>32</td>
<td>30</td>
<td>26</td>
<td>30</td>
<td>118</td>
</tr>
<tr>
<td>42. Health maintenance</td>
<td>21</td>
<td>21</td>
<td>11</td>
<td>16</td>
<td>69</td>
</tr>
</tbody>
</table>

This CNS Intervention Scheme was developed according to the Omaha Problem Classification Scheme; Using the CNS Intervention Scheme to highlight the follow-up content performed by CNS. The CNS Intervention Scheme for this study included number 41-Disease Prevention and number 42-Health Maintenance based on the original Omaha Problem Classification Scheme.

Chapter Four Result
Figure 4.10 Ten frequent problems covered by CNS intervention

- Circulation
- Physical Activity
- Nutrition
- Emotional Stability
- Disease Prevention
- Bowel Function
- Health Maintenance
- Sleep & Rest Pattern
- Respiration
- Digestion-hydration

Person Times
Table 4.37 showed that before the patients' discharge, their top concern was treatment cost. 62% of the patients expressed this view. More than half of patients (54.3%) were concerned that they might not get enough health service support after being discharged home. 89 patients were concerned that their CHD might not be sufficiently controlled after their discharge. 15% of patients (n=30) feared of readmission because of CHD. And 28 patients (14%) worried that they would be an inconvenience or burden to their relatives after they were discharged home. Also, more than ten percent of patients (10.5%) worried that their other chronic diseases would not be controlled effectively. There were sixteen patients who were concerned that they would not be readmitted to hospital in time if CHD recurred at home. In the study group, ten patients (10% of patients in study group) were concerned about the quality of the CNS follow-up. Also, six patients complained that there were no carers at home to look after them. And three patients felt lonely at home.

<table>
<thead>
<tr>
<th>Item</th>
<th>Control group (n=100)</th>
<th>Study group (n=100)</th>
<th>Total (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of treatment</td>
<td>66</td>
<td>58</td>
<td>124</td>
</tr>
<tr>
<td>Could not get enough health service support after discharge</td>
<td>69</td>
<td>40</td>
<td>109</td>
</tr>
<tr>
<td>CHD could not be controlled well</td>
<td>53</td>
<td>36</td>
<td>89</td>
</tr>
<tr>
<td>Afraid of readmission</td>
<td>19</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Afraid of the disease bringing inconvenience for the relatives (Time consuming for the relatives)</td>
<td>12</td>
<td>16</td>
<td>28</td>
</tr>
<tr>
<td>Other chronic disease(s) could not be controlled well</td>
<td>7</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Could not go to hospital in time when CHD recurred</td>
<td>11</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Afraid of the quality of CNS follow-up</td>
<td>10*</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>No carer at home</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Feel lonely</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

* All the 10 patients wanted the original hospital and doctor to do the follow-up
After the patients were discharged home, they wanted to know if they would receive health education related to CHD and for any other geriatric diseases they had. They also wanted to know that they could receive follow-up by a health professional at home. They hoped that the community service agency would do more for their health care support without increasing the cost for the patient. The patients were aware that the medical expenses in hospital would be more than community health services charges. (See table 4.38)

Table 4.38 Patient's preference for their health service after discharged home (surveyed 4 weeks after discharge)

<table>
<thead>
<tr>
<th>Item</th>
<th>Control group (n=100)</th>
<th>Study group (n=100)</th>
<th>Total (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Getting health education related to CHD, and other geriatric disease</td>
<td>82</td>
<td>100</td>
<td>182</td>
</tr>
<tr>
<td>Health professional's follow-up</td>
<td>82</td>
<td>99</td>
<td>181</td>
</tr>
<tr>
<td>Hoping community service system could give more support (not expensive)</td>
<td>73</td>
<td>99</td>
<td>172</td>
</tr>
<tr>
<td>Medical expenses minimized through community health service rather than hospitalization</td>
<td>70</td>
<td>100</td>
<td>170</td>
</tr>
</tbody>
</table>
The reasons many patients preferred to be discharged early if possible related to financial reasons (61.5% of total patients in this study). Patients also considered their home environment to be better than the hospital (34.5% of total patients), as it was restful, quieter and more comfortable. Some patients also told the investigator that it was more convenient for their relatives to look after them at home, particularly to provide meals for them. If the patient was in hospital, then the relatives were obliged to prepare food and take it to the patient in hospital. The relatives also felt obliged to be present with their relative to look after the patient in hospital at night. (See table 4.39)

<table>
<thead>
<tr>
<th>Item</th>
<th>Control group (n=100)</th>
<th>Study (n=100)</th>
<th>Total (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic reason</td>
<td>65</td>
<td>58</td>
<td>123</td>
</tr>
<tr>
<td>Home environment is better*</td>
<td>36</td>
<td>33</td>
<td>69</td>
</tr>
<tr>
<td>Disease is controlled well</td>
<td>19</td>
<td>22</td>
<td>41</td>
</tr>
<tr>
<td>Believe that community health department can good support</td>
<td>11</td>
<td>11</td>
<td>22</td>
</tr>
</tbody>
</table>

* Environment at home is more quiet, comfortable, and more convenient for relative
Most of the concerns of patients who preferred to stay longer at hospital were related to their disease. Forty-five patients (22.5%) were sceptical about the quality of community health service. Fifteen percent of patients thought that their CHD could not be properly controlled after they were discharged home. Also, two patients who lived alone worried that there was no carer to look after them, and they could not afford to hire a carer themselves. A patient in the control group was concerned that it would be difficult for him to travel to hospital or clinic by himself after discharge to see the doctor. (See table 4.40)

<table>
<thead>
<tr>
<th>Item</th>
<th>Control group (n=100)</th>
<th>Study group (n=100)</th>
<th>Total (n=200)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not believe in the quality of community health service</td>
<td>29</td>
<td>16</td>
<td>45</td>
</tr>
<tr>
<td>CHD is not controlled well</td>
<td>18</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Feel safer at hospital than at home</td>
<td>3</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>No carer at home</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Inconvenient for patient to go to hospital or clinic</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
4.6 Conclusion

This chapter presented the research findings from data analysis of the instruments addressing the research hypotheses. The results showed that compared with the control group, the study group had significantly higher levels for: self-reported understanding of the basic knowledge about CHD risk factors, diet, medications at 2 days, 4 weeks, 12 weeks post-discharged, and knowledge about physical exercise at 4 weeks, 12 weeks post-discharged. Self-reported adherences of diet and health-related daily practice behavior at 2 days, 4 weeks, 12 weeks post-discharged, medication adherence at 4 weeks, 12 weeks post-discharge, and physical exercise at 12 weeks post-discharge of the study group were significantly higher than the control group. But readmission rate between the two groups measured at 12 weeks post-discharge was not significantly different.
Chapter Five Discussion

Providing an effective health care service for elderly people with chronic diseases in China is a controversial issue. However, there has never been any formal nursing research in China into the provision of continuing health care for patients' referrals from hospital to community, with the cooperation of the hospital and the community health service agency, during the patients' transitional period. Some attempts at promoting the cooperation between hospital and community health service agency have been launched in mainland China (Guo-Ban-Fa, 2000; Guo-Fa, 1998; Zhong-Fa, 1997; Ministry of Health P.R. China, 1994). On the other hand, the continued health service and comprehensive discharge planning and follow-up support protocol has been successfully applied and demonstrated by many nursing researchers in America and other countries (Naylor, et al., 1999, 1994; Stewart, et al., 2002, 1999, 1998; Bolman, et al., 2002; Fox, et al., 2001; Jolly, et al., 1999). Some hospitals in Hong Kong (for example, United Christian Hospital, Alice Ho Miu Ling Nethersol Hospital) have also applied a similar protocol in continuing health care delivery for years.

The investigator designed a continuing health care protocol for nursing professionals. This protocol was modified from previous health service protocols to fit the reality of mainland China. This study explored a nurse-led discharge planning and follow-up support model. This model was easier to apply and disseminate because it consumes less human resources and may be affordable by most elderly CHD patients in China.

Discussion in this chapter focuses on the research questions. It also discusses this study, based on the results of this research, previous researches published by other
investigators, and the present situation of health care for elderly CHD patients in China. The study demonstrated that nursing professionals' cooperation in both the hospital and the community health service agency provided a successful referral for the elderly CHD patients. These patients' knowledge and adherence to health recommendation improved significantly following the implementation of a sustained health education program provided by nurses follow this protocol.

5.1 Patient's CHD-related knowledge was improved by discharge planning and follow-up intervention

Patient education is a primary cornerstone of health care intervention (Rankin & Stallings, 2001). The purpose of education is to improve patient's clear understanding of the reasons for adherence to prescribed treatment and recommendations (Falvo, 1994). The elderly CHD patients recruited to the intervention group for this study showed significantly more improvement on practical CHD-related knowledge than the patients in the control group. The positive results from this study demonstrate that an effective nursing intervention protocol for elderly CHD patients should: address the learning capabilities of the elderly, be delivered at an appropriate time, have a continuous structure assessment performance, provide education and counseling by the experienced nurses during their transitional period. It should also meet patients learning and requirements and needs. The hospital management structure needs to be organized so that nurses have sufficient time to engage fully in this teaching role.
Education according to elderly cognitive changes may enhance the learning effect

The elderly are identified as having poorer reading and comprehension skills than the average population (Jackson, et al., 1991). The majority of older people have some degree of cognitive changes and vision impairments, some of them having serious hearing problems, and others suffer from chronic diseases. In this study, it was found that about 11% of elderly patients have hearing problems, and about 16% of subjects have vision impairments. All of these conditions can interfere with the ability to learn or impact negatively on thought processes (Bastable, 1997). It has been demonstrated in laboratory that older adults have poorer comprehension and long-term memory loss than young adults (Morrell, Park, & Poon, 1990, 1989). Other researchers have suggested that older adults have problems with text comprehension when inferences are required (Cohen, 1981), that they have less processing capacity in working memory (Salthouse & Mitchell, 1989), and that they have difficulties organizing and integrating information in long-term memory (Park, et al., 1990).

The effect on elderly learning capacity was lowered at the early stages of admission because most of their energy was needed for the demands of their illness (Wolf, 2001). A survey (Tian, et al., 1998) of 50 Chinese CHD patients (mean age of 27 males was 55.5±12.3, and mean age of 23 females was 65.5±18.3) found that what patients (72%) care most about were things related to the ward environment but not information about CHD. This may be because the patients were unfamiliar with the ward environment. Admitted patients may be at different recovery phases during their stay in hospital. It is therefore inconvenient for elderly patients to attend lectures or group discussions during their transitional period from hospital discharge to home. As
patients improve and the acute stage of the illness is stabilized, they can focus on learning about the follow-up management (Wolf, 2001). It was considered that individual education and counseling to be appropriate for the recruited elderly patients, and the discharge planning intervention to start two days before discharge, and the follow-up support to be through home visits and telephone contacts for one month after discharge. Despite being vulnerable to short-term memory loss during the aging process, and having slower reactions, the elderly still have the capacity to learn. Older adults can learn effectively if special care is taken to slow the pace of information presentation, ensure the relevance of the material, and give them appropriate feedback when teaching (Wolf, 2001). During the discharge planning and follow-up support intervention period in this study, patients recruited to the intervention group were found to have significant improvement in understanding about the CHD risk factors, diet, medications, and physical exercise. This ongoing education intervention by the clinical study nurse and the community study nurses also showed a significant difference from a local research which was conducted by Hu et al. (2001).

Hu et al (2001) delivered an education program for inpatients and outpatients with CHD (n=145, aged 45 to 80). Patients received CHD education for the first time after the first patient knowledge level assessment. The second education session was 4 weeks later. After that, patients received additional sessions every three months. Patient knowledge level was assessed after the six months long education program finished. The education input included giving lectures, viewing videos, group discussions, individual coaching, and sending related pamphlets to the patients. The assessment included patient risk factors, illness condition, and understanding of the CHD disease. The results showed that the number of patients with a high level
understanding of CHD risk factors increased to 68 (46.9% of total patients) after being assessed the second time, from 36 (24.8% of total patients) at the baseline.

Compared to Hu et al.'s study, patients in the present study group had a lower education background (49% vs. 91.7% having secondary school education and lower), also the education pattern in the present study was not as complicated as Hu's study. The present study showed a higher ratio of patient understanding of CHD risk factors measured within two days after patient discharge (58.0%), 4 weeks (77.0%), and even at 12 weeks (82.0%) after patient discharge.

Elderly patients may have experienced changes in their learning ability, especially during their hospital stay. Nurses should be careful to note these changes as the elderly need more time to process and react to information. In this study, the education process and counseling for elderly CHD patients was carried out at a slow pace to enable information assimilation. Before being discharged, patients received the discharge planning intervention from the clinical study nurse. After their discharge, patients received the related intervention by the community study nurse starting within 2 days of discharge and ongoing for one month into the patients' recovery period. Patients were able to pay more attention to learning and this was shown by the positive results in this study. Patients showed significant improvement in their understanding of CHD-related knowledge after they were recruited for the continuing education session during the transitional period. Also, if patients were allowed sufficient time to assimilate what had been discussed at feedback before their discharge, they would have more opportunity to react to what they had learned after discharge. They should also have more opportunity to get feedback from the

Chapter Five Discussion
community study nurse. The patients must be encouraged to act on the knowledge they learned through this process. The time between each education session was as not long as in previous studies. It may be beneficial to reinforcing the patients' knowledge which they have learned. Such regular stimulus is necessary to enable patients to recall what they have learned. So, this continuing education program for elderly CHD patients delivered through the cooperation of the clinical study nurse and the community study nurses revealed a better awareness of the learning capabilities of the elderly education during the transitional period.

**Structured intervention by experienced nurses may improve education and counseling**

In this study, the experienced nurses were invited to become study nurses to perform the intervention. According to the requirement, nurses must be advocates, astute assessors, and assertive interveners. These roles are critical for effective discharge planning for elderly patients, especially the frail elderly (Burggraf & Stanley, 1989). The Fifth report on the provision of services for patients with heart disease (2002) in the UK mentioned that an experienced professional should carefully screen all referral letters so that an appropriate degree of priority is given to the patients. All the study nurses received this type of training for discharge planning and follow-up intervention.

The more complex the goal, the more important it is to provide clearly understandable education at a level appropriate to the learner. Simple information check-lists should be introduced, in order to guide nursing staff to the likely areas for patient information needs (Turton, 1998). The education and counseling effects may be enhanced through
the use of simple, succinct language (Bastable, 1997). This may be achieved by the nurses who are experienced in patient education and counseling. Patients who have access to specialist nurses were found more knowledgeable, more proficient in self care and more satisfied with the care they receive (Naylor, 1996; Mcsharry, 1995).

Normally, before a patient is discharged, a physician may talk briefly to the patient and/or the patient's relative about factors relevant to the patient following their discharge. Free pamphlets are available in the ward for patient to take. The conventional care may include nursing education in the ward. However, the education and counseling were usually not based on patient assessment, nor were the effects assessed regularly. Continuity of the education sessions provided for patients was also lacking. Setting goals or objectives is an important step in the nursing process and it can help the nurse focus on what is critical and keep patient teaching on track. However it is too often ignored (Rankin & Stallings, 2001).

In this study, patients learning needs and weaknesses coping with their CHD were recorded on file. These were referred for the community follow-up intervention. Patients learning needs were kept on track by the study nurses based on assessments. The assessment stage of the teaching process is the most crucial element of patient education. The systematic and thorough collection of data relevant to the teaching process is the basis from which learning needs are identified, objectives are developed, and a teaching plan is formulated (Whitman, et al., 1992).

Nurses should prioritize patients individual learning needs before instruction begins. Prioritizing needs can help the nurse use their teaching time more effectively (Wolf,
American Nursing Association (ANA) and the Joint Commission for the Accreditation of Hospital Organizations (JCAHO) identified that patient education is directed towards increasing patients' knowledge about their condition, treatment, and prevention (Wolf, 2001). In this study, patients' CHD-related knowledge was assessed in four separate parts: an understanding of CHD risk factors, understanding of CHD diet knowledge, an understanding about CHD medications, and an understanding about CHD physical exercise. This evaluation method is different from other studies in that the patient's CHD-related knowledge was evaluated without differentiating the key areas, such as knowledge relate to diet, medications, and physical exercise. In this study, patients' assessments revealed a high level of medications knowledge, but at the same time, a poor level of understanding of physical exercise knowledge. Patients' weakness in information related to their CHD rehabilitation could be clearly identified through this ongoing assessment. The study nurses prioritized patients' actual learning needs individually. In this study, the systematic and thorough assessment and data collection during the interventional period guided the nurse to help patients set priorities in maintaining a healthy lifestyle. Education and counseling could be better directed towards improving patients' relevant knowledge.

Successful education and counseling require time and human resources

Effective health education needs time and dedication from the nurse. However, it has been found that patients sometimes receive only a brief overview of disease-related education (Redman, 1997). In the clinical environment, time for health education may be shortened by other commitments, work assignments, a short hospital stay for many patients, and unexpected emergencies (Wolf, 2001; Zhang & Li, 2000; Zhou & Sun, 2000). The effectiveness of nursing education revealed unsatisfactory results in local

Chapter Five Discussion
studies (Yang, 2002; Zhang & Li, 2000). Yang (2002) found in her survey that 145 subjects (72.5%) out of a total of 200 in-patients had poor adherence to health recommendations because of the lack of related knowledge.

Yao et al. (2004) discovered that there is a shortage of nurses to deliver proper total patient care on wards. Hospital nurses face the challenge of rapid development of new medical technology and skills and they become exhausted by routine work. They may not have enough time to access each patient individually before health education commences. Nurses pay insufficient attention to health education, considering it a burden and some lack sufficient communication skills to provide quality health education (Zhang & Li, 2000; Zhou & Sun, 2000). So, sometimes the nurse will go through the motion of providing health education. Many hospitals face a limitation on their authorized strength, and have to hire temporary nurses who have a lower level of professional education (Liu, 2001). If these temporary nurses provide health education to patients, the effect cannot be assured. Also, it is common that some patients may not believe the younger nurses. When Tierney et al. (1994) studied discharge planning for older patients who were 75 years and over, they found that only 35% of patients were given information by health professionals concerning their health problem. The perceived contribution of nurses to risk factor management was small compared to that of physicians and other caregivers. Many patients with established CHD and cardiovascular risk factors do not remember ever having received information about the management of their risk factors (Scholte op Reimer WJ, et al., 2002).

Before the intervention started, the investigator received an assurance that the two study hospitals would guarantee that the study nurses would have sufficient time to
perform the intervention in this study. Also, the clinical study nurse would have sufficient time to do the discharge planning, and the community study nurses would be able to perform the follow-up support following the intervention protocol. Therefore, the quality of education and counseling could be assured for all patients recruited in the study group with respect to time and human resources. On the other hand, education given by experience nurse could save time because compared with the inexperienced nurses, the clinical study nurse could perform more accurate individual assessment and give appropriate education in a shorter time based on their previous experience.

Patients' health information seeking to improve behavior by continuing education and counseling

The study also identified that one month after the discharge planning and follow-up support intervention was finished, some patients in the study group were continuing to improve their level of understanding, though the difference was not significant. Although the reason was not clear, it is possible that elderly CHD patients’ motivation for seeking care and adapting positively to their illness, may have been stimulated by their involvement with this intervention program. The health belief model (Rosenstock, Strecher & Becker, 1994) affirms that individuals are not likely to take a healthy action unless they believe that they are susceptible to the ill-health condition in question. However, compared with patients in the study group, the patients in the control group showed no improvement in their CHD related knowledge after being discharged.
Study revealed that more than 90% of patients want to receive education related to CHD, and other diseases. Other researches in China have had similar results (Qi & Teng, 2001). It is interesting to note that even if patients in the study group had a significantly higher level of understanding related to CHD medication and CHD diet, the control group still improved their knowledge about to CHD medication and CHD diet knowledge at the time of their discharge compared with the baseline. Local studies (Guo & Zhang, 1998; Qin, et al., 2002) identified medication as the area that CHD patients want to know more about. Patients also paid more attention to CHD diet knowledge because Chinese people prefer to control their chronic disease by diet rather than by medication (药补不如食补). Qin et al. (2002) found that the elderly CHD patients prefer to rest rather than practice physical exercise. Usually, it is common for elderly Chinese patients to consider that rest is much more important than exercise during the transitional period, especially during the time just after recovering from a CHD occurrence. The result showed that the percentage of patients with a higher level of understanding of CHD physical exercise was less than the percentage of those patients who understood of other areas of related knowledge.

Wolf (2001) pointed out that patient's feeling, emotion, and attitude may affect the learning outcome. Patient's affective behavior reflect value, belief, need, and emotional response which addresses the patient's belief about his or her illness and the validity of the content being taught. This is critical, for the nurse has to address the most beneficial domain of learning in order to achieve the desired goal of health education. Before the patient can put the training input to use, he or she must be willing to listen to what is said. Only when the patient is ready to receive the information can the health professional actually teach. It prompts that when nurses
produce health education and counseling, patients' motivation for learning should be considered. The nurses need to convince the patients by skillful and knowledgeable communication that the training session or physical exercise demonstration has a sound factual basis.

The object of patient education is not only to help patients comprehend information but also to help put the information to use in their daily lives (Wolf, 2001). Health education for elderly patients is intended to increase their ability to make decisions about their health and health care, to cope with a specific illness, and to improve their health-related behaviors (Falvo, 1994). So, another goal of this study has been to promote patient adherence through discharge planning and follow-up intervention provided for elderly CHD patients.

5.2 Patients' adherences to CHD-related health behaviors are improved by discharge planning and follow-up intervention

Adherence to healthy behavior promises considerable benefits to patients with CHD (Eleanor Richards, 1997; Moher, 1995; O'Connor, et al, 1989). The successes of the discharge planning and follow-up program for elderly CHD patients should be linked closely to the measurement of patient adherence relative to outcomes (Richards, 1997). The finding in the study demonstrates that the compliance of elderly CHD patients was enhanced by educational and behavioral intervention improvements from the continuing health care education.

Ongoing reminders as part of health care professional follow-up, and detailed patient education programs could potentially increase compliance rates (Kravitz, et al., 1993).
Generally, when elderly patients are discharged, relatives will accompany them at this time. Physicians will give some discharge information to both patients and their relatives. Sometimes, physicians will speak to the patients' relatives but not to the patients themselves as some patients may not understand or may forget what was said to them within a short time (short-term memory loss). However, elderly Chinese people usually do not argue with health care providers, even when they disagree (Allender & Rector 1998) or do not understand. But this may unfortunately affect patients' understanding of both health information and adherence.

Yang (2002) found in her survey that 145 subjects (72.5%) of a total of 200 in-patients had poor adherence to health recommendation because of the lack of related knowledge. She also found that among the poor adherents, 65 subjects (32.5%) complained that the reason for poor adherence was due to unclear explanations by health professionals.

In the present study, when study nurses provided information to patients and their relatives, study nurses concentrated on patient knowledge assimilation as the study's outcome showed that the self-report understanding of CHD risk factors, CHD diet, CHD medications and CHD physical exercise in the study group was significantly higher than in the control group.

Research found that the self-reported diet adherence in both the study group and the control group had considerably improved 2 days after discharge. This may be because the relatives regard the clinician's dietary recommendation to be beneficial for patients when they are sick. Research has shown that situational characteristics play a
significant role in determining adherence (LuRer & Caress, 1989). Elderly patients enjoy the soft, easy-to-digest unsalted diet at the early stage of illness. Most elderly Chinese patients prefer food neither salty nor greasy during their stay in hospital because their appetites are not as good as usual. Also, patient and their relatives believe that food prepared at home is tastier than that provided by the hospital. Usually, relatives will provide food for the patients. After patients are discharged home, and if they consider their health has improved, they may adjust their eating habits and return to their normal diet without consulting any medical opinion. Also, Chinese people living in northern China prefer some level of salty, fatty and fried food. Traditionally, Chinese people also consider that being capable of eating well and be able to choose from a variety of foods is a sign of a healthy body, which may be a barrier to the adherence to dietary restriction. In this study, eating habits and the understanding of a CHD diet were identified as significant factors that affect patients’ adherence to dietary recommendations.

Hartwell and Henry (2003) conducted a small sample sized study that assessed the effectiveness of dietary advice given to patients undergoing coronary artery bypass grafting (CABG) surgery. Dietary intake was assessed on three occasions (pre-operatively, 2 months after surgery and 1 year after surgery) by use of a food consumption frequency questionnaire that had been previously validated. Patients were also asked to provide information on any dietary advice they had received. Complete data is available for 15 males, aged 51-79 years, who were admitted for CABG surgery. The absolute mean intakes of total fat, saturated fat and dietary cholesterol significantly increased 1 year after CABG surgery by 21%, 36% and 51%, respectively, and the choice of food items reflected this change in nutrient intake.
These undesirable changes occurred despite the provision of dietary advice. This may consequently increase the risk of recurrent problems.

Diet education and supervision is not a one time thing. Dietary adherence should be reviewed regularly. Patients and family members need to be alerted to the importance of dietary compliance. This can help them understand the necessity for dietary restrictions (Swartz, 1982). Patients in the study group listed the food items they consumed daily and the way they cooked it. Then, the study nurses helped patients identify the food and the way of cooking that should be avoided or limited in their daily diet. The result in the study demonstrated that through the continuing intervention, patients’ dietary adherence could still be enhanced even if they have been discharged home.

Generally, Chinese people believe that “是药三分毒”, which means that any medication, is considered noxious at some level, especially western medication. So, patients believe that a choice of diet therapy is better than the choice of medication for disease treatment if at all possible. Knowledge of the trends in food consumption patterns is essential for the planning, implementation, and health-promotion advice (Johansson, et al., 1997). A study by Paisley et al. (1993) showed that two thirds of the people who were actually consuming a high-fat diet did not think their diet was high in fat. Particular food items that may be making a significant contribution to the nutritional status need to be identified (Hartwell & Henry, 2003). Experienced nurses with patient education related knowledge were invited on this study to ensure proper health teaching (Dillner, 1992).
Elderly Chinese people prefer to obtain and use natural resources, for example they prefer traditional Chinese medicine. They prefer opening a window to using an air conditioner, eating fresh food to eating canned food, they prefer doing shopping daily, and exercising every morning. Avoiding extreme temperature such as leaving a hot home to go outside in the winter cold is one important health preventive issue; and the elderly also like to take Chinese herbs or natural products to promote health and preventing illness. To maintain harmony in personal relationships, Chinese elderly usually do not argue with health care providers, even when they disagree, so, nurses need to be patient and encourage elderly patients to express their thoughts, to respect what the elders say, and to follow up by checking with family members. Because harmony in the home is highly valued, nurses need to consider family opinions and ideas when making plans for their elderly patients. Health education must be delivered to the family as a unit.

After discharge, when patients have finished the prescribed medication, they may choose not to attend the out-patient department of their original hospital for a repeat prescription. This decision is usually based on their financial circumstances, medication being expensive for the less well-off in society. Some of these patients may decide to self-medicate on a generic medicine which is cheaper. Others may seek alternative therapy, Chinese medicine, for instance.

The elderly remain socioeconomically disadvantaged relative to the general population at present. But economic factors appear to play an important role in medication decisions by the elderly. For the elderly poor, lacking money to buy medicine, these economic factors could lead to major negative consequences. Stuart
and Grana (1998) found that elderly people with annual incomes greater than $18,000 were 18% more likely to treat problems with prescription drugs than were persons with annual incomes less than $6,000. There were strong bivariate associations between annual income and both the number of health problems and medication rates reported. People in the lower income group reported significantly more health problems than those in the higher income group, and were less likely to use prescription medicines to treat a given problem. This result was consistent with economic accounting which is typically more price responsive about purchases of nonessential services and less price responsive in treating critical care needs. The effects of income on drug utilization rates showed that it increased the probability that reported problems would be treated with prescription drugs according to the increment of income. This study confirmed that the reason patients listed their first preference for early discharge was for financial reasons. Their choice to be involved in the discharge planning and follow-up program was to save medical expenses.

Patients’ education level and self-reported understanding of CHD medication were the only factors identified to affect patients’ medication adherence in this study. However, when Park et al. (1992) assessed the effects of external cognitive support on adherence, they found that the young-old subjects showed a high rate of adherence (94%) that did not improve with the addition of the interventions. Old-old subjects had a lower rate of adherence (85%) than young-olds.

Through reviewing the records, all patients recruited in this study took three or more kinds of prescribed medication before their discharge despite whether being in the study group or the control group. This is higher than the World Health Organization.
(1981) reported in which 34% of the elderly were recorded taking three or more prescriptions.

Medication adherence is an important health behavior. A person who takes medication in the wrong amount or at the wrong times or who does not take it at all would be described as nonadherent or noncompliant (Park, et al., 1992). The investigator in the present study assessed the medication adherence at 4 weeks and 12 weeks after discharge: dependent on whether the patient continued to take the medication(s) prescribed by their physicians (either western medications or Chinese medications); irregularly used the medications or quit. Sometimes, some elderly with CHD even used the medication according to suggestions from other CHD patients. Some patients changed to a cheaper medication themselves or took the medications temporarily when symptoms reoccurred.

Some patients changed from the prescribed long-acting nitroglycerin to short-acting nitroglycerin on their own accord because the price of short-acting nitroglycerin was much cheaper than long-acting nitroglycerin. Compared with the western medications for CHD, Chinese medication or herbs were cheaper. In considering the possibility from side effects with western medication, some elderly Chinese patients prefer to use Chinese medication, or go to some private clinic to get folk prescriptions.

In addition to adherence to therapy which is the basis of clinical stability, patients need to pay attention to other daily activities which are not good to health. Regular daily physical exercise and daily life activities are good for health with correct intermittent rest. This is a recommended behaviour (Hait, 1990).

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Daily activities varied among elderly patients. Many patients need to continue their normal daily activities besides walking which is the most enjoyable activity for the elderly. Also the exercise restraint levels for elderly CHD patients are very different. The exercise prescription should be individualized and should incorporate activities for optimal enjoyment and compliance (Mahler, Cunningham & Curlman, 1986). Patients in the study group were taught to monitor and self-manage daily activity levels using the daily activity and exercise recording form, which was developed according to the Borg Scale for Rating Perceived Exertion (1982). Low-level activities are preferable in older people (Jowett & Thompson 2003). The community study nurse provided the patients with physical exercise counseling according to the patients’ assessment and the patients’ self records. It was suggested to patients that they manage their daily activity perceived exertion level within the range of “very light” to “fairly light” during the transitional period. The mean level of perceived daily activity exertion of patients in the study group was at the “moderate level” compared with the “somewhat strong level” of the study group. Individuals who managed about 20 minutes of light to moderate-intensity activity daily were observed to have about a 30% lower risk of death from CHD than sedentary individuals (Leon, Myers & Connett, 1997). For some sedentary elderly patients, the perceived exertion level for their daily activity could be higher than for patients performing the same activity in the “light” to “moderate-intensity” range.

Smoking cessation is associated with lower mortality among patients after CHD (Wilson, et al., 2000). This study found that the smoking cessation rate of the study group improved significantly during the discharge planning and follow-up support
intervention. However, relapses increased significantly after the intervention. It revealed that the intervention program had only short-term effects on smoking cessation. Similarly, in the study by Bolman et al. (2002): with advice from a cardiologist, brief counseling by a nurse and aftercare by the cardiologist, only showed short-term effects on smoking cessation. A brief intervention to help coronary patients give up smoking during hospitalization such as single session interventions delivered as a part of routine care may be insufficient to influence highly addicted smokers (Hajek, Taylor & Mills, 2002). In addition, Carlsson’s study (1997) revealed that after a three months education program provided for the intervention group patients at four weeks after being discharged from hospital, the smoking cessation rates after 12 months improved from 29% in the routine care group compared with 53% in the intervention group.

Sutherland (2003) pointed out that many patients do attempt to quit smoking when the health professional advises them to do so because the health professional’s advice motivates them to try to quit. With no advice or support from a health professional only 1-2% of smokers will stop smoking and remain abstinent over the next year. With three minutes’ advice from a doctor the success rate will be 5%, and the addition of pharmacotherapy increase the success rate to 10%. The success rate increases further when intensive behavioral support is provided from a specialist clinic, and intensive support plus pharmacotherapy can lead to 25% success rates at one year (Fiore, et al., 2000).

In this study, the result shows that the number of patients who failed to quit smoking increased significantly at 12 weeks after discharge compared with 4 weeks after
discharge. It may because there was no recommendation on smoking cessation after
the community study nurses follow-up finished. To improve success in smoking
cessation, the intervention should continue after discharge for all patients even if they
had received smoking cessation education in hospital. Primary health care
professionals should systematically and repeatedly advise smokers to stop, and it
should be a long-term intervention.

When Ghali et al (1988) explored the precipitating factors that led to cardiac
decompensation and subsequent hospital admission and readmission for heart failure,
they found that the lack of adherence to the prescribed medical regimen was the most
commonly identified causative factor. It was noted in 64% of the cases there was a
lack of adherences; nonadherence rate for diet was 22%, drugs 8%, and with the
combination of drugs and diet up to 37%.

The study found that the number of self-recorded daily heart discomfort occurrence in
the study group was considerably lower than the control group. This outcome may
reflect that patients in the study group managed daily activities better than the control
group.

Michalsen et al. (1998) found that lack of adherence to the medical regimen was the
most commonly identified factor and was regarded as the cause of the cardiac
decompensation in 41.9% of cases with a mean (SD) age of 75.4 (9.9) years. Drug
non-adherence was found in 23.5% of patients, and 54.2% of the total admissions
could be regarded as preventable. Their research concluded that any program needs to
include patient education, patient follow up, and health professional training.
Positive outcome for elderly CHD patients following the nurses’ continuing education intervention was also demonstrated by Allison et al. (2000) study. Allison et al. examined whether nurses could manage coronary risk factors in patients with unstable angina more effectively than physicians practicing usual care. A 6-month program of risk factor management was performed by a registered nurse versus participation in usual care. The nurse intervention consisted of a 30-minute counseling visit at 6 to 10 days after the chest pain episode and a second 30-minute session 1 month later. Compared with usual care, the patients receiving nurse intervention had a significant reduction in both triglycerides and weight, and had corresponding improvements in self-reported diet adherence and exercise. The 6-month rate of recurrent events (cardiac death, out-of-hospital cardiac arrest, myocardial infarction) and/or revascularizations (coronary artery bypass surgery or coronary angioplasty) was lower in the nurse intervention group.

Holland and Harris (2003) reported that age, self-rated health, sex, and help available at home remained significant predictor variables in the logistic regression equations that were evaluated for non-routine discharge situation. Similar results were revealed in this study. Age, vision, medication for insomnia, self-reported physical exercise adherence, and the sum of the self-record daily heart discomfort occurrences within 4 weeks after discharge were the five significant factors in predicting the risk of CHD related readmission for elderly CHD patients. The variables: age, vision, and medication for insomnia may reflect the patient's health condition. In coronary heart disease (CHD), heart discomfort/heart pain occurrence is one of the key symptoms of myocardial ischemic change in everyday life. Also, Chinese elderly prefer regularly
daily activity when they feel in good health. So, self-reported physical exercise adherence can reflect the patient's state of rehabilitation. According to the finding in the study, the variable sum of self-record daily heart discomfort occurrences within 4 weeks after discharge, and the variable self-reported physical exercise adherence are significantly correlated (Pearson Correlation $r = 0.184$, $p=0.010$, $\alpha=0.05$). Although the CHD readmission rate is similar between the study group and control group, the self-reported physical exercise adherence of the study group is considerably higher than that of the control group ($\chi^2 = 22.184$, $p=0.000$, $\alpha=0.05$). The age range between the groups is considered one of the related reasons for the similar CHD readmission rates between the two groups. Although there was no significant age difference between the two groups, there were 13 cases aged 80 and above in the study group versus 2 cases aged 80 and above in the control group. Age was defined as significant predictor of CHD readmission in the present study and previous studies.

In conclusion, a nurse-led continuing health care program for elderly CHD patients during the transitional period was feasible and effective in fostering lifestyle changes that may lower coronary risk.

5.3 A cost-effective continuing health care delivery model is needed for health care reform in China

China is in the process of health care reform. One goal of the reform is for the health care delivery system to find a practical patients' referral model which can provide efficient and cost-effective continuing care (Guo-Ban-Fa, 2000; Guo-Fa, 1998; Zhong-Fa, 1997; Ministry of Health P.R. China, 1994). Effective patient referrals could insure care and services continue to promote the safe and timely transfer of
patients from one level of care to another. In this study, the nurse was the only health care professional involved at the centre of the care management. Compared with other comprehensive referral processes, this referral process is simple and is considered more feasible in practice when considering the present situation in mainland China. The study results also demonstrate that the elderly CHD patients recruited for the study group gained significant benefits from this process. Also, this referral model meets the operational goads of both study hospitals, which will help the comprehensive hospital to discharge patients earlier, and the community hospital to increase patient capacity.

Making referrals and coordinating care

After discharge, during the patient’s transitional period from hospital to home, collaboration is a common component of a successful referral (Charlesworth & Mckenzie, 1996). The clinical study nurse and community study nurses were the only health care members who performed the patients’ assessment, education and counseling, patient referral, and follow-up support in this study. Sometimes, the focus of home care nurses’ assessments may differ from that of the hospital nurses’. One way to prevent this difference is to adopt a standardized language, for both documentation and for communicating patients’ needs; and to provide nursing interventions across the spectrum (Bowles, 2000). In this study, a standard form for patient assessment was developed and implemented in both clinical and community settings to avoid any possibility for undue bias between the clinical study nurse and the community study nurses.
The nursing literature, especially the material on referrals and discharge planning, has described with varying specificity, information that must be transmitted when patients are discharged to other providers (Anderson & Helm, 2000). However, information transmitted among providers about patients' health status and needs among providers may be viewed from two perspectives: the amount and type. Amount is simply an aggregate measure of total volume of information. Type characterizes the content of the communication. The information in the referral document in this study included four general types or content categories: background, medical, nursing, and psychosocial, and also a summary of the health care information. This content is in accordance with the suggestions in the two publications (Anderson & Helm, 2000; Anderson & Hill, 1994).

Nursing documentation for patient assessment and current status was accomplished by use of assessment forms and screening tools. By carefully documenting the patient's assessment, the nurse helps ensure that other carers are more likely to get the assessment information and apply it to the continuing health care process. Dash et al. (1996) mentioned that community referral forms and community educational programs were two examples of communication between the hospital staff and an outside agency, such as the community health service department. In this study, the discharge planning intervention information was documented and referred by the hospital study nurse to the community study nurses; thereby ensuring that the appropriate intervention would be continually provided during the patients' transitional period, from hospital discharge to home.
Patient care communication between provider organizations across the health care delivery system may assist nurses in developing better patient care information-management systems (Anderson & Helms, 1998). For nurses, continuity of care is usually coordinated so that the patient care is planned and integrated around available resources (Anderson & Helm, 2000). Several national policies related to patient referral and transition between health care agencies have been launched by the government of China (Guo-Ban-Fa, 2000; Ministry of Health P.R. China, 1994). However, in practice, patient transition and referral is unsatisfactory, and the dissemination of patient referral between health care agencies is also difficult in present day in mainland China.

Naylor et al (2001) summarized that the gaps in communication between health care agencies and professional medical staff was a fundamental source of inadequate discharge planning. Problems in the identification of patients' needs; role confusion; fragmentation; and lack of knowledge, time and other resources, have also been identified as significant barriers to adequate discharge planning for elderly patients. The absence of a standardized assessment criteria and discharge planning guidelines has been defined as contributory factors in the lack of coordinated care.

Two local studies (Zhao, et al., 2003; Shi, et al., 2001) conducted discharge planning and home visits by nurses working in the ward or in the outpatient department of a comprehensive hospital. However, this continuing care model is difficult to apply and disseminate in mainland China. Generally, the framework of the provincial public hospital system classifies hospitals at several levels. The provincial comprehensive hospital is identified as the first level, and the district comprehensive hospital is
identified as the second level. The patient capacity of these two levels of hospital service is large. Therefore the catchment area is wide, especially so considering that some patients have to travel from other provinces. So, it is difficult for the nurses who work in the comprehensive hospitals at first level and second level to provide follow-up and regular home visits (Zhao, et al., 2003). The community hospital is identified as the third level, which can conveniently provide community health services for local people.

The intervention model guarantees elderly CHD patients will receive continued health service during the transitional period

At present in mainland China, the relationship among hospitals is competitive (Zhang, et al., 2002; Liu, et al., 2002; Jiang & Yang, 2002; Le, Wu & Zhang, 1999). Health care service agencies lack enthusiasm for patient referrals. Neither nurses nor physicians in comprehensive hospitals are familiar with the referral program or they do not pay enough attention to the referral program (Liu, et al., 2002). These separate services make it difficult for patients to receive continuous health care such as a regular follow-up at the appropriate time immediately after discharge, when they are highly stressful and vulnerable (Burney, Purden & McVey, 2002).

At the beginning of this study, the investigator negotiated with several hospitals for their help in getting sufficient cases for this study within a limited period. However, several hospitals rejected the investigator including the local comprehensive hospitals because these hospitals wished to retain their patients' resources allocation. Their concern was that if they referred the patients to the community hospitals, the patients' allocation resources may be transferred with them and this would affect the hospital's

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income. On the other hand, in the winter season when there is a high incidence of CHD, the hospital wards want the patients to be discharged as early as possible, once their condition is stabilized and under control, because many other patients need to be admitted, and the high rate of bed turnover increases the ward’s income. The study hospital welcomed this discharge program of patient referral to the community hospital and the CNS follow-up when discharged home because it helps to create more available bed space. Sometimes if there are vacancies for inpatients, physicians prefer the patients, already admitted, to stay longer on the ward for financial reasons.

The community hospital and the comprehensive hospital involved in this study signed a document for a two-way transfer of patient referrals according to the requirements of the government health bureau, which is aimed at improving the cooperation network among the different levels of health service agencies. However, community hospitals complain that most of the patient referrals go in one-direction only between the two hospitals. Patients are always referred to the comprehensive hospital by the community hospital when they cannot deal with the more serious emergency cases. The other reason for complaint was that the community hospital found some patients wanted continuing health care service after their discharge home to come from the comprehensive hospital, but health care information needs were not referred from the hospital or other health agencies in time. So, the community hospital missed the opportunity to provide a health care service to patients in need.

Meanwhile, the elderly patients showed a willingness to request continuing health care service during their transitional period. In this study, about 70% of patients wanted the follow-up support after discharge. Also, similar results were explored in
other local reports. Guo and Zhang (1998) reported that about one third of 138 patients admitted with CHD wanted a health professional home visit after their discharge. In another investigation (Dong & Zhang, 2002), there were 80 admitted cases among 125 elderly patients with chronic disease who asked for follow-up and home visits after being discharged. Qi and Teng (2001) found in their study that 167 out of 200 elderly CHD patients considered that the transitional follow-up was important for them. Patients requiring continuing care, especially the health care needs during their transitional period, should be fully satisfied with the health care delivery system.

In this study, an effective continuing health care model was set up through cooperation between the hospital nurses and the CNS of the two study hospitals. The discharge planning and follow-up program, and elderly CHD patient referral model developed in this study was in accordance with patients needs, and it guarantees elderly CHD patients receive continuing health service during the transitional period.

Implementation of the transitional health care model meeting the requirement of health care reform in China

The health care delivery system need to provide an efficient and cost-effective continuing health care service for people in China (Guo-Ban-Fa, 2000; Guo-Fa, 1998; Zhong-Fa, 1997; Ministry of Health P.R. China, 1994). Continuity of health care is recognized as essential for positive outcomes for hospitalized elders (Naylor, et al, 2001). A discharge planning and follow-up support program is essential to ensure continuity of care. Patient outcomes, patient costs, satisfaction, and rate of readmission could all improve with effective discharge planning and follow-up

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support (Haddock, 1994). The discharge planning and follow-up model which was set up and implemented in this study meets the requirement of health care reform in China.

It is imperative to support and encourage nurses skilled at building effective team collaboration and communication (Anthony & Hudson-Barr, 1998; Haddock, 1994; Haddock, 1991). Nurses must be prepared to systematically assess, plan, and coordinate the patient's discharge plan within a short time span. In an environment of limited resources, a mentorship program is an efficient and effective method to prepare staff nurses for more comprehensive discharge planning practices (Hansen, et al., 2000). In China's present situation, the nursing professional especially experienced nurses with a high professional education background, should fill the key role in the referral program. Professional counseling related to discharge planning should be available from other disciplines such as the dietitian or pharmacist in the hospital, and it should be the same for the CNS.

A multi-discipline comprehensive discharge planning program has identified the benefits for elderly patients' outcomes in Naylor's research (1999, 1994). However, the comprehensive model appears not to be suitable for the present situation in China. The national public health care budget and the economic circumstances of most patients are insufficient to support a comprehensive program. Most patients cannot afford the expensive service. Human resources from different health care professions, necessary for a comprehensive program, cannot be justified. The public health care system could spend more time and effort on a comprehensive discharge planning arrangement before patients' discharge but even so, the personnel resources of the
social services such as the social worker find it impossible to be involved in the program at present.

This study found that before a patient was discharged, the hospital study nurse informed the community study nurse that the referral documents were available. Once notified, one of the community study nurses would go to the comprehensive hospital and collect the referral documents. This method of referral document transition is not convenient for CNS. And it may affect CNS's intention to implement the discharge planning and follow-up program for patients. The referral documents can be transited more conveniently by today's modern technology. The referral documentation can be sent from the comprehensive hospital to the community hospital, through the Internet service in mainland China. It should not be difficult to develop a standard electronic document for referral but maintain patient confidentiality there would need to be a strict procedure.

The quality of health service provided by community professionals is a concern of patients. 22.5% cases from 200 patients in this study did not confidence in the quality of the community health service, so they preferred to stay in hospital longer. Several surveys (Zhang, et al., 2002, Liu, et al., 2002, Jiang & Yang, 2002) revealed similar results. However, this study revealed more than 70% of subjects were willing to receive continuing health service after discharge. They hoped that the discharge planning and follow-up program could provide them inexpensive follow-up support, and could save on their medical expenses. In this study, the patients in the study group receiving the 4 weeks follow-up from community study nurses displayed more confidence with CNS follow-up than the control group. This revealed that the

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program may meet patients' health care needs. The CNS education/counseling covered the physical domain, psychosocial domain, environment domain, and the health-related behavior domain. It identified that the CNS could answer patients general questions related to health care.

However, most patients in the study group were unwilling to pay for CNS follow-up even though they were satisfied with the CNS follow-up. However, contrary to what they had said, some patients were not confident with the quality of CNS health service. Another reason may be that generally, Chinese patients consider that health education/counseling is not as necessary as IV, IM, or other treatment. At present, Chinese people, including some health professionals do not pay enough attention to health education/counseling.

In general, patients' CHD-related knowledge and adherence to CHD-related health behavior improved after the discharge planning and follow-up program was set up for this study. It demonstrated that this continuing care model is effective, simple and practical, and also beneficial for elderly CHD patients during the transitional period following discharge from hospital to home. The discharge planning and follow-up program is as a cost-effective continuous health care delivery model which needs to be implemented in mainland China.
Chapter Six Conclusion, Implications, Limitations, and Recommendations

6.1 Conclusion

China is facing an aging population like other countries. The health care delivery system demands innovation to meet the requirements of the increasing number of elderly people with chronic diseases. The discharge planning and follow-up support program is efficient and cost-effective for the provision of continuous health care for elderly people. The nursing professionals' initiative intervention program developed in this study showed significant improvement in elderly CHD patients' health care outcome during the transitional period.

The discharge planning and follow-up intervention was designed to avoid barriers which may cause inadequate continuity of care provision as Naylor mentioned (Naylor, Bowles, et al, 2001). Effective communication was established between the clinical study nurse and the community hospital study nurses of the two study hospitals. The standardized assessment criteria and discharge planning guidelines were developed by the investigator and applied in this study. Experienced nurses were invited to perform the intervention.

This study demonstrates that practical discharge planning and a follow-up support program does have a positive impact on elderly people with coronary heart disease during the transitional period. Although the readmission rate was found to be insignificant between patients in the experimental group and those in the control
group, patients recruited in this continuing care program gained significant improvement in all aspects of CHD related knowledge and CHD related health behavior.

This study demonstrates that a simple, effective, and practical discharge planning program is needed for elderly Chinese people with CHD during their transitional period and when implemented by both clinical nurses and community nurses, could provide effective continuous health care from hospital to community.

6.2 Implications

In mainland China, researchers have tried to conduct cost-effective continuing health care for patients with chronic diseases. However, a gap still exists between the hospital health care and community health care delivery during the patient's transitional period. Coordinated discharge planning and the follow-up support program has demonstrated an efficient cost-effective continuing health care delivery model for patients, during the transitional period.

In this study, a nurse-led discharge planning and follow-up support program based on clinical nurse and community nurse collaboration and coordination, has been tested and demonstrated to be an effective program for improving patients' adherence to health recommendations. It has the potential to achieve the goal of lowering health care cost and improving survival rates. The continuing health care model conducted on elderly CHD patients in this study can be used and tested on patients with other diseases. If implemented, this nurse-led continuing health care model will avoid the current potential obstacles to a collaborative and coordinated service within the
multi-health system of mainland China. The nurses should be encouraged to provide the collaboration and coordination necessary to provide continuing care from the hospital to the community according to the positive evidence within this study.

6.3 Limitations and Recommendations

The present study was limited in that all subjects recruited came from one comprehensive hospital and one community hospital in Tianjin. Unfortunately, because other hospitals were not involved in this study, the results may be debatable. It would be beneficial if more comprehensive hospitals and district hospitals were invited to participate in future studies. In addition, it is unknown if elderly patients living elsewhere would react differently than the elderly Tianjin patients. Elderly patients from other comprehensive hospitals and community hospitals are recommended to be involved in any future study.

Elderly patients with CHD are at particular high risk for rehospitalization, with a return rate of 40-50% within 6 months (Ekman, Fagerberg, et al., 2001). It reported that the largest decline in adherence to diet modification and exercise plans occurs during the first year (Oldridge, 1988; Carmody, Senner, et al., 1980). Patients’ outcome was followed up 12 weeks after discharge in this study. This length of time appears to insufficient in measuring the long-term effect of the discharge planning and follow-up support program. In a future study, patients’ outcomes such as adherence to health recommendations and readmission rates should be followed-up at least one year after discharge.
The results may have biases because some results were based on self reports. Health-care literature which focuses on adherence, or to a predetermined regimen, may be the result of an emphasis on cost-effective health care, for example, a shorter length of hospital stay (Eleanor Richards, 1997). Unfortunately, the length of hospital stay was not measured in this study because factors that may affect patients' length of hospital stay could not be controlled. For example: the physician's decision and the patient's decision on the time of discharge are important factors for the financial consideration of both the physician and the patient in the patient's length of hospital stay. Originally, patients' low-density lipoproteins cholesterol (LDL-C) and health care costs were to be measured. But in the end, these two items were abandoned because many subjects objected to providing blood for testing because of the prevalence of SARS. Some patients were unable to calculate their total health care expenses as sometimes their children paid the bills, while some elderly patients wanted keep their health care expense confidential. In future studies, items that can reflect cost-effectiveness such as length of hospital stay and total health care costs should be measured. The impact of discharge planning and follow-up support intervention on other objective variables such as low-density lipoproteins cholesterol (LDL-C) should be measured in future studies if possible.
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Appendix I Definition of Professional Terms

CHD: This stands for coronary heart disease, and is also known as coronary artery disease. This is a disease that leads to angina and heart attacks and is caused by narrowing of the coronary blood vessels (fifth report on the provision of services for patients with heart disease, 2002).

Nurse consultant: Nurse Consultants are similar to nurse practitioners but with a wider range of responsibilities and autonomy (fifth report on the provision of services for patients with heart disease, 2002).

Nurse practitioner: A nurse who carries out a role which was formally undertaken by a doctor and takes clinical decisions about a patient's care. The nurse practitioner functions within strict guidelines (fifth report on the provision of services for patients with heart disease, 2002).

Risk factors: Risk factors are the factors that can be identified in a particular patient that puts them at risk, for example, from having coronary heart disease. The most important coronary risk factors are smoking, high cholesterol, hypertension (high blood pressure), obesity, diabetes, and a strong family history of premature heart disease (fifth report on the provision of services for patients with heart disease, 2002).
Appendix II Consent Letter
English Version

CONSENT TO PARTICIPATE IN RESEARCH

I __________________________ hereby consent to participate in the captioned research conducted by________________________. ___________________________ is their supervisor.

I understand that information obtained from this research may be used in future research and be published. However, my right to privacy will be retained, i.e., my personal details will not be revealed.

The procedure as set out in the attached information sheet has been fully explained. I understand the benefits and risks involved. My participation in the project is voluntary.

I acknowledge that I have the right to question any part of the procedure and can withdraw at any time without penalty of any kind.

Name of participant

Signature of participant

Name of Parent or Guardian (if applicable)

Signature of Parent or Guardian (if applicable)

Name of researcher

Signature of researcher

Date

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Appendix II Consent Letter
Chinese Version

参与研究同意书

我同意参加中国天津老年冠心病患者出院指导及随访研究。研究者是香港理工大学护理学院博士研究生赵岳，指导教师为香港理工大学护理学院黄金月教授。

我知道该研究资料将可能用于今后的研究和专业文章的发表。我的个人权益将受到保护，如个人的资料。

研究人员已经向我就该研究内容、本人参与该研究的益处和危险进行了详细的解释。我同意志愿参与该研究。

我知道我保有就有关研究提出问题和随时退出该项研究的权利。

参加者姓名

签名

家属姓名

家属签名

研究者姓名

签名

日期

您如果有其它问题，请与联系，联系电话：

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Appendix III

Guidance for data collection in evaluating patient’s CHD-related knowledge and adherences (English Version)

Self-reported understanding of CHD risk factors that a patient may control

The CHD risk factors that a patient may control are:
- Use of tobacco;
- High blood pressure;
- High blood cholesterol;
- Being overweight;
- Lack of regular exercise;
- Poor self-management of stress;
- Diabetes.

High:
Able to identify six and more risk factors;

Moderate:
Able to identify four or more, but less than six risk factors;

Low:
Only able to identify three or less risk factors.

Self-reported understanding of CHD diet knowledge

Patient should understand that the foods below should be avoided or limited daily:
- Avoids Fried foods;
- Choose lean beef, pork and lamb;
- Avoid shrimp, shellfish, cuttlefish, squid and the ovary of crab;
- Avoid strong coffee and strong tea;
- Limit high-cholesterol food, like egg yolks (eat no more than four egg yolks a week) and animal viscera like liver;
- Avoids whole milk (use low-fat dairy products—skim milk), cream cake, and ice cream;
- Avoid animal oil (peanut oil is suggested);

High:
When the study nurse lists the common foods people eat daily including all items above in Tianjin China, the patient can point out six or more items above that should be avoided;

Moderate:
When the study nurse lists the common foods people eat daily including all items above in Tianjin China, the patient can point out four or more (less than six) items above that should be avoided;
Low:
When the study nurse lists the common foods people eat daily including all items above in Tianjin China, the patient can point out three or fewer items above that should be avoided.

Self-reported diet compliance

High:
Patient avoided all foods described above within the last seven days;

Moderate:
Patient did not comply with the diet recommendation three times or fewer within the last seven days;

Low:
Patient did not comply with the diet recommendation or more than three occasions within the last seven days.

Self-reported understanding of knowledge of CHD medications

High:
Able to state the name, dose, purpose, the time taken, the main side-effects, and instructions for storage of every medication the patient takes (for example, nitroglycerin should avoid light during storage);

Moderate:
Able to state the dose, the time taken of every medication the patient takes;

Low:
Unable to state the dose, and/or the time taken of every medication the patient takes.

Self-reported medication compliance

High:
Compliance dose, the time taken, and instructions for storage of every medications the patient takes (for example, nitroglycerin should avoid light during storage) within the last seven days;

Moderate:
Issues of non-compliance with the dose, or the time taken, or the instructions for storage of every medications the patient takes (for example, nitroglycerin should avoid light during storage) were 3 times or less within the last seven days;

Low:
Issues of non-compliance with the dose, or the time taken, or the instructions for storage of every medications the patient takes (for example, nitroglycerin should avoid light during storage) were more than 3 times within the last seven days.
Self-reported understanding of knowledge of CHD physical exercise

High:
Able to state all the contents of each item below:

Essential self-monitoring skills for coronary patient are rate of perceived exertion (level 2–3), heart rate (The change of heart rate after activity is not more than 30 times/min compared with the heart rate before activity, or the heart rate is not more than 110 times/min after activity); blood pressure (change of BP is not more than 15mmHg after activity compared with the BP before activity), and there is no angina after activity;

The exercise is achieved by low-to moderate-level aerobic activity (rate of perceived exertion at level 2 to 3). The patient should not overdo activity;

It is required that the patient exercise regularly. Generally, patient should exercise at least 3 times a week.

All exercise programs should include warm-up, aerobic, and cool-down phases. It is important not to exercise during the 2 hour period before or after a meal.

Moderate:
Able to state the first item, and at least one of the other three items;

Essential self-monitoring skills for coronary patient are rate of perceived exertion (level 2–3), heart rate (The change of heart rate after activity is not more than 30 times/min compared with the heart rate before activity, or the heart rate is not more than 110 times/min after activity); blood pressure (change of BP is not more than 15mmHg after activity compared with the BP before activity), and there is no angina after activity;

The exercise is achieved by low-to moderate-level aerobic activity (rate of perceived exertion at level 2 to 3). The patient should not overdo activity;

It is required that the patient exercise regularly. Generally, the patient should exercise at least 3 times a week;

All exercise programs should include warm-up, aerobic, and cool-down phases. It is important not to exercise during the 2 hour period before or after a meal;

Low:
Can not state the content of the first item, or can only state the content of the first item.

Essential self-monitoring skills for coronary patient are rate of perceived exertion (level 2–3), heart rate (The change of heart rate after activity is not more than 30 times/min compared with the heart rate before activity, or the heart rate is not more than 110 times/min after activity); blood pressure (change of BP is not more than 15mmHg after activity compared with the BP before activity), and there is no angina after activity;

The exercise is achieved by low-to moderate-level aerobic activity (rate of perceived exertion at level 2 to 3). The patient should not overdo activity;
It is required that the patient exercise regularly. Generally, the patient should exercise at least 3 times a week.

All exercise programs should include warm-up, aerobic, and cool-down phases. It is important not to exercise during the 2 hour period before or after a meal.

Self-reported physical exercise compliance

High:
Within the last seven days, records showed that:
- Daily rate of perceived exertion is within level 2-3;
- There was no heart discomfort experienced after activity;
- The change of heart rate was not more than 30 times/min than the average after activity, or the heart rate was not more than 110 times/min after activity;
- The change of BP was not more than 15mmHg after activity compared with the BP before activity

Moderate:
Issues below occurred less than 4 times within the last seven days:
- Daily rate of perceived exertion is outside of level 2-3;
- There was heart discomfort experienced after activity;
- The change of heart rate was more than 30 times/min than the average after activity, or the heart rate was more than 110 times/min after activity;
- The change of BP was more than 15mmHg after activity compared with the BP before activity

Low:
Issues below occurred more than 3 times within the last seven days:
- Daily rate of perceived exertion is outside of level 2-3;
- There was heart discomfort experienced after activity;
- The change of heart rate was more than 30 times/min than the average after activity, or the heart rate was more than 110 times/min after activity;
- The change of BP was more than 15mmHg after activity compared with the BP before activity

Self-reported health-related lifestyles behavior compliance

High:
- No smoking/quit smoking; and
Issues below did not occurred during the last seven days:
- Daily life with no fixed schedule;
- Feel excited, nervous or stressful after seeing a movie, watching TV, or other activity;
- Uncomfortable Heart feeling due to emotional reasons;
- Forget to carry Nitroglycerin when going out;
- Bathing after eating/bathing in/with hot water/carer is not nearby when patient baths;
- Catch cold.
Moderate:
No smoking/quit smoking; and
Issues below occurred not more than 3 times during the last seven days:
Daily life with no fixed schedule;
Feel excited, nervous or stressful after seeing a movie, watching TV, or other activity;
Uncomfortable heart feeling due to emotional reasons;
Forget to carry Nitroglycerin when going out;
Bathing after eating/bathing in/with hot water/carer is not nearby when patient baths;
Catch cold.

Low:
Continuing smoking; or
Issues below occurred more than 3 times during the last seven days:
Variation in daily life schedule;
Feel excited, nervous or stressful after seeing a movie, watching TV, or other activity;
Uncomfortable heart feeling due to emotional reasons;
Forget to carry Nitroglycerin when going out;
Bathing after eating/bathing in/with hot water/carer is not nearby when patient bath;
Catch cold.
Appendix III

Guidance for data collection in evaluating patient's CHD-related knowledge and adherences (Chinese Version)
患者冠心病有关知识和健康指导依从性评估指导

1. 患者对可以控制的冠心病危险因素了解程度

患者能够控制的冠心病危险因素包括：
• 吸烟；
• 高血压；
• 高血脂；
• 胆固醇；
• 肥胖；
• 日常缺乏规律活动；
• 不能有效控制紧张或激动情绪；
• 糖尿病。

高：
能够说出六种以上危险因素；

中：
能够说出四种以上主要的危险因素；

低：
仅能说出三种以下的危险因素

2. 患者对饮食方面知识的了解程度

患者了解避免：
• 煎炸食品；
• 猪牛羊肉的脂肪部分；
• 虾、贝类、墨鱼、鱿鱼、蟹类；
• 咖啡、浓茶；
• 蛋黄（每周不超过4个蛋黄）、动物内脏如肝脏；
• 全奶（应饮用低脂奶）、奶油蛋糕、奶油雪糕等；
• 动物油。

高：
当护士列出天津常见的日常食品包括上述全部食品，患者能够指出六种以上应限制的食品；

中：
当护士列出天津常见的日常食品包括上述全部食品，患者能够指出四种以上应限制的食品；

低：
当护士列出天津常见的日常食品包括上述全部食品，患者能够指出三种以下应限制的食品。

3. 患者遵从饮食指导的程度

高：
患者在一周内未进食过上述任何一种应限制的食品；
患者在一周内有不超过三次进食上述应限制的食品；

低：
患者在一周内进食过上述应限制的食品和饮料超过三次。

4. 患者对所使用药物方面知识的了解程度

高：
准确说出患者所服每种药物的名称、服药计量、作用、服药时间、副作用、和药物保存注意事项（如硝酸甘油需要避光保存）；

中：
能清楚了解每种药物的服药计量、服药时间；

低：
不能准确说出每种药物的服药计量、和/或服药时间。

5. 患者遵从服药方面指导的程度（参考每日服药记录表）：

高：
患者在过去一周内严格遵守服药计量、服药时间和药物保存注意事项（如硝酸甘油需要避光保存）；

中：
患者在过去一周内未能严格遵守服药计量或药物保存注意事项（如硝酸甘油需要避光保存）合计不超过 3 次；

低：
患者在过去一周内未能严格遵守服药计量或服药时间或药物保存注意事项（如硝酸甘油需要避光保存）合计超过 3 次。

6. 患者遵从活动方面知识的了解程度

高：
说出下列各项内容：

- 通过自我监测主观尽力感觉（perceived exertion），心率、血压、有无心绞痛发生等项以便自我评估活动是否适宜。须说出现主观尽力感觉应在 2-3 之间，活动后心率变化不超过 30 次/分（或活动后心率不超过 110 次/分），锻炼后收缩压变化范围超过 15mmHg，活动后心脏无不适感觉；
- 康复期每次活动量应该在轻度至中度之间（每日日常活动及功能锻炼记录表 2-3 之间），禁止活动量过度；
- 日常活动应有规律性，一般情况下，每周应有三次以上的运动；
- 了解活动应包括热身、活动、放松整理等三个步骤，每次活动应在进食前（后）2 小时以上。

中：
能说出下面第一项内容，及第二、三、四项中的至少一项内容；
通过自我监测主观尽力感觉(perceived exertion)，心率、血压、有无心绞痛发生等项以便自我评估活动是否适宜。须说出自观尽力感觉应在 2-3 之间，活动后心率变化不超过 30 次/分（或活动后心率不超过 110 次/分），锻炼后收缩压变化范围超过 15mmHg，活动后心脏无不适感觉；

康复期每次活动量应该在轻度至中度之间（每日日常活动及功能锻炼记录表 2-3 之间），禁止活动量过度；

日常活动应有规律性，一般情况下，每周应有三次以上的运动；

了解活动应包括热身、活动、放松整理等三个步骤，每次活动应在进食前 (后) 2 小时以上；

低：

7. 患者遵从活动方面指导的程度

高：

一星期内：

- 活动显自我感觉在 2-3 之间；
- 活动后无心脏不适感觉；
- 活动前后心率变化不超过 30 次/分，活动后心率不超过 110 次/分；
- 锻炼后收缩压变化范围在 15mmHg 之内。

中：

一星期内出现下述情况少 4 次：

- 活动显自我感觉超过 2-3 水平；
- 活动后心率有不适感觉；
- 活动前后心率变化超过 30 次/分，活动后心率超过 110 次/分；
- 锻炼后收缩压变化范围超过 15mmHg。

低：

一星期内出现下述情况少 4 次：

- 活动显自我感觉超过 2-3 水平；
- 活动后心率有不适感觉；
- 活动前后心率变化超过 30 次/分，活动后心率超过 110 次/分；
- 锻炼后收缩压变化范围超过 15mmHg。
8. 患者遵从生活行为（戒烟、情绪等）护理指导的程度：

高：
- 完全戒烟；
和一周内未出现下述情况：
- 作息不规律；
- 活动、观看电影电视，心情激动、紧张或兴奋；
- 出现因情绪变化而引起的心脏不适；
- 外出时忘记携带硝酸甘油；
- 饱餐后洗浴/洗浴水温过高/洗浴时家属未在附近；
- 发生感冒；

中：
- 完全戒烟；
和一周内出现下述情况在 3 次以下：
- 一日作息不规律；
- 活动、观看电影电视，心情激动、紧张或兴奋；
- 出现因情绪变化而引起的心脏不适；
- 外出时忘记携带硝酸甘油；
- 饱餐后洗浴/洗浴水温过高/洗浴时家属未在附近；
- 发生感冒；

低：
- 未戒烟；
或一周内出现下述情况多于 3 次：
- 一日作息不规律；
- 活动、观看电影电视，心情激动、紧张或兴奋；
- 出现因情绪变化而引起的心脏不适；
- 外出时忘记携带硝酸甘油；
- 饱餐后洗浴/洗浴水温过高/洗浴时家属未在附近；
- 发生感冒；
Appendix IV Questionnaire for the Elderly with Coronary Heart Disease
English Version

Code: Name: Sex: Age:

Interview Time: Address: Tel:

General Information

Marital Status: married(1) widower(2) divorced(3) single(4)

Usual Living Arrangement:
   With spouse(1) with child(2) with Grandchild (3)
   with domestic helper(4) Self(5)

Education Level: secondary and above(1) primary(2) none(3)

Religion: No(1) Yes(2)

Daily Carer:

Feeling of the carer: good(1) ordinary(2) poor(3)

Source of financial support:
   Retirement fund(1) from relative(2) other(explain)

Feeling of financial pressure
   No pressure(1) moderate(2) heavy(3) Monthly Income: Yuan

Knowledge of understand of community health services
   Understand well(1) understand some(2) don’t understand(3)

Use of the Community Health Services
   Often(1) seldom(2) none(3)

Daily Shopping: by self(1) by self and other by other(3)

Place of Shopping: Convenient(1) Inconvenient(2)

History of Smoking/Drinking
   Smoking: years of smoking history. cigarettes daily/ years of quit

Physical Assessment

MMSB:

Hearing:
   normal (1)
   hear loud voice (2)
   lost hearing (3)
Vision:
clear(1)
not clear(2)
lost vision(3)

Sleeping pattern:
normal(1) occasional insomnia(2) frequent insomnia(3)

Medication Use for Insomnia:
ever(1) seldom(2) often(3) everyday(4)

Appetite
normal(1) poor(2) eating difficulty(3)

Eating Habit
not salty and/or greasy(1) salty and/or greasy(2)

Mouth
clean(1) not clean(2) ulcer(3)

Urine
normal(1) frequent micturition(2) incontinent(3)

Stool
normal(1) constipation(2) incontinent(3)

Integument
normal(1) dry(2) swelling(place)(3) not intact(place)(4)

Activity
No help needed(1) need little help(2) need great help(3)

Vital Signs
P: times/minute; R: times/minute; BP: mmHg; Weight: Kg

TC: blood total cholesterol:
Before discharge:_________; 12 Weeks after discharge:_________

LDL-C: low-density lipoprotein cholesterol
Before discharge:_________; 12 Weeks after discharge:_________

Self Care ability
Barthel Index:

Questionnaire of patient's adherence of health recommendation

Self-reported understanding of CHD risk factors
high(1) moderate(2) low(3)

Self-reported understanding of CHD diet knowledge
high(1) moderate(2) low(3)
Self-reported diet compliance
  high(1)  moderate(2)  low(3)

Self-reported understanding of knowledge of CHD medications
  high(1)  moderate(2)  low(3)

Self-reported medication compliance
  high(1)  moderate(2)  low(3)

Self-reported understanding of knowledge of CHD physical exercise
  high(1)  moderate(2)  low(3)

Self-reported physical exercise
  high(1)  moderate(2)  low(3)

Self-reported other health-related lifestyle behavior (smoking, emotion control, etc.)
  compliance
  high(1)  moderate(2)  low(3)

The chart related to patient’s readmission

Times of readmission due to CHD recurrence since discharge three months ago:
  none(1)  one(2)  two(3)  three and more(4)

Times of outpatient department (clinic) visit due to CHD since discharge three months ago:
  none(1)  one(2)  two(3)  three and more(4)

Total health care expense due to CHD since discharge three months ago: __________ Yuan

Times of readmission due to other disease(s) since discharge three months ago:
  none(1)  one(2)  two(3)  three and more(4)

Times of outpatient department (clinic) visit due to other disease(s) since discharge three months ago:
  none(1)  one(2)  two(3)  three and more(4)

Total health care expense due to other disease(s) since discharge three months ago: __________ Yuan

Information about comorbidity and complication
  none(1)  one(2)  two(3)  three and more(4)
  name of comorbidity/complication 1.
  2.
  3.

The top two concerns of the patient after discharge from hospital to home
  The first: ______________________
  The second: ____________________

Appendices
Satisfaction with the clinical discharge planning
high(1) moderate(2) low(3)

Satisfaction with the CNS follow-up
high(1) moderate(2) low(3)

Perceived helpful of the CNS follow-up
high(1) moderate(2) low(3)

Willingness to accept CNS follow-up
high(1) moderate(2) low(3)

Willingness to pay for CNS follow-up
Yes(1) How much would you like to pay: _____ Yuan (except treatment fee)
No (2)

Suggestion(s) about the discharge planning and follow-up support program
Appendix IV
Chinese Version

冠心病患者调查问卷

编号： 姓名： 性别： 年龄：
访示时间： 住址： 电话：

1. 一般资料

婚姻状况： 已婚 (1) 鲤嚏 (2) 离婚 (3) 独身 (4)

同住亲友： 配偶 (1) 子女 (2) 孙辈 (3) 保姆 (4) 独居 (5)

教育程度： 中学以上 (1) 小学 (2) 无正规教育 (3)

宗教信仰： 无 (1) 有 (2)

日常生活照顾者：

自我感觉日常照顾者关心程度： 好 (1) 一般 (2) 差 (3)

经济来源： 退休金 (1) 亲属提供 (2) 其它 (注明) (3)

经济压力： 无压力 (1) 一般 (2) 沉重 (3) 病人可支配收入： 元/月

对所属社区提供服务内容了解程度： 清楚 (1) 听说过 (2) 不了解 (3)

是否接受过社区服务： 经常 (1) 较少 (2) 从没有 (3)

日常用品采购： 自己 (1) 自己和其他人 (2) 其他人 (3)

日常购物方便程度： 方便 (1) 不方便 (2)

个人嗜好： 烟： 年历史，每日量： 已戒除 年

2. 身体状况：

简短智能测验表 (MMSE) 评估结果： MMSE：

听力状态：

能听清护士正常谈话声音 (1)
能听清护士高声谈话声音 (2)
听不清护士高声谈话声音 (3)

视力状态： 能看清所用药品外包装上书写的名称及服用方法 (1)
不看清所用药品外包装上书写的名称及服用方法 (2)
失明 (3)

睡眠状况：

良好 (1) 偶尔失眠 (2) 经常失眠 (3)

服用安眠药：

从未服用 (1) 偶尔服用 (2) 经常服用 (3) 每日服用 (4)
进食状况：
正常 (1) 食欲不振 (2) 吞咽困难 (3)

进食习惯：
喜清淡饮食 (1) 喜咸和/或喜油腻 (2)

口腔状况：
正常 (1) 不洁 (2) 溃疡 (3)

排尿：
正常 (1) 尿频 (2) 失禁 (3)

排便：
正常 (1) 便秘 (2) 失禁 (3)

皮肤状况：
正常 (1) 干燥 (2) 肿胀 (部位) (3) 破溃 (部位) (4)

活动状况：
不需协助 (1) 需少量协助 (2) 需大量协助 (3)

生命体征：
脉搏 次/分 呼吸 次/分 血压 mmHg 体重 Kg

血浆总胆固醇浓度：
出院前：_________；出院后 12 周：_________

血浆低密度脂蛋白-胆固醇浓度：
出院前：_________；出院后 12 周：_________

3. 自理能力：
个人生活活动评估表：Barthel Index：

4. 患者依从性调查问卷

患者对所患疾病的病因、危险因素了解程度：
高 (1) 中等 (2) 低 (3)

患者对饮食方面知识的了解程度：
高 (1) 中等 (2) 低 (3)

患者遵从饮食指导的程度：
高 (1) 中等 (2) 低 (3)

患者对所使用药物方面知识的了解程度：
高 (1) 中等 (2) 低 (3)

患者遵从服药方面指导的程度：
高 (1) 中等 (2) 低 (3)

患者对冠心病活动方面知识的了解程度：
高 (1) 中等 (2) 低 (3)
患者遵从活动方面指导的程度：
高（1）　中等（2）　低（3）

患者遵从生活行为（吸烟、情绪控制等）护理指导的程度：
高（1）　中等（2）　低（3）

5. 病人再住入院情况调查
你自从三个月前至今因冠心病复发住院情况：
无（1）　　一次（2）　二次（3）　三次及以上（4）

你自从三个月前至今因冠心病看门诊情况：
无（1）　　一次（2）　二次（3）　三次及以上（4）

你自从三个月前至今因冠心病原因共计支出：__________元

你自从三个月前至今因其它疾病发作再住入院情况：
无（1）　　一次（2）　二次（3）　三次及以上（4）

你自从三个月前至今因其它疾病看门诊情况：
无（1）　　一次（2）　二次（3）　三次及以上（4）

你自从三个月前至今因其它疾病原因共计支出约__________元

6. 患者目前合并其它疾病的资料
无（1）　　一种（2）　二种（3）　三种及以上（4）

疾病名称：1.
2.
3.

7. 病人目前感觉忧虑的主要问题及程度：
问题一：
问题二：

8. 您对出院前医院病房护士指导满意程度：
高（1）　中等（2）　低（3）

9. 您对社区护士的随访满意程度：
高（1）　中等（2）　低（3）

10. 您认为社区护士的随访对您的疾病康复的帮助程度：
高（1）　中等（2）　低（3）

11. 您今后接受社区护士随访的意愿：
高（1）　中等（2）　低（3）

12. 您是否愿意负担社区护士随访的费用：
是（1）您心理能够承受的护士随访费用：__________元（不包括各种治疗费用）
否（2）

13. 您对出院计划过程有何意见及建议？
### Appendix V Barthel Index (BI)

#### English Version

<table>
<thead>
<tr>
<th>Code:</th>
<th>Activity</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dressing</td>
<td>10 = independent (including buttons, zips, laces, etc.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = needs help but can do about half unaided</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = dependent</td>
<td></td>
</tr>
<tr>
<td>Feeding</td>
<td>10 = independent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = needs help cutting, spreading butter, etc., or requires modified diet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = unable</td>
<td></td>
</tr>
<tr>
<td>Grooming</td>
<td>5 = independent face/hair/teeth/shaving (implements provided)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = needs help with personal care</td>
<td></td>
</tr>
<tr>
<td>Toilet Use</td>
<td>10 = independent (on and off, dressing, wiping)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = needs some help, but can do somethings alone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = dependent</td>
<td></td>
</tr>
<tr>
<td>Bathing</td>
<td>5 = independent (or in shower)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = dependent</td>
<td></td>
</tr>
<tr>
<td>Transfers (bed to chair and back)</td>
<td>15 = independent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 = minor help (verbal or physical)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = major help (one or two people, physical), can sit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = unable, no sitting balance</td>
<td></td>
</tr>
<tr>
<td>Mobility (on level surfaces)</td>
<td>15 = independent (but may use any aid; for example, stick) &gt; 50 yards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 = walks with help of one person (verbal or physical) &gt; 50 yards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = wheelchair independent, including corners, &gt; 50 yards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = immobile or &lt; 50 yards</td>
<td></td>
</tr>
<tr>
<td>Stairs</td>
<td>10 = independent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = needs help (verbal, physical, carrying aid)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = unable</td>
<td></td>
</tr>
<tr>
<td>Bladder</td>
<td>10 = continent alone</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = occasional accident</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = incontinent, or catheterized and unable to manage</td>
<td></td>
</tr>
<tr>
<td>Bowels</td>
<td>10 = continent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = occasional accident</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = incontinent (or needs to be given enemas)</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL Score (0 - 100)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Barthel Index (BI) was developed by Mahoney Fland Barthel D in 1965.
# Appendix V Barthel Index (BI)  
## Chinese Version  

### 自我照顾能力评估

<table>
<thead>
<tr>
<th>项目</th>
<th>评估得分说明</th>
<th>得分</th>
</tr>
</thead>
<tbody>
<tr>
<td>浴洗</td>
<td>10=自助（包括扣钮、拉链及穿鞋）</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=需协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>进食</td>
<td>10=自助,在合理时间内完成用膳</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=需协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>洗澡</td>
<td>5=自助：洗脸、漱口、梳头、剃须</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=需协助或全靠他人</td>
<td></td>
</tr>
<tr>
<td>如厕</td>
<td>10=自助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=需协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>洗澡</td>
<td>5=自助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>转换坐卧姿势</td>
<td>15=完全自助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10=需指导或极少量协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=可稳定维持坐姿，转移位置时需极少量协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>走动</td>
<td>15=自己（可用助行器）走多于 50 米</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10=需指导或极少量协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=自动用轮椅走动多于 50 米</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>上下楼梯</td>
<td>10=自助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=需协助</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=全靠他人</td>
<td></td>
</tr>
<tr>
<td>排尿控制</td>
<td>10=控制自如，包括用尿管</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=有时发生尿床，需使用尿垫等用品</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=失禁</td>
<td></td>
</tr>
<tr>
<td>排便控制</td>
<td>10=控制自如，良好习惯</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5=有时发生排便失控/便秘需使用药物</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0=失禁</td>
<td></td>
</tr>
</tbody>
</table>

### 总分： 100
Appendix VI  Mini-mental state examination (MMSE)

English Version

Patient Code Number: ______________ Rater: ______________ Date: ______________

"MINI-MENTAL STATE"

<table>
<thead>
<tr>
<th>Maximum Score</th>
<th>Score</th>
</tr>
</thead>
</table>

**ORIENTATION**

5 ( ) What is the (year) (season) (date) (day) (month)?
5 ( ) Where are we: (state) (county) (town) (hospital) (floor)?
3 ( ) REGISTRATION
    Name 3 objects: 1 second to say each. Then ask the patient all 3 after you have said them. Give 1 point for each correct answer. Then repeat them until he learns all 3.
    Count trials and record.

Trials

**ATTENTION AND CALCULATION**

5 ( ) Serial 7’s. 1 point for each correct. Stop after 5 answers.
    Alternatively spell "world" backwards.

**RECALL**

3 ( ) Ask for the 3 objects repeated above. Give 1 point for each correct.

**LANGUAGE**

9 ( ) Name a pencil, and watch (2 points)
    Repeat the following "No ifs, ands or buts." (1 point)
    Follow a 3-stage command:
    "Take a paper in your right hand, fold it in half, and put it on the floor" (3 points)
    Read and obey the following: CLOSE YOUR EYES (1 point)
    Write a sentence (1 point)
    Copy design (1 point)

________

Total Score

Appendix VI Mini-mental state examination (MMSE)

Chinese Version

简短智能测验

<table>
<thead>
<tr>
<th>题号</th>
<th>问题</th>
<th>得分</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>今天是什么日子？包括年份、季节、月份、日期、星期</td>
<td>5/5</td>
</tr>
<tr>
<td>2.</td>
<td>我们现在在那里？包括城市、区、医院、楼层、病房名称</td>
<td>5/5</td>
</tr>
</tbody>
</table>
| 3.   | 现在我会告诉你三样东西名称，讲完后，请你重复一次。请记住，因为几分钟后，你要重复一次告诉我。
     | ( 苹果 ) ( 火车 ) ( 报纸 )。现在请你重复这三样东西给我听。[以第一次讲的记分，一个一分；然后重复物件，直至全部三样都记得。] | 3/3  |
| 4.   | 请你用一百减七，然后再减七，一直减下去，直到我说停为止。（减五次后停止）
     | 或我现在告诉你几个数目，请你倒数出来。（42731）                                      | 5/5  |
| 5.   | 请告诉我，刚才你记住的三样东西。                                                        | 3/3  |
| 6.   | 这是什么？ （铅笔）（手表）
     | 请你跟随我说这句话。（嫡丈买鱼肠）                                                   | 2/2  |
     | 现在桌上有一张纸，请用右手拿起纸张，用双手一齐将纸折成一半，然后将纸放回桌上。     | 3/3  |
     | 请读出纸上的字句，然后跟着做                                                             | -1   |

拍手

请你告诉我任何一句完整的句子。（例如：今天天气很好） | -1 |

这里有一幅图画，请依照把图画画出。               | -1 |

(完成时间： 3 分钟)                                  | 9/9 |

评估人：
日期：
总分： 30/30

This instrument of MMSE was translated & validated by Dr. Helen Chiu & her team (1975).
### Appendix VII Daily Activity Record of Rate of Perceived Exertion Record and Daily Self-reported Heart Discomfort (English Version)

<table>
<thead>
<tr>
<th>Time</th>
<th>Perceived Exertion after activity</th>
<th>Heart discomfort after activity</th>
<th>Time</th>
<th>Perceived Exertion after activity</th>
<th>Heart discomfort after activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extremely light 1</td>
<td></td>
<td></td>
<td>Extremely light 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very light 2</td>
<td></td>
<td></td>
<td>Very light 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fairly light 3</td>
<td></td>
<td></td>
<td>Fairly light 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Somewhat hard 4</td>
<td></td>
<td></td>
<td>Somewhat hard 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hard 5</td>
<td></td>
<td></td>
<td>Hard 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very hard 6</td>
<td></td>
<td></td>
<td>Very hard 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extremely hard 7</td>
<td></td>
<td></td>
<td>Extremely hard 7</td>
<td></td>
</tr>
</tbody>
</table>

**In bed activity**
- Time: Start
- End
- Pulse: Before
- After

**Daily life Activity**
- Time: Start
- End
- Pulse: Before
- After

**Indoor activity**
- Time: Start
- End
- BP: Before
- After
- Pulse: Before
- After

**Outdoor activity**
- Time: Start
- End
- BP: Before
- After
- Pulse: Before
- After

**Self-summary of perceived exertion**
- morning
- Afternoon and evening

Reference: Relationship between Verbal Descriptions of Perceived Exertion and Numeric Ratings on the Borg 15-Point Scale.
### 每日日常活动及功能锻炼记录表 (主观全力感觉)

<table>
<thead>
<tr>
<th>活动/锻炼后自我感觉</th>
<th>清晨及上午日常活动及锻炼记录</th>
<th>下午及晚上日常活动及锻炼记录</th>
</tr>
</thead>
<tbody>
<tr>
<td>极轻</td>
<td>轻</td>
<td>轻</td>
</tr>
<tr>
<td>轻</td>
<td>稍轻</td>
<td>稍轻</td>
</tr>
<tr>
<td>稍</td>
<td>稍轻</td>
<td>稍轻</td>
</tr>
<tr>
<td>稍轻</td>
<td>稍轻</td>
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<tr>
<td>稍</td>
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<td>稍轻</td>
</tr>
<tr>
<td>稍轻</td>
<td>稍轻</td>
<td>稍轻</td>
</tr>
<tr>
<td>稍</td>
<td>稍轻</td>
<td>稍轻</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>活动后心率不适</th>
<th>活动后心率不适</th>
</tr>
</thead>
<tbody>
<tr>
<td>极轻</td>
<td>轻</td>
</tr>
<tr>
<td>轻</td>
<td>轻</td>
</tr>
<tr>
<td>轻</td>
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<td>轻</td>
</tr>
<tr>
<td>轻</td>
<td>轻</td>
</tr>
</tbody>
</table>

### 说明
- 请在相应的时间栏内填写活动起/止时间。如活动时间6时20分至6时50分，则在6时栏内记录为20:50；如为6时20分至7时30分，则在6时栏内记录20,在7时栏记录30。
- 血压记录方式为活动前的收缩压/活动后的收缩压。参考Relationship between Verbal Descriptions of Perceived Exertion and Numeric Ratings on the Borg 15-Point Scale.
### Appendix VIII Daily Medication Record

#### English Version

| Taking Time          | AM 9 | AM 10 | AM 11 | AM 12 | PM 1 | PM 2 | PM 3 | PM 4 | PM 5 | PM 6 | PM 7 | PM 8 | PM 9 | PM 10 | PM 11 | PM 12 | AM 1 | AM 2 | AM 3 | AM 4 | AM 5 |
|----------------------|------|-------|-------|-------|------|------|------|------|------|------|------|------|------|-------|-------|------|------|------|------|------|
| Medication :         |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
| Taking Time          |      |       |       |       |      |      |      |      |      |      |      |      |      |       |       |      |      |      |      |      |
Appendix VIII Daily Medication Record (Chinese Version)

|       | 晨 6 时 | 晨 7 时 | 晨 8 时 | 晨 9 时 | 晨 10 时 | 晨 11 时 | 午 12 时 | 下午 1 时 | 下午 2 时 | 下午 3 时 | 下午 4 时 | 下午 5 时 | 晚 6 时 | 晚 7 时 | 晚 8 时 | 晚 9 时 | 晚 10 时 | 晚 11 时 | 晚 12 时 | 晚 1 时 | 晚 2 时 | 晚 3 时 | 晚 4 时 |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|

每日进餐时间：

药物 1：

药物 2：

药物 3：

药物 4：

药物 5：

药物 6：

药物 7：

药物 8：

药物 9：

注：请在空格内写明相应的分钟。如清晨 7 时 30 分用早餐，即在晨 7 时纵栏与每日进餐时间横栏相交的空格内填上 30 即可。药物使用应填上药物名称。