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**LEVEL OF KNOWLEDGE AMONG CORONARY
ARTERY BYPASS GRAFTING PATIENTS IN
HOSPITAL UNIVERSITI SAINS MALAYSIA**

by

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**Dissertation submitted in partial fulfillment of the
requirements for the degree
of Bachelor of Health Sciences (Nursing)**

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CERTIFICATE

This is to certify that the dissertation entitled Knowledge Level Among Coronary Artery Bypass Grafting Patients in Hospital Universiti Malaysia is the bonafide record of research work done by Nor Shuhada Binti Murd@Mansor 87443 during the period of July 2008 to April 2009 under my supervision. This dissertation submitted in partial fulfillment for the degree of Bachelor of Health Sciences (Nursing). Research work and collection of data belong to Universiti Sains Malaysia



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KNOWLEDGE AMONG CORONARY ARTERY BYPASS GRAFTING PATIENTS IN HOSPITAL UNIVERSITI SAINS MALAYSIA

ABSTRACT

Preoperative education has a positive impact on cardiac patient's increase level of knowledge. It helps to prepare patient physically and psychologically, since the patient undergoing coronary artery bypass grafting (CABG) has a hard time maintaining the health status after the surgery. The objective of this study is to explore the knowledge outcome of the patient regarding basic cardiac, lifestyle, and myocardial infarction risk factor among CABG patients. Besides, the paper would like to determine the relationship of sociodemographic data (sex, marital status) with knowledge level of CABG patients. This is a descriptive and quantitative study. This study took place in Cardiothoracic Intensive Care Unit (CICU) and Surgery Clinic (SOPD), HUSM. The self-administered questionnaire was provided to patients (n=13) during post-CABG phase. Patients has a low cardiac knowledge with mean score of 59.23 (mean score <70). This included the basic cardiac knowledge (89.90±13.20), knowledge on lifestyle were found at low level with men score of 62.86±14.83, and myocardial infarction risk factor knowledge with low level mean score of 39.42±17.56. There is no association between both sex and marital status with cardiac health knowledge. In conclusion, CABG patient's knowledge is low especially in lifestyle and risk factor despite the preoperative intervention. Thus, ways to improvise the preoperative should be taken to produce positive effect upon cardiac health knowledge of patient.

**PENGETAHUAN PADA KALANGAN PESAKIT *CORONARY ARTERY*
BYPASS GRAFTING (CABG) DI HOSPITAL UNIVERSITI SAINS**

MALAYSIA

ABSTRAK

Pendidikan pra-operatif memberi impak yang positif terhadap tahap pengetahuan pesakit kardiak, dengan menyediakan pesakit secara fizikal dan psikologikal. Ini penting kerana pesakit yang menjalani pembedahan *coronary artery bypass grafting (CABG)* menghadapi masalah dalam menjaga status kesihatan selepas pembedahan. Objektif penyelidikan ini dijalankan adalah untuk mengetahui pengetahuan pesakit berkaitan dengan pengetahuan kardiak asas, gaya hidup, dan faktor risiko yang menyumbang kepada infarksi kardiak. Selain itu, penyelidikan ini juga bertujuan untuk mengetahui hubungan antara data sisiodemografi (jantina, status perkahwinan) dengan tahap pengetahuan pesakit. Kajian secara deskripsi dan kuantitatif ini dijalankan di Klinik Surgeri (SOPD) Unit Rawatan Rapi Kardiothoraksik (CICU), Hospital Universiti Sains Malaysia. Borang Soal Selidik diberikan kepada responden (n=13) semasa fasa pos-CABG. Pesakit mempunyai tahap pengetahuan kesihatan kardiak yang rendah dengan skor min 59.63 (skor min<70). Ini termasuk pengetahuan kardiak asas(min= 89.90±13.20), pengetahuan berkenaan gaya hidup (62.86±14.83), dan pengetahuan faktor risiko infarksi kardiak (39.42±17.56). Tiada hubungkait wujud antara kedua-dua faktor demografi (jantina dan status perkahwinan) dengan tahap pengetahuan kesihatan kardiak. Kesimpulannya, tahap pengetahuan pesakit

yang menjalani CABG adalah rendah. Oleh sebab itu, beberapa pendekatan perlu diambil bagi mengemaskan lagi pendidikan pra-operatif supaya terdapat kesan positif terhadap tahap pengetahuan pesakit.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Coronary artery disease is widely known for having a debilitating effect in a patient life. According to the Health Ministry of Malaysia, in 2006 cardiovascular problem is the fourth main cause of hospital admission in government hospitals and the second main principal causes of death. Thus, more patients opted for a more invasive procedure such as Coronary Artery Bypass Grafting (CABG) surgery for a more apparent effect to their health. CABG proves to relieve angina, has a positive impact on mortality and improve quality of life (Arthur, Daniels, McKelvie, Hirsh and Rush, 2000; LeMone and Burke, 2008 and Wikipedia, 2003).

However, surviving the CABG takes a lot more than the surgery itself. It requires lifestyle modification such as exercise, diet, reduced tobacco use, weight reduction, and stress management. Interestingly, these adjustments are required even before the surgery and continued after surgery. A pre-operative intervention has shown patient's improvement in physical status, health-related quality of life, and adherence to rehabilitation activities (Arthur et al., 2000). Sarpy, Galbraith and Jones (2000) study found that preoperative health status had a significant direct effect on postoperative health status.

Post CABG care planning and discharge planning begin in the preoperative phase when the preoperative teaching is implemented. Preoperative education has a positive impact on patient's increase level of knowledge. Knowledge is important for CABG patients because it encourages them to live a healthy life thus compliance to positive lifestyle modification. It is actually compatible with the vision of Health Ministry of

Malaysia that promotes individual responsibility towards increasing quality of life. There are three qualities of life domains which are being, belonging, and becoming based on World Health Organization (WHO). The being domain includes physical, psychological and spiritual being, whilst the belonging domains comprises of physical, social, and community belonging. Moreover, the becoming domain consists of practical, leisure, and growth becoming.

In Cardiothoracic Intensive Care Unit (CICU), HUSM the patients for CABG surgery are given a preoperative education in the ward. Since the patient undergoing coronary artery bypass graft (CABG) surgery has a hard time maintaining the health status after the surgery, the preoperative education is seen as providing support and increase the knowledge level of the patient.

1.2 Problem statements

In order to have the successful CABG outcome, patients need to be prepared physically and psychologically. Physical preparation involves not only the immediate activities before the surgery such as skin and gastrointestinal preparation, but also getting the right diet and exercise advice even before admission. The waiting could have a detrimental effect on the candidate's general health status by 4.3% (Arthur et al., 2000), but could result in 4.7% improvement with a pre-operative intervention. The psychological preparation is also essential in producing positive results of CABG. A majority of the patients waiting for CABG experienced fear and anxiety (Koivula, Paunonen-Ilmonen, Tarkka, Tarkka and Laipalla, 2001). Besides, the patient who is well-informed pre-operatively has shown better anxiety alleviation (Dunckley, Ellard, Quinn and Barlow, 2008).

Patients in HUSM who electively underwent CABG do not get sufficient preoperative preparation related to the surgery. Thus, patients lack knowledge on the

reason why they need to do specific activity is like exercise, controlling diet, discontinuing tobacco use, and managing stress (Tromp, Van Dulmen and Van Weert, 2004; Goodman, Peters, Matthews, Gerathy and Golden, 2003; Martin, Hemingway, Gunnell, Karsch, Baumbach and Frankel, 2002).

The knowledge level is also influenced by sociodemographic data. Patients with lower education level, an annual income less than \$50 000 had a significantly lower coronary artery disease knowledge (Kayaniyil, Ardern, Winstanley, Parsons, Brister, Oh, Stewart and Grace, 2008). The study by Kayaniyil et al.(2008) shown that a family history of heart disease, non-smoker and undergoing cardiac procedure have positively affect patient's cardiac knowledge.

This study was conceptualized within the social cognitive theory (1960). This model was developed by Albert Bandura. It emphasized on how an individual learning is determined not by the personality only but also by external influence. The social context is considered as a determinant for the individual human being. The learning environment can be defined as a combination of the environmental determinants and behavioural determinants the learner can be interacting with (Institute for Dynamic Educational Advancement, 2007).

There are ten major concepts formulated by Bandura that are important to understand in order for SCT to be applied in health education. The main elements are environment and situation, observational learning, self-efficacy and reinforcement. The other elements are behavioral capability, expectations, expectancies, self-control, emotional coping responses, and reciprocal determinism.

1.3 Objectives of the study

1.3.1 General objective

The objective of this study is to explore the knowledge level among CABG patients.

1.3.2 Specific objectives

The specific objectives in this study are:

- 1- To determine the knowledge level of CABG patients.
- 2- To determine the knowledge level of CABG patients on
 - basic cardiac
 - lifestyle
 - risk factor of myocardial infarction
- 3- To examine the association of sociodemographic data (sex, marital status) with knowledge level of CABG patients.

1.4 Research Question

The research questions this study intended to answer are:

-What is the knowledge level of CABG patients at HUSM?

-What is the knowledge of CABG patients at HUSM, on,

i) basic cardiac?

ii) lifestyle?

iii) myocardial infarction risk factor?

-Is there any association of sociodemographic data (sex, marital status) with the cardiac health knowledge level of CABG patients?

1.5 Hypothesis

1.5.1 Null hypothesis, Ho

Ho₁: There is no significant improvement of knowledge level among CABG patients.

Ho₂: There is no association between sex and knowledge level of CABG patients

Ho₃: There is no association between marital status and knowledge level of CABG patients.

1.5.2 Alternative hypothesis, Ha

Ha₁: There is a significant improvement of knowledge level among CABG patients.

Ha₂: There is an association between sex and knowledge level of CABG patients

Ha₃: There is an association between marital status and knowledge level of CABG patients.

1.6 Definition of Terms (Conceptual)

1.6.1 Knowledge Level

In this study, the knowledge level that being assessed are the basic cardiac, lifestyle, and risk factor of myocardial infarction knowledge among CABG patients. These three aspects of knowledge are measured using the Cardiac Health Knowledge Questionnaire developed by Havik & Maeland (1987) that consists of 20 items. The overall scales of correct responses are computed by summing the items to produce a percentage.

The knowledge level of CABG patients is also examined by determining the association between demographic data and the knowledge level. The demographic data are sex and marital status of the CABG patients.

1.6.2 Preoperative education

According to Adventist Health (2009) the preoperative education helps to ensure the patient have the best experience possible before surgery, immediately afterward and during their recovery period at home. Educational sessions give patients important information about what will happen during their hospital stay and also help them prepare for the post-surgical recovery period (Adventist Health, 2009). The education is provided after patient has consented to the surgery and just before patient admitted to the operation table.

1.6.3 Coronary artery bypass grafting (CABG)

In this study, coronary artery bypass graft (CABG) is a procedure to restore blood flow and oxygen in the heart for a coronary heart disease patient done in HUSM. A sternotomy is first done to expose the heart before the heart is stopped and cooled during surgery. The aorta is clamped off to produce a bloodless surgical field. The blood circulation is taken over by a heart lung machine or also known as cardio-pulmonary bypass pump. Then, a saphenous or a mammary vein is excised from its normal attachment in the leg and grafted to the aorta and coronary artery. This will result in the conduit for blood flow past the obstruction.

Once grafting is completed, cardio-pulmonary bypass is discontinued and patient's heart is rewarmed to stimulate heart beat. Chest tubes are placed in the pleural space and mediastinum to drain blood and reestablish negative pressure in the thoracic cavity. The sternum is closed using heavy wires and bone wax, the skin is closed with sutures or staples, sterile dressings applied over sternal and leg incision. This surgery takes about four hours to complete.

(LeMone and Burke, 2008)

1.7 Significance of the Study

The preoperative intervention prior to CABG is a necessity to ensure successful recovery of post-CABG patient. Patients with successful pre-operative interventions prove to have positive surgical outcome (Goodman et al., 2001; McHugh, Lindsay, Hutton, Morrison and Wheatley, 2001; Koivula et al., 2001). Besides, patients who were intervened pre-operatively are 33% more compliance to physical activity (Arthur et al., 2000).

Cardiac knowledge has significant correlation with sociodemographic data of the patients (Kayaniyil et al., 2008). The sociodemographic data may include the gender, ethnicity, socioeconomic status, education level, employment status and family history of heart disease (Kayaniyil et al., 2008; Potvin, Richard and Edwards, 2000).

Patients with increase knowledge level tend to be more compliant in health activities and lifestyle changes (Arthur et al., 2000; Alm-Roijer, Stagmo, Uden, Erhardt, 2004). Although knowledge do not necessarily result in risk reduction behavior, but still, the lack of knowledge will deter both lifestyle modifications and cardiac health. By not doing this study, we could not determine the knowledge level of patient related to the basic cardiac knowledge, lifestyle modification, and risk factor knowledge towards the successful recovery process to increase the quality of life after CABG.

CHAPTER 2

LITERATURE REVIEW

2.1 Incidence and prevalence

Coronary artery disease has a multi-effect on an individual's life. Based on studies done, it does not only affect the patient physically, but also psychologically and economically (Watt-Watson, Stevens, Katz, Costello, Reid and David., 2004; Arthur *et al.*, 2000; Koivula, Paunonen-Ilmonen, Tarkka, Tarkka and Laipalla., 2002). Coronary artery bypass grafting is a treatment that could relieve the symptoms and improve a patient's quality of life. In United States of America, more than 598,000 CABG procedures are performed each year (Levey, Dieter, Preston, Smith and Levey, 2001). Besides, in 2005 67.1% of open-heart surgeries performed in United States were CABG (American Heart Association, 2008). In United Kingdom, the need for revascularization is equivalent to a rate of 1861 per million population (Martin *et al.*, 2002). This exceeds its national target of 1500 procedures per million population.

In Finland, with a population of 5.1 million, 4334 CABG surgeries were performed in 1998 (Koivula *et al.*, 2001). 76% of the surgeries were performed on men and 75% of which were elective. With this large figure of patients undergoing CABG, the candidates have to put themselves in the waiting list. The waiting caused a detrimental effect on the candidate's general health status by 4.3%, but could result in 4.7% improvement with a pre-operative intervention (Arthur *et al.*, 2000). Koivula *et al.* (2001), in her study stated that all the patients waiting for CABG have fear and anxiety, with 50% low fear and anxiety, 25% medium fear, and 25% high fear. Thus, it is very helpful for CABG candidates to be intervened of preoperative preparation during this time.

According to McHugh et al. (2001), with preoperative preparation and education the risk factors are reduced by 25% for smoking, reduction in overweight patients by 24.5%, and the mean total cholesterol reduced from 5.8 mmol/L to 5.1mmol/L. According to ACC/AHA Practice Guidelines (2004), the survival percentage for CABG patients after 5 years is 92%, and 81% in 10 years. Furthermore, the freedom from angina is 83% at 5 years and 63% at 10 years.

In India, 95.9% patients who undergo CABG have at least one of the five major cardiovascular risks factors which are hypertension, dyslipidemia, smoking, diabetes mellitus, and have a family history of premature coronary artery disease (Kaliswal, Kulshreshtha, Agrawal, Bansal and Trehan, 2006). These 5 risk factors have shown to have a high association with coronary artery disease in South East Asian patients (De Silva, Fung, Kyaw, Chen, Hui and Meng, 2008).

In Malaysia, diseases of the circulatory system were listed as one of the principal causes of hospitalization in 2006, with 13,831 admissions. Among them 6,372 deaths in general hospital were caused by heart disease, and diseases of pulmonary circulation (Kementerian Kesihatan Malaysia, 2006).

Myocardial infarction was the most common coronary artery disease (CAD) presentation, affecting 42% of patients, followed by unstable angina (27.5%) and stable angina (27.5%) (Kui et al., 2007). In order to relieve these symptoms from worsening, 17.3% of respondents of a study by Kui, Kok, Singh, Choon, Houg, Kim and Ismail. (2007) in Malaysia opted for coronary artery bypass surgery as a treatment. With the increased statistical number of patients undergoing CABG, it is important to ensure that patients are well-informed with the procedures and its health-related activities.

2.2 Means of Pre-Operative Approaches

The pre-operative teaching has utilized many types of methodologies to ensure the effectiveness of the teachings. This would be reflected in the result achieved at the end of the program. It could be measured using the level of knowledge, length of hospital stay, pain management, anxiety and depression, smoking cessation, risk factor reduction, and physical activity. Integrating educational and support programme in preparing patients before CABG has produced positive results (Goodman et al., 2003; Goodman, Davidson, Preedy, Peters, Waters, Persaud-Rai, Shuldham, Pepper and Cowie, 2008).

This secondary prevention has shown to be effective in addressing risk factors and reversing cardiac misconceptions that have been shown to interfere with good psychosocial recovery (McHugh et al, 2001; Havik and Maeland, 1987). In India, a study was done to test the effect of preoperative teaching. It has shown to improve patients' self-care activities (Kaur, Verma, and Singh, 2007). Besides oral delivery of preoperative teaching, it could also use other means or approaches. For example providing a booklet (Goodman et al, 2003 and Watt-Watson et al, 2004), involving patients in physical activity (Arthur, 2000) and home visits (Goodman et al, 2003).

It is vital to emphasize that the preoperative preparation involves the combination of both physical aspects and psychological aspects. The effectiveness of preoperative teaching is measured by a patient's condition after surgery has taken place. It could be either long-term or short-term. The impact of CABG, especially when it is unexpected, proved to be enormous for both the patient and the caregiver.

2.2.1 Written pre-operative information

A written form of pre-operative information has been used widely to facilitate teaching. Goodman et al. (2003) had devised a manual in a programme of education for patients waiting for CABG. It had been provided 3 months before the surgery took place.

Besides being useful in providing lifestyle advice, it also offered the patient something to focus on rather than the uncertainty of the surgery. The designation of the manual involved multidisciplinary team including the pharmacist, the dietician, and the occupational therapists.

Watson-Watt et al. (2004) also used a pain booklet in preadmission education regarding pain after CABG. The utilization of the booklet has proven to have a positive effect on the patients' pain-related interference in activities and fewer concerns in taking analgesics. Interestingly, the benefit of providing a written form of preoperative information does not only reach the patient, but goes beyond that. This is supported by the findings of Goodman et al. (2003) which stated that the patients' family and general practitioner also found the booklet helpful. However, it also has its own negative factors. However, difficulty might arise when the participant had a limitation with the eyesight or illiterate.

2.2.2 Telephone interviews and home visits

The pre-operative education via telephone interviews and home visits has shown to have its own advantage. A randomized, controlled trial by Arthur et al. (2000) used monthly nurse-initiated telephone calls, together with exercise training, education, and reinforcement. The telephone call was meant to answer questions and provide assurance apart from fulfilling the supportive-educative component of the intervention. This type of approach encourages a one-to-one contact with patients before the surgery. This was much appreciated by the patients on the waiting list for CABG who had some doubts regarding the booklet/manual received and needed further explanations from the nurses.

A study by Goodman et al. (2003) revealed that 65% of CABG patients that commented the telephone interview and home visit was either helpful or useful, 45% said it was reassuring and 30% appreciated the one-to-one contact. Although the nurses

felt that this was a very labourious process, but they value the opportunity to detect any health problems, like newly diagnosed diabetes and blood abnormalities. These are the problems that could delay the operations, if not identified prior to admission. In her other qualitative study, Goodman et al. (2008) found that the home visits helped nurses identify more patient problems compared to having patients coming to clinic. Patients were more comfortable discussing their concerns with nurses in the relaxed environment of their own homes rather than the busy out-patient clinics.

2.3 Pre-Operative Education/Preparation

The pre-operative preparation for a CABG candidate is usually provided during the waiting period before surgery, which is 6 months prior admission until the day of surgery. The preparation could vary from the oral health education to the physical involvement of the patient. Patients who received pre-operative intervention spent a day less in hospital and had a higher level of social support compared to the non-intervention group (Arthur et al., 2000). The patients perceived pre-operative preparation as a means of support, and thus tended to maintain with that kind of lifestyle. This is supported by the findings from a study conducted by Dunckley et al. (2008) which showed that the amount of social support received by patients is associated with good recovery.

2.3.1 Physical Activity

Patients with worsening symptoms of coronary artery disease during the waiting period refuse to be involved in any physical activity before the surgery. It is mostly because of the perception that this activity may put them at a higher risk of having an attack. However, Arthur et al. (2000) proved that the implementation of exercise training before CABG reduced physical deterioration during the waiting period and contributed to sustained postoperative exercise. It is supported by the data states that the mean time spent exercising increased by 33% in the group with intervention compared to non-

intervention group (McHugh et al., 2001). Pre-operative exercise also correlates significantly with post-operative pain, that is the more patients exercise, the less pain patients reported (Sarpy et al., 2000). Physical activity also improves the patients' general health status before the surgery, thus assisting the patients in further recovery after the surgery (McHugh et al., 2001).

2.3.2 Risk Factor Reduction

Risk factor reduction is important in preparing a patient physiologically before the surgery. In other words, it helps a patient to become more fit before the surgery and in facing the trauma during and after the surgery. Among the common risk factors reduction that had been studied before were dietary habit, smoking status, obesity, blood pressure, diabetes, plasma cholesterol, alcohol intake, and weigh reduction (Goodman et al., 2003; McHugh et al., 2001 and Arthur et al., 2000). A study by McHugh et al. (2001) showed that a shared care program consisting of health education and motivational intervention promotes the risk factors reduction. Maintaining risk factor reduction has shown to be a challenging aspect in pre-operative preparation. It is because it requires patients' adherence and commitment to continue practicing lifestyle modification. However, Arthur et al. (2000) discovered that the pre-operative education facilitated in patients compliance after the surgery. Goodman et al. (2003) also found that diet, daily activities, and risk factor of coronary artery disease were the most helpful aspects in the pre-operative manual.

2.3.3 Pain

Pain is one of the most anticipated aspects in patients after CABG. The section on medication, in particular, the analgesics is the most helpful aspect in the manual provided for patients waiting for CABG (Watt-Watson et al., 2004). Pain is the reason why a patient refuses to ambulate. Ironically, the activities like repositioning and deep breathing are actually the strategies for minimizing pain. It is because the patients

believe that any activity may subsequently result to pain is dangerous for the healing process. Pain management information should be comprehensive, address realistic expectations and symptom management (Theobald and McMurray, 2004). Majority of the post-CABG patients reported receiving inadequate analgesic and received only 47% of their prescribed dose (Watt-Watson et al., 2004). Moreover, there are patients who explained that they received no preparation for pain other than pain in the chest and the leg.

Watt-Watson et al. (2004) provided a pre-operative education of pain and booklet for the CABG candidates. It aimed to evaluate a pre-admission education intervention to reduce pain and related activity interference after CABG surgery. The result showed that the control group faced a significantly more pain-related interference, especially in deep breathing and coughing.

Unlike the control group, the intervention group had fewer concerns about taking analgesics (eg. addiction, constipation). The health professional's lack of knowledge on the pain management and its side effects may discourage a patient from taking analgesics. Thus, additional strategies, besides the booklet, are required to ensure the effectiveness of pre-operative education on pain.

2.3.4 Self-Care Activities

The knowledge of the patient on the self-care activities after CABG is very important. It is because it promotes autonomy and prevents prolonging the patients' role as a patient that will impede the patients from returning to their normal daily routine. A study by Theobald and McMurray (2004) found that patients had difficulty in adjusting to life afterwards. It included the physical activities, pain, and lifestyle modification. Thus, with the information related to self-care activities the patient can anticipate what they need to deal with and alleviate their burden after the surgery.

Kaur et al. (2007) had developed a teaching module on self-care activities for patients undergoing cardiac surgery and test its effectiveness in two groups of patients, control and intervention group. This module comprised of 10 variables which were breathing exercise, positioning, extremities exercise, ambulation, eating/drinking, elimination, wound care, personal hygiene, coping with pain, and rest and sleep. It was evaluated on the forth post-operation day. The results showed highly statistical significant difference ($p < 0.001$) between the two groups in 7 out of 10 variables. It demonstrated how pre-operative teaching was an effective means in assisting post-CABG patients in self-care activities.

2.3.5 Knowledge and Information

There is a wide range of knowledge that could be provided by nurses to patients waiting for CABG. However, careful selection on the type and amount of knowledge is vital in ensuring the usefulness of information provided to patients. Post-operative information could be discussed pre-operatively to make the post-operative course more manageable for the patient (Moser and Riegel, 2008). Absence of information could actually encourage paternalism in patient-health care provider relationship.

Goodman et al. (2003) discovered that patients are more interested in their admission process or medical concerns rather than the risk factors. The questions were regarding medications, surgery, worsening symptoms, immediate pre-operative preparation (eg. skin preparation), pain, length of stay, and the self-care activities. In her other study, Goodman et al. (2003) also found that the healthcare provider did not offer information compatible to the patient's need. Thus, it is important to assess the patient's understanding and reiterating information before pre-operative education is delivered.

Studies have shown that there is insufficient information provided preoperatively for CABG patients in psychosocial, emotional aspects, and possible complications about the surgery (Tromp et al., 2004; Ivarsson, Iarsson, Luhrs and Sjoberg., 2005). The

amount of information received and the sensitivity of the health care provider to psychosocial determinants (eg. beliefs and risk perception) facilitated the patients to play active roles in their care. It would make patients more aware and willing to discuss their illness and method of illness with health care personnel (Ivarsson et al., 2005).

Besides adequate information, arrangement of the method of delivery is also vital. Patients experienced the admission day as confusing and fatiguing due to too much information provided all at once (Tromp et al., 2004). Thus it is important to ensure the distribution of information is started even before the admission. Furthermore, patient-centered education can also have a positive impact in meeting patients need towards information. It encourages nurses to develop sensitive and respectful care while aiding them to identify pertinent issues (Tromp et al., 2004).

2.3.6 Psychological Aspect

Fear, anxiety, and depression are the most common psychological problem faced by the patients waiting for CABG. Patient with high anxiety and fear could result in worsening of general health status before the surgery. There are number of factors associated with the level of fear and anxiety in pre-CABG patients. They are sex, had no vocational education, were on the sick leave, were depressed, and had a short wait for operation (Koivula et al., 2001). Women were found to be more anxious because women are more sick than men when undergoing CABG due to delayed presentation of coronary artery disease (Sarpy et al., 2000). Patients who are still working are depressed to return to work after surgery compared to the retired community and those without vocational education might have trouble in maintaining financial security (Koivula et al., 2001). Patients with a shorter waiting time are found to have more fear because patients perceived that the candidate with a higher risk needed to be operated first (Koivula et al., 2001). However, health professionals believed that anxiety could be

alleviated by keeping patients and relatives informed about their treatment (Dunckley et al., 2008).

2.4 Instrument

The Cardiac Health Knowledge Questionnaire was developed by Havik and Maeland (1987). This questionnaire has been used by previous studies to measure cardiac knowledge level (Newens, McColl and Bond, 1997; Lewin, Thompson and Elton, 2002; Macleod Clark, Rowe and Jones, 1993).

This questionnaire has 2 subscales, which are the Basic Cardiac Health Knowledge Scale and the Cardiac Lifestyles Knowledge Scale. The first scale consists of 30 items investigates and the knowledge of the functions of the cardiovascular system and the pathogenesis and manifestations of coronary heart disease. The Cardiac Lifestyle Knowledge Scale consists of 15 items and covers behavioural aspects in the aetiology of coronary heart disease and in rehabilitation (Best Practice Guidelines for Cardiac Rehabilitation and Secondary Prevention, 1999).

In the first subscale, the respondents' responses are based on true or false. There are 16 true responses and 14 false responses. In the second subscale, questions 1 to 7 are based on true or false response. There are 3 true responses and 4 false responses. In the questions 8 to 15, the respondents are required to rate the risk for heart infarction based on the behavioral aspects. The rates are: 1=very low risk, 2=low risk, 3=some risk, 4=high risk and 5=very high risk.

Each score is calculated as a percentage of the correct items. However, the item answered with "don't know" is counted as an incorrect answer (Havik and Maeland, 1987). The overall scales of correct responses were computed by summing the items to produce a percentage of patients knowledge score.

2.5 Theoretical Framework

The Social Cognitive Theory (SCT) deals with two main elements which are psychosocial dynamics influencing health behavior and methods for promoting behavioral change. Within SCT, human behavior is explained in terms of a triadic, dynamic, and reciprocal model in which behavior, personal factors (including cognitions), and environmental influences all interact (Glanz, 2002 adopted from University of Twente: Social Cognitive Theory, 2004). There are ten major concepts formulated by Bandura that are important to understand in order for SCT to be applied in health education. The main elements are environment and situation, observational learning, self-efficacy and reinforcement. The other elements are behavioral capability, expectations, expectancies, self-control, emotional coping responses, and reciprocal determinism.

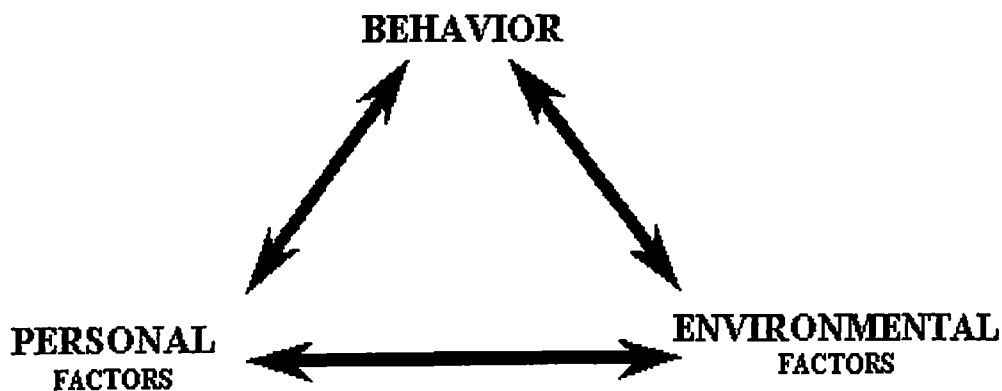


Figure 2.1: Overview of social cognitive theory (Institute for Dynamic Educational Advancement, 2009)

The three factors which are environment, behaviour, and people (personality) are constantly influencing each other. According to York University (2009), the interaction between the person and behaviour involves the influences of a person's thoughts and actions. The interaction between the person and the environment involves human beliefs

and cognitive competencies that are developed and modified by social influences and structures within the environment. The third interaction, between the environment and behavior, involves a person's behavior determining the aspects of their environment and in turn their behavior is modified by that environment.

The environment and situation is two different concepts, but closely related. The environment is the physically external to a person, whilst the situation is the perception or cognitive representation of the environment that may affect the behavior. Environment and situation provide an ecological framework for understanding behavior (Parraga, 1990 adopted from University of Twente: Social Cognitive Theory, 2004). The finding by Sol, van der Graaf, Goessens and Visseren (2008) shows that social support influenced the clinical manifestation of vascular disease. The structural social support, for example spouse, is the physical environment of patient. However, it turns out in this study that the functional social support is the factor in improving the clinical manifestation. In other words, it depends on how the patients view their support (spouse, nurses, financial) which are either supporting, over-protective, in denial, or involved actively in patient care.

The observational learning occurs when a person observe a certain behavior being done and see the end result of it which is positive or negative. If the end result is positive, the observer will be encouraged doing the same behavior and the opposite thing will happen if the result is negative. It is less time consuming compares to operant conditioning because instead of learning about the behavior through trial and error, the person just has to watch it. For instance, the nurses can demonstrate to mother how to breast feed by using model. However, for a more effective result, mother can be exposed to the other women who breast fed their child and mix with them. Indirectly, the mother will understand the satisfaction of breast feeding and raise the desire breast feed her own child.

Reinforcement is the primary building-block in the operant conditioning. There are two types of reinforcement which are positive and negative reinforcement. The positive reinforcement will increase the possibility of a person to repeat doing the deed again. In the other hand, in negative reinforcement the chances of the person to do the deed again will decrease. A study by Van Zundert, Nijhof and Engels (2009) found that adolescent with the knowledge regarding to benefit of quitting smoking still experienced relapse after a period of abstinence. The researcher suggested that it is possible that when they experience the negative effects of quitting which is the withdrawal symptom, they inclined to downplay the advantages of quitting.

Self-efficacy is the confidence a person have in carrying out a behavior. In clinical practice, self-efficacy refers to 'how certain a patient feels about his/her ability to take necessary action for improvement of symptoms and maintenance of health' (Kakudate, Morita, Sugai and Kawanami, 2009). Bandura proposed that self-efficacy is the most important prerequisite for behavior change because it affects how much effort is invested in a given task and what level of performance is attained (Sheldon,1982). A study by Kakudate et al. (2009) showed that there is a significant increase in self-efficacy among periodontal patients when they were taught using the newly modified 6-steps method of brushing teeth. One of the ways is by simplifying the steps and allowed the learner to practice the behavior again and again.

In this study, by adopting Social Cognitive Theory we could study the interaction between environment (social support/marital status) and personal (sex), with the human behaviour (knowledge level) of CABG patient after Pump-Talk. The knowledge level is also influenced by sociodemographic data. Patients with lower education level, an annual income less than \$50 000 had a significantly lower coronary artery disease knowledge (Kayaniyil, Ardern, Winstanley, Parsons, Brister, Oh, Stewart and Grace, 2008). The study by Kayaniyil et al.(2008) shown that a family history of

heart disease, non-smoker and undergoing cardiac procedure have positively affect patient's cardiac knowledge.

CHAPTER 3

METHODOLOGY

3.1 Research design

This is a descriptive and quantitative study. The research design is cross-sectional.

3.2 Population and Setting

This study takes place in Hospital Universiti Sains Malaysia, Kubang Kerian Kelantan. In HUSM, the CICU providing care for cardiac surgery patients is divided into two wards. They are Kristal 1 and Kristal 2. Kristal 1 is specifically for immediate post-operative phase where patients need the ventilation support and close monitoring. This ward has the capacity of two beds. The Kristal 2 provides care for pre-operative and post-operative phase. This ward has the capacity of six beds.

In this study, its population is the post-surgery patients admitted to CICU for CABG. They should be in the forth post-operative day (Kaur et al., 2007), when patient's condition has stabilized.

3.3 Sample

3.3.1 Sample Size

Based on the Registration Book of CICU, HUSM there are 52 and 36 CABG cases in 2006 and 2007 respectively. On average, there are 44 CABG cases per year in HUSM. The power of the study is 0.8 (Ivarsson et al., 2005), with significant level of 0.05($\alpha=0.05$) and $p<0.05$. Thus in order to determine the sample size, the single mean formula is used.

The formula:

$$\left[\frac{Z\alpha (SD)}{\Delta} \right]^2$$

$$Z\alpha = 95\% \text{ CI} = \alpha (0.05/2) = 1.96$$

$$SD = 13.5 \text{ (Newens et al, 1997)}$$

$$\Delta = 5$$

Sample size calculation

$$\left[\frac{1.96 (13.5)}{5} \right]^2$$

$$n = \left[\frac{26.46}{5} \right]^2$$

$$n = (5.29)^2$$

$$n = 28 + 20\% \text{ drop- out}$$

$$n = 28 + 6$$

$n = 34$. Thus, the sample size of this study is 34.

The respondent acquired during the collection of data is 38.2% (n=13).

3.3.2 Sampling Design

This study used the non-random, purposive sampling of patients who were the candidates of elective CABG, admitted to CICU, HUSM. Patient was required to answer the questionnaire related to cardiac health knowledge.

3.3.3 Inclusion and Exclusion Criteria

The inclusion criteria is patient is admitted to CICU, HUSM for CABG. Besides, patient is at least on the forth post-operative day of CABG. Patient is able to read and write, either in Bahasa Malaysia or English.

The exclusion criteria is patient is admitted to CICU, HUSM for cardiac surgery such as valve replacement. Besides, patient is not on the forth post-operative day of CABG. Patient is not able to read and write, either in Bahasa Malaysia or English.

3.4 Instrumentation

3.4.1 Instrument

The instrument used to evaluate post-CABG patients knowledge was the Cardiac Health Knowledge Questionnaire. This questionnaire was self-administered and the duration took to answer this questionnaire is about 15 to 25 minutes. The questionnaire consisted of 2 sections: Section A; Sociodemographic Data, and Section B: Cardiac Health Knowledge Questionnaire. The questionnaire had undergone the forward and backward translation by the Centre of Language, Universiti Sains Malaysia to ensure its preciseness.

The Cardiac Health Knowledge Questionnaire contained 2 subscales which were the Basic Cardiac Health Knowledge scale and The Cardiac Lifestyle Knowledge scale with Cronbach's α ranged from 0.69 to 0.86 (Kayaniyil et al., 2008). The items in both subscales were based on the Cardiac Health Knowledge Questionnaire developed by Havik & Maeland (1987).

The 5 items in the Basic Cardiac Health Knowledge scale were meant to measure the knowledge functions of the cardiovascular system and manifestations of coronary artery disease. The 15 items in the Cardiac Lifestyle Knowledge scale