

KNOWLEDGE AND PRACTICES ON PHYSICAL  
ACTIVITY INTERVENTIONS AMONG BREAST  
CANCER PATIENTS IN NUCLEAR,  
RADIOTHERAPY AND ONCOLOGY  
DEPARTMENT (NROD), HOSPITAL UNIVERSITI  
SAINS MALAYSIA

by

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## LIST OF ABBREVIATIONS

BC	- Breast Cancer
NROD	- Nuclear, Radiotherapy and Oncology Department
WHO	- World Health Organisation
CRF	- Cancer Related Fatigue
HPM	- Health Promotion Model

## ABSTRACT

### KNOWLEDGE AND PRACTICES ON PHYSICAL ACTIVITY INTERVENTIONS AMONG BREAST CANCER PATIENTS IN NUCLEAR, RADIOTHERAPHY AND ONCOLOGY DEPARTMENT (NROD ), HOSPITAL UNIVERSITI SAINS MALAYSIA

**Background:** Knowledge regarding the important of practices on physical activity is very important among breast cancer patients for their awareness to improve quality of life. Physical activity and exercise among cancer patients has been linked to reduce cancer related fatigue and nausea symptoms as well improve the immune system function of the patients. There are few references on this subject in the literature. The aim of this study was to investigate the knowledge and practices on physical activity among cancer patients in NROD, Hospital USM.

**Methods:** A cross sectional, descriptive study was conducted in 87 of breast cancer patients in NROD by using structured self administered questionnaire. The non probability purposive sampling technique was used to select the sample for this study. Statistical analysis was conducted by using the Statistical Package for Social Sciences (SPSS) version 22. Meanwhile, the descriptive analysis had been used to summarize socio demographic data of the patients. Pearson Chi- Square was used to evaluate the association between the study variables and the socio-demographic data (age, occupational status, marital status, level of education and financial status) with the practice towards physical activity. A p-value of equal or less than 0.05 was considered significant.

**Results:** In this study population, there were 60 of breast cancer patients (69.0%) had average level of knowledge regarding physical activity among them meanwhile majority of them had insufficiently active (51.7%) towards practice on physical activity. Then, for association between selected socio-demographic data and practices on physical activity among breast cancer patients, age was found to be significant association with practice on physical activity, with p value 0.000. Then, occupational status also had been found significantly associate with practice on physical activity where the p value is 0.009. Same goes to marital status and educational level where it

also shows significantly associated with practices on physical activity with p value were 0.004 and 0.009 respectively.

**Conclusion:** This study reflected there was an average level towards knowledge regarding physical activity among breast cancer patients. Besides, they also reflect lack of practicing aspect towards physical activity. Most of patients can perform physical activity but might be not practice because of the socio-demographic factor such as lack of time and increased in workforce. Therefore, education, communication and reassurance should be emphasis on encouraging the patients to practice physical activity to overcome public health concern to decrease the death and improve in quality of life among breast cancer women.

**Keywords:** Physical activity, Knowledge, Practice, NROD.

## ABSTRAK

### PENGETAHUAN DAN PRAKSTIS KE ATAS AKTIVITI FIZIKAL DALAM KALANGAN PESAKIT KANSER PAYUDARA DI JABATAN NUKLEAR, RADIOLOGI DAN ONKOLOGI, HOSPITAL USM

**Latar Belakang:** Pengetahuan mengenai kepentingan amalan aktiviti fizikal adalah amat penting dalam kalangan pesakit kanser payudara untuk memberi kesedaran kepada mereka bagi membantu meningkatkan kualiti hidup. Aktiviti fizikal dan senaman dalam kalangan pesakit kanser telah dikaitkan dapat mengurangkan keletihan berkaitan kanser dan gejala loya serta meningkatkan fungsi sistem imunisasi pesakit. Terdapat beberapa rujukan mengenai perkara ini. Tujuan kajian ini adalah untuk mengkaji pengetahuan dan amalan aktiviti fizikal dalam kalangan pesakit kanser di NROD, Hospital USM.

**Kaedah:** Keratan rentas, kajian deskriptif telah dijalankan pada 87 pesakit kanser payudara di NROD dengan menggunakan soal selidik isi sendiri berstruktur. Bukan kebarangkalian teknik persampelan bertujuan telah digunakan untuk memilih sampel kajian ini. Analisis statistic telah dijalankan dengan menggunakan Pakej Statistik untuk Sains Sosial (SPSS) versi 22. Sementara itu, analisis deskriptif telah digunakan untuk meringkaskan data sosio demografi pesakit. Pearson Chi- Square telah digunakan untuk menilai hubungan di antara pembolehubah kajian dan data sosio-demografi (umur, status pekerjaan, status perkahwinan, tahap pendidikan dan status kewangan) dengan amalan ke arah aktiviti fizikal. Nilai p yang sama atau kurang daripada 0.05 dianggap penting.

**Hasil:** Pada penduduk kajian ini, terdapat 60 pesakit kanser payudara (69.0%) yang mempunyai tahap sederhana tentang pengetahuan mengenai aktiviti fizikal dalam kalangan mereka. Manakala pula, majoriti daripada mereka cukup aktif (51.7%) ke arah amalan aktiviti fizikal. Kemudian, untuk perkaitan antara data sosio demografi terpilih dan amalan aktiviti fizikal dalam kalangan pesakit kanser payudara, umur didapati mempunyai hubungan yang signifikan dengan amalan aktiviti fizikal, dengan p nilai 0.000. Kemudian, status pekerjaan juga telah dijumpai ketara mengaitkan dengan amalan aktiviti fizikal di mana nilai p adalah 0.009. Begitu juga dengan status

perkahwinan dan taraf pendidikan di mana ia juga menunjukkan dengan ketara yang berkaitan dengan amalan aktiviti fizikal dengan nilai p masing-masing 0.004 dan 0.009.

**Kesimpulan:** Kajian ini mencerminkan tahap yang sederhana terhadap pengetahuan mengenai aktiviti fizikal dalam kalangan pesakit kanser payudara. Selain itu, mereka juga mencerminkan kekurangan mengamalkan aspek ke arah aktiviti fizikal. Kebanyakan pesakit boleh melakukan aktiviti fizikal tetapi mungkin tidak mengamalkan kerana faktor sosio-demografi seperti kekurangan masa dan peningkatan dalam tenaga kerja. Oleh itu, pendidikan, komunikasi dan keyakinan perlu diberi penekanan kepada pesakit untuk menggalakkan mereka mengamalkan aktiviti fizikal bagi mengatasi masalah kesihatan awam untuk mengurangkan kematian dan meningkatkan kualiti hidup di kalangan wanita kanser payudara.

**Kata kunci:** Aktiviti fizikal, pengetahuan, praktis, NROD.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the Study

According to the World Health Organization (2014), cancer is the uncontrolled growth and spread of cells. It can affect almost any part of the body. The growths often invade surrounding tissue and can metastasize to distant sites. Many cancers can be prevented by avoiding to common risk factors, such as tobacco smoke. In addition, a significance proportion of cancers can be cured, by surgery, radiotherapy or chemotherapy, especially if they are detected early. The National Cancer Society Malaysia (2014), states that an estimated number of 90,000 to 100,000 people in Malaysia living with cancer at any one time, with less than 10% of cancers happening in children compared to over 50% in men and 35% in women aged 50 and above.

The most frequent cancers among Malaysians are breast, colorectal and lung cancer, with one in 19 Malaysians developing breast cancer, one in 33 developing colorectal cancer and one in 40 developing lung cancer (World Health Organization, 2008). Breast cancer is the most common cancer among women. The mortality and incidence rate of breast cancer has been continuously increasing. Many studies have consistently confirmed that low alcohol consumption and lactation can decrease the risk of breast cancer. Breast cancer is a malignant tumor that starts in the cells of the breast. A malignant tumor is a group of cancer cells that can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body. The disease occurs almost entirely in women, but men can get it, too. The female breast is made up mainly of *lobules* (milk-producing glands), *ducts* (tiny tubes that carry the milk from the lobules to the nipple), and *stroma* (fatty tissue and connective tissue surrounding the ducts and lobules, blood vessels, and lymphatic vessels). Most breast cancers begin in the cells that line the ducts (*ductal* cancers). Some begin in the cells that line the lobules (*lobular* cancers), while a small number start in other tissues (American Society Cancer, 2014).

Physical activity is defined as an activity that is planned, repetitive, structured, and purposeful, with the aim to improve or maintain one or more components of physical fitness, for example, endurance, body composition and muscular strength. Existing evidence strongly suggests that physical activity both during and post treatment can improve cardio-respiratory fitness, muscular strength, flexibility, vigour, physiological outcomes, nausea, physical well being, physical functioning, anxiety and overall quality of life. Regular exercise and activity in survivors of breast cancer has been linked to reductions in cancer related fatigue and nausea symptoms reduce rates of cancer recurrence, and improvements in immune system function (Sander, Wilson, Izzo, Mountford, & Hayes, 2012).

Furthermore, physical activity appears to minimise functional decline in cancer survivors, maintain or minimise bone loss, improve immune system function and reduce cancer related chronic diseases (Stene et al., 2013). Previous studies also revealed that physically active women could reduce their risk of breast cancer by approximately 20-30% compared with inactive women (Miyawaki, Shibata, Ishii, & Oka, 2014). Since breast cancer patients are at high risk, it is important to determine their knowledge and practices on physical activity interventions against cancer prognosis.

## **1.2 Problem statement**

Breast cancer is a serious health problem if does not detected early in many countries. In Malaysia, breast cancer has affected all sectors including high income people. Although the additional effect of exercise in breast cancer has been investigated in numerous studies throughout the last few decades, due to the wide variety in the status of patients in such areas as disease stage, associating co-morbid conditions, and physical function, to date there has been no clear consensus or standard approach that has been agreed upon in terms of exercise in breast cancer patients, despite recent systematic reviews and meta-analyses published on the effect of exercise interventions (Eyigor & Kanyilmaz, 2014).

Based on the previous study shows that physical activity gives a lot of benefits but, the studies showed not many breast cancer survivors involved in the activity (Valenti et al., 2008). There also have relationship between selected demographic data and practices on physical activity. So, this study will be able to see the association based on those variables because some study had proof that such as age, occupational status, level of education, marital status and financial status can influence the practices towards physical activity. The effect of physical activity on breast cancer patients is unknown, but physical activity might improve prognosis through beneficial effect on cancer biomarkers and energy balance, as well as decreasing risk for cardiovascular disease, an important death for many cancer patients (Valenti et al., 2008). However, studies pertaining to explore the patients' knowledge and practices were limited and not reported particularly in Malaysia. Thus, this is the time to conduct such a study in order to determine the patient's knowledge and their practices on physical activity interventions.

## **1.3 Objectives of the study**

### ***1.3.1 General objective***

The objective of this study is to determine the knowledge and practices on physical activity among breast cancer patients in Nuclear, Radiotherapy and Oncology Department (NROD), Hospital Universiti Sains Malaysia.

### ***1.3.2 Specific Objectives***

The specific objectives for the study are:

1. To determine the level of knowledge and practices on physical activity among breast cancer patients in NROD, Hospital USM.
2. To determine the association between selected demographic data (age, occupational status, marital status, level of education and financial status) with the practices on physical activity among breast cancer patients in NROD, Hospital USM.

### **1.4 Research Questions**

The research questions are as follow:

1. What are the level of knowledge and practices of breast cancer patients in NROD regarding physical activity interventions?
2. Is there any association between selected demographic data (age, occupational status, marital status, financial status and educational level) with the practices on physical activity among breast cancer patients in NROD?

### **1.5 Research Hypothesis**

1. Null hypothesis,  $H_0$ : There is no significance association between selected demographic data (age, occupational status, marital status, level of education and financial status) with the practices on physical activity among breast cancer patients in NROD.

Alternative hypothesis,  $H_A$ : There is a significance association between selected demographic data (age, occupational status, marital status, level of education and financial status) with the practices on physical activity among breast cancer patients in NROD.

## **1.6 Definition of Term (Conceptual and Operational)**

### **1.6.1 Knowledge on physical activity**

According to Merriam-Webster (2014), knowledge is “the fact or condition of knowing something with familiarity gained through experience or association”. While, physical activity is defined as any bodily movement produced by skeletal muscles that require energy expenditure (World Health Organization, 2014). So, knowledge on physical activity is a fact or condition of knowing physical activity gained through experience or association. In this study, the operational term for knowledge on physical activity is used to assess the general knowledge related to physical activity among breast cancer patients by using five questions which are comprise of: have you ever heard and read the important of physical activity among breast cancer, physical activity can reduce the risk of getting breast cancer, physical activity is only beneficial to cardiovascular problem and obesity people and the side effect of breast cancer treatment can be reduce by physical activity.

### **1.6.2 Practice on physical activity**

Practice on physical activity is the activity of doing any bodily movement produced by skeletal muscles that require energy expenditure again and again in order to become better at it or regular occasion at which you practice physical activity that is done often or regularly (Meriam-Webster, 2014). The operational of definition for physical activity by Godin, 2011 consist of two questions about the type of exercise and the frequency on doing exercise.

### **1.6.3 Breast cancer patient**

Breast cancer patient is a person who is under treatment or care regarding the cancer that forms in tissues of the breast (National Cancer Institute, 2014). Breast cancer usually occurs in women and for this study; breast cancer patient is a person who are treated as outpatients in NROD, Hospital USM.

## **1.7 Significance of the study**

Physical activity has been found to play a role in the prevention of certain type of malignancies, including breast, colon, and other cancers. An increasing amount of evidence indicates that physical activity may affect prognostic outcomes in certain cancer diagnoses, especially breast cancer. Structured exercise and physical activity interventions can be helpful in addressing specific survivorship issues, including overall quality of life, cancer-related fatigue, cardiorespiratory impairment, and lymphedema. Exercise also may be helpful during the palliative care phase to alleviate symptoms and increase physical well being (Eickmeyer, Gamble, Shahpar, & Do, 2012).

This study is important to determine the knowledge and practices on physical activity interventions among breast cancer patients in NROD, Hospital USM. This study also can give the awareness regarding the importance of physical activity for them to sustain and achieve the maximum quality of life. Sometimes, people who had greater knowledge about breast cancer risk factors had lower awareness of the connection to physical activity than people with less knowledge. The finding of this study will benefit to breast cancer patients in NROD, Hospital USM that is fighting the cancer prognosis.

## **1.8 Outline of the Thesis**

The research thesis consists of six chapters. Chapter One provides a presentation of background of the study related to knowledge and practices on physical activity among breast cancer patients. This is followed by the problem statement, research objectives, research questions, research hypothesis, and significance of the study and definition of operational terms used in this thesis. Finally the chapter concludes with the thesis structure. Chapter Two details, a review of the literature review which serves as the basis for generating the research questions and the Health Promotion Model (HPM) as the conceptual framework used in this study. Chapter Three describes the research methodology underpin the phase of the research study. Chapter Four outlines the results of the study. In Chapter Five, the discussion chapter, all the research information drawn from the research study is summarized and discussed with reference to the research questions and finding. Strength and limitation of the study are discussed at the end of this chapter. Chapter Six provides the conclusion and discussed the implications arising from the practices on physical activity among breast cancer patients in NROD.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

Chapter two composed of four sections related to the important of physical activity among breast cancer patients including the breast cancer treatment, physical activity as intervention, relationship between selected demographic data with physical activity interventions, and Conceptual Framework which is HPM.

#### 2.2 Breast cancer treatment

There are several types of treatment for breast cancer which are surgery, radiation therapy, chemotherapy, hormone therapy, targeted therapy and bone-directed therapy. Most women with breast cancer have some type of surgery. Surgery is often needed to remove a breast lump or a segment of the breast only or may be in the mastectomy (Malaysia Oncology Society, 2012). In both cases, the glands in the axilla need to be removed and checked for the presence and spread of cancer cells. The breast can be reconstructed at the same time as surgery or later on. For many patients, surgery will be combined with other cancer treatments, such as chemotherapy, hormone therapy or radiation therapy (Malaysia Oncology Society, 2012).

These nonsurgical treatments may be administered before surgery (neoadjuvant therapy) or after surgery (adjuvant therapy) to prevent cancer growth, spread or recurrence (Cancer Treatment Centers of America, 2014). Surgical technique used in the treatment of breast cancer can lead to both acute and late complications or side effects, which have the ability to influence a woman's physical and psychological recovery. Combining other treatment methods, such as radiation and chemotherapy, with surgery also contributes to post-operative complications such as infection, impaired wound healing, altered pulmonary or renal function, haematomas, seromas, upper arm, or breast chest wall pain and the development of deep vein thrombosis (Smeltzer, Bare, Hinkle & Cheever, 2010). A short term effects typically occur during the course of treatment and normally resolve within a few months of completion. In comparison, long term effects will usually occur after treatment has completed and may have prolonged impacts lasting for many years.

Pain has been frequently described side effect, with one report suggesting 21% of breast cancer survivors still experience some form of pain four years post surgery. Impairment of physical functioning is also common and includes reduced range of motion in the shoulder, reduced grip and upper body strength, and increase in arm volume (lymphoedema). The main possible long term of removing axillary lymph nodes is lymphoedema (swelling) of the arm. Because any excess fluid the arm normally travels back into the bloodstream through the lymphatic system, removing the lymph nodes sometimes blocks the drainage from the arm, causing this fluid to build up. This results in arm swelling (lymphedema) (American Cancer Society, 2014).

More than half of patients with breast cancer receive a form of radiation therapy or radiotherapy at some point during treatment. Radiotherapy may be used to cure cancer such as thyroid carcinomas, localized cancers of the head and neck and cancers of the uterine cervix. Radiotherapy may also be used to control malignant disease when a tumor cannot be removed surgically or when local nodal metastasis is present, or it can be used neoadjuvantly (prior to local definitive treatment) with or without chemotherapy to reduce the size of a tumor to enable surgical resection. Radiation therapy may be used prophylactically to prevent the spread of a primary cancer to a distant area (eg, irradiating the brain to prevent leukemic infiltration or metastatic lung cancer) (Smeltzer et al., 2010). The most common acute side effects include cough, pain in the breast, chest wall or axilla, pulmonary symptoms such as shortness of breath (dyspnoea) and skin reactions. Fatigue and lymphoedema also can occur as acute or late side effects.

There are two types of chemotherapies which are called as adjuvant chemotherapy and neoadjuvant chemotherapy. When therapy is given to patients with no evidence of cancer after surgery, it is called adjuvant therapy. Adjuvant therapy is used to kill any cancer cells that may have been left behind or spread but cannot be seen, even on imaging tests. If these cells are allowed to grow, they can establish new tumors in other places in the body. Adjuvant therapy after breast-conserving surgery or mastectomy reduces the risk of breast cancer recurrence (American Cancer Society, 2014). Neoadjuvant chemotherapy does have two benefits. First, chemotherapy may shrink the tumor so that it can be removed with less extensive surgery. That is why neoadjuvant chemotherapy is often used to treat cancers that are too big to be surgically removed at the time of diagnosis (called *locally advanced*).

Besides that, by giving chemotherapy before the tumor is removed also important for doctors to see how the cancer responds. If the first set of drugs does not shrink the tumor, the doctor will know that other drugs are needed. Usually, acute side effects associated with chemotherapy include fatigue, loss of energy, difficulties sleeping, depression, and difficulty in concentrating, anxiety, nausea, vomiting, and loss of appetite, diarrhoea, hair loss, and sore mouth. Long term side effects and complications are increased levels of hot flushes or sweats, anticipatory nausea, loss of sexual interest, weight gain, infertility, cardiac dysfunction and possible cognitive impairments (Demark-wahnefried, Pinto, & Gritz, 2014).

### **2.3 Physical activity as an intervention**

Physical activity can promote health and prevent the onset of disease including type 2 diabetes and osteoporosis, cardiovascular disease, forms of cancer, obesity and injury (Victorian Health Promotion Foundation, 2010). Numerous interventions, programs and support groups are available to cancer patients to assist in their recovery and to decrease the impact of these side-effects and complications. Interventions involving exercise or physical activity have capacity to positively affect recovery both physically and psychologically, due to the many and varied effects that can have on the human body. The cardiovascular, endocrine, immune, musculoskeletal and neurological systems of the body are all influenced to some degree when a person participates in exercise. As a consequence, physical activity offers a holistic approach, encompassing not only the emotional and physical recovery from cancer, but with far-reaching effects on a person's general health and well-being (Harrison, 2008).

The studies to find out whether physical activity can prevent cancer recurrence or slow the progression of disease are limited. But studies have shown that regular physical activity can reduce anxiety and depression, boost self-esteem, improve mood, and reduce symptoms of fatigue, nausea, pain, and diarrhoea. These benefits can be gained through moderate physical activity on most, if not all days of the week. Moderate activities are those that make you breathe as hard as you would during a brisk walk. Activities like biking, walking, and swimming are considered moderate, and so are activities like yard work and brisk house cleaning. Adults should try to get at least 150 minutes of moderate intensity or 75 minutes of vigorous intensity activity each

week (or a combination of these). Its best if this can be spread throughout the week. And, try to limit the amount of time you spend sitting (American Cancer Society, 2013).

Cancer related fatigue (CRF) is defined as distressing persistent, subjective sense of emotional, physical, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning (Harrison, 2008). CRF is one of the most common and concerning symptoms for patients throughout the spectrum of oncologic diagnoses, not only during the active phase of treatment but often persisting among disease-free survivors (Eickmeyer, Gamble, Shahpar & Do, 2012). The rationale for physical activity as an intervention for CRF is that the effects of cancer treatment combined with reduced levels of physical activity during treatment decrease a person's capacity for physical performance.

Cardiovascular impairment and the presence of depressive symptoms were identified in one study as the two main correlates of long term fatigue among breast cancer survivors. Other study has demonstrated that both cardiovascular impairment and depression can be positively influenced by regular physical activity. Physical activity interventions early after treatment therefore have the potential to not only reduce fatigue, but to positively impact of these co-morbid conditions in the longer term (Harrison, 2008).

#### **2.4 Relationship between Selected Demographic Data and Practices on Physical Activity**

Regular physical activity provides people with important physical, emotional and social health benefits. In spite of these benefits, a rapid decline in physical activity among community has been observed (Park & Kim, 2008). In order to plan and implement intervention to increase physical activity, we need to determine the factors that play a role in affecting physical activity in breast cancer population. However, there are still under explanation on the relation of physical activity among breast cancer patients.

## *Age*

Age and sex were the most consistent demographic correlates physical activity behaviour among community including in breast cancer patients. As people became older, the level of physical activity decreased (Park & Kim, 2008). But age does not necessarily predispose an individual to lower activity. As we just saw, factors associated with a person's job (e.g., conflicts with leisure time or a false perception of adequate physical activity at work) or disposable income (e.g., leisure physical activity may be a low-priority expense) that created barriers to exercise during middle age may diminish during retirement. Studies have also examined personal determinants of physical activity in younger age groups. A review of some studies published between 1970 and 1999 examined determinants of physical activity in children and adolescents.

Among children, negative associations with physical activity were found for previous physical inactivity, lack of access to programs or facilities, and time spent indoors. Some of the variables negatively associated with physical activity in adolescents were nonparticipation in community sports, being sedentary after school and on weekends, sibling's nonparticipation in physical activity, previous physical inactivity, lack of parents' support and lack of opportunities to exercise or access to facilities or programs (Dishman, Heath, & Lee, 2013).

## *Occupational status*

Employed people usually tend to have limited time for exercise. Lack of time is consistently reported as a major constraint on participation in physical activity. People perceive that they have less discretionary time for exercise and sporting activities (Victorian Health Promotion Foundation, 2010). Other study stated that, being employed was associated with the likelihood of meeting walking guidelines. It means that, being employed will be active in physical activity. However this factor was not significant in either the active transportation domain or in leisure time walking. It suggests that walking within working hours appreciably contributes to daily walking. Nevertheless, a number of studies have confirmed an increase of physical activity as a result of having more free time in the retirement period (Pelclová, Vašíčková, Frömel, & Djordjević, 2009).

### ***Educational level***

In particular, the current findings seem to suggest individuals' reliance on employment as a major source of physical activity results in precipitous declines in physical activity as they move through early old age and transition out of the workforce. In contrast, for individuals with higher levels of education, work is not as strongly associated with physical activity and may in fact detract from it. Thus, when highly educated individuals leave the workforce, it is unlikely that they are losing their main source of activity and may actually be freeing up time to engage in leisure-time physical activity (McNeill, Kreuter, & Subramanian, 2006).

Such a finding has important intervention implications for aging adults with low levels of education. In particular, these findings suggest that developing and promoting opportunities for physical activity among aging individuals with low levels of education who have recently transitioned out of the formal workforce should be a major public health priority (McNeill, Kreuter, & Subramanian, 2006). Recent Australian research has found that higher educational levels are associated with increased physical activity. People with higher levels of education may be more informed of the health consequences of certain lifestyle behaviours, leading them to exercise more often (Australian Bureau of Statistics, 2011).

### ***Marital status***

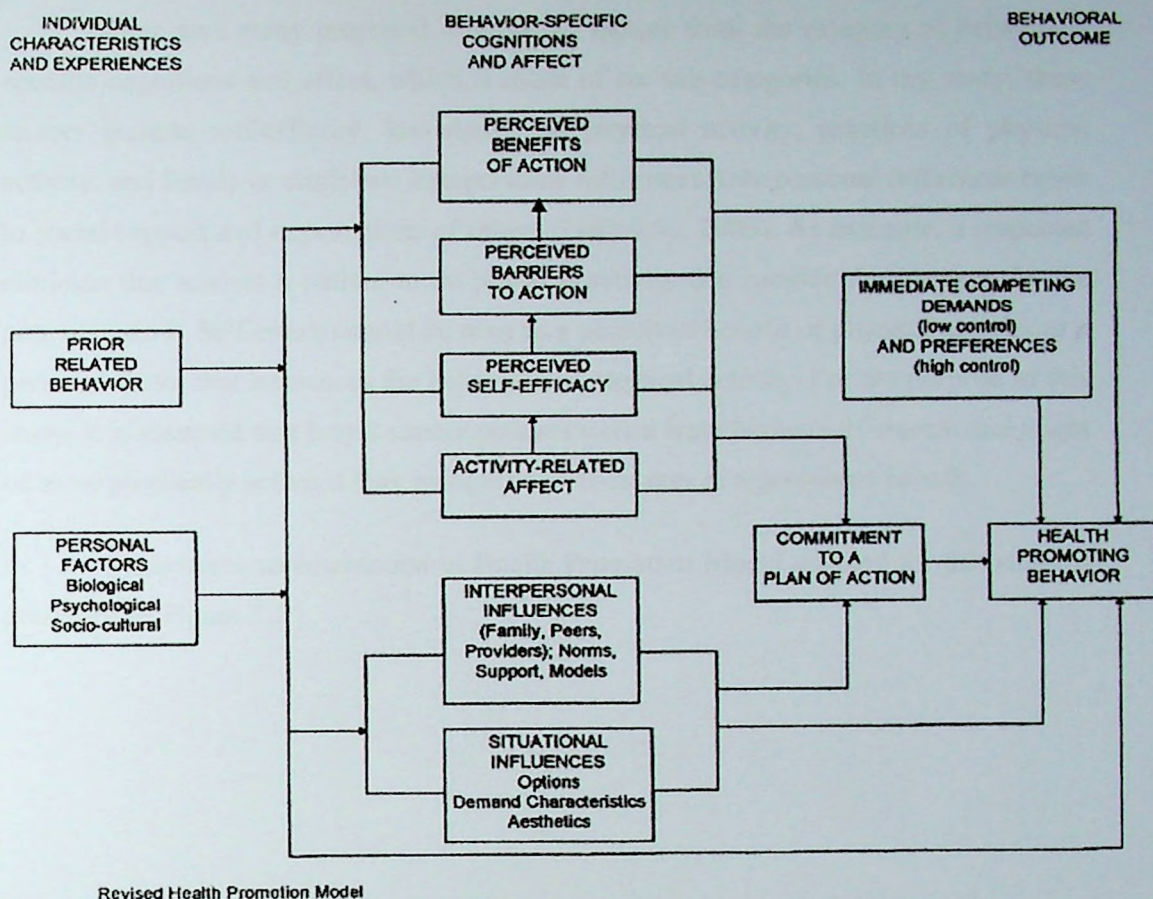
Current literature is ambiguous as how marriage impacts physical activity. The domestic and social responsibilities of marriage may decrease the available time for activity, but the presence of an active partner may bolster motivation for physical activity. When people already married, they will be parenthood especially having newborn. New parents have often mentioned feeling exhausted and overwhelmed with the responsibilities of caring for a new born. This period of adjustment may drastically reduce the time once used for physical activity. Further, the ability to be active may be related to the roles each parent assumes in raising the child. Women may feel that they have fewer opportunities to be active than males because they devote more time caring for their child and performing domestic responsibilities (Hull et al., 2011).

### ***Financial status***

Financial income may also influence a person's level of physical activity. There is a relationship between lower socio-economic status and reduced participation in physical activity, which may be due in part, for example, greater child-minding responsibilities, higher levels of disability, to limited financial resources, higher levels of psychological distress, or long hours in manual work, all of which affect people's capacity for participation (Australian Bureau of Statistics, 2011). The study finds that men and women from low socioeconomic groups have insufficient physical activity to benefit health (Park & Kim, 2008).

### **2.5 Conceptual Framework: Health Promotion Model (HPM)**

The behavioural of physical activity is the result of a complex casual web that involves several types of variables, rather than just one type. Fifteen studies used theoretical framework including Pender's Health Promotion Model (HPM) (Park & Kim, 2008). The Health Promotion Model was proposed by Nola J Pender in 1982 was designed to be a complementary counterpart to models of health protection. Health promotion is defined as behaviour motivated by the desire to increase well-being and actualize human health potential (Nursing Theories, 2008). The model focuses on three areas which are individual characteristics and experiences, behaviour specific cognitions and affect and behavioural outcomes (Nursing Theories, 2012) (see Figure 2.1). The study focus on the practices of physical activity among breast cancer patients. Health promoting behaviours should result in improved health, enhanced functional ability and better quality of life at all stages of development (Park & Kim, 2008).

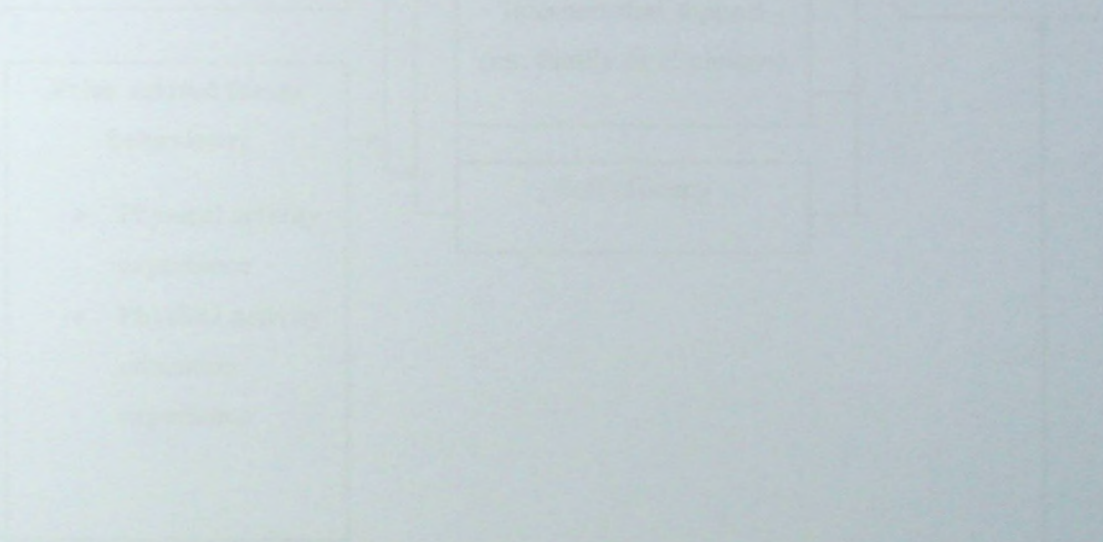


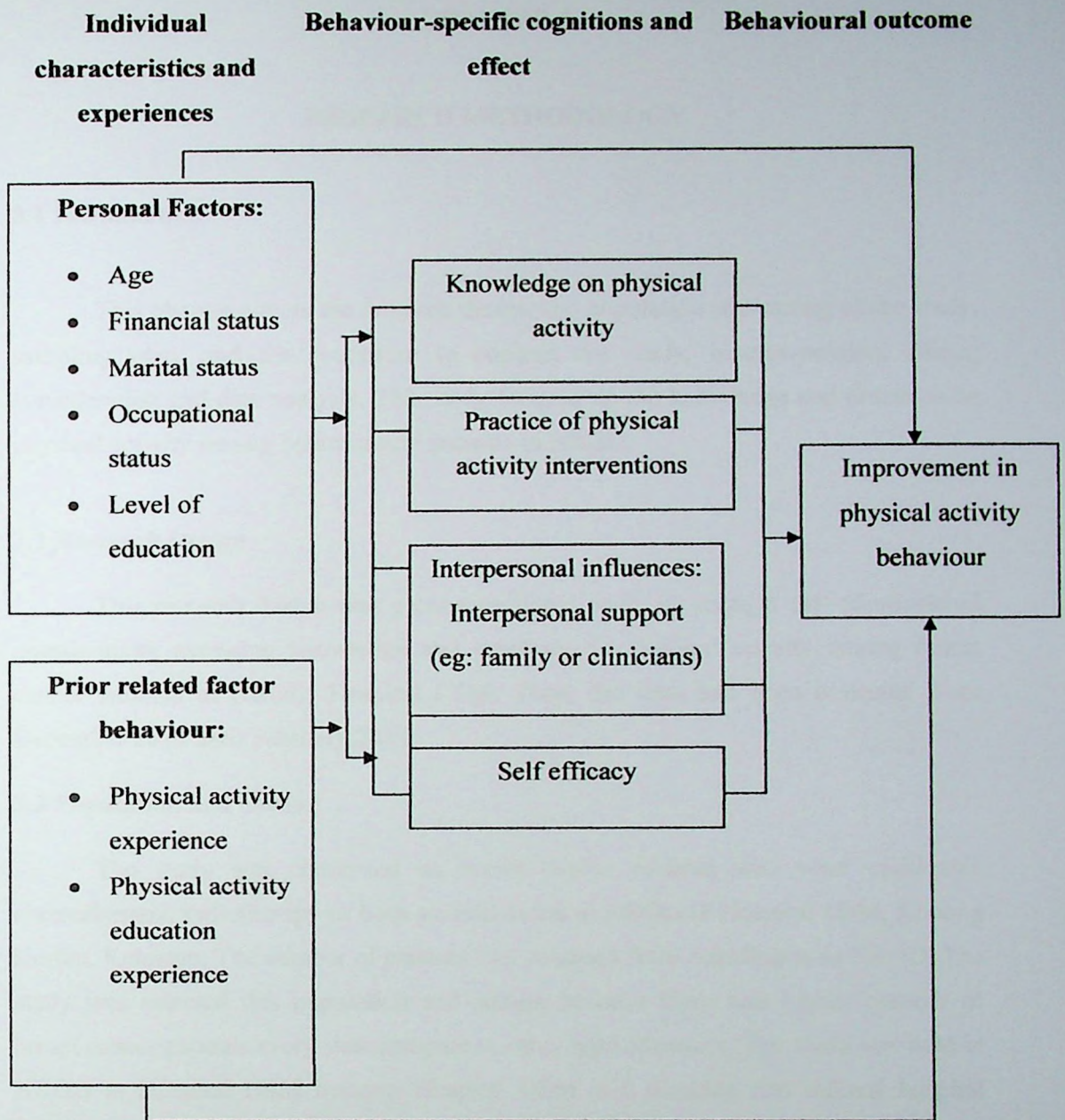
**Figure 2.1 Revised Health Promotion Model (HPM) (Pender, 1996)**

The Health Promotion Model (HPM) categorizes the factors influencing behaviours similar to the Health Belief Model (HBM). Modifying factors, cognitive-perceptual factors and variables influencing the likelihood of action, are delineated. The HBM is a health protective model, whereas the HPM is focused more on achievement of higher levels of well-being and self-actualization (Galloway, Texas, & Marcos, 2003). Within the HPM are many variables that have been proposed as factors that influence one's physical activity. For my study, a personal factor is broken into the categories of socio-demographic data which are age, marital status, level of education, financial status and occupational status that are proposed as influencing factors of practices on physical activity. For example, as an individual's income increase, there is greater likelihood the participant will engage in physical activity. This aspect provides meshing of the HPM with the concept of self-actualization (Galloway, 2003).

There also many proposed influencing factors from the category of behaviour-specific cognitions and affect, which is made of six sub-categories. In my study, these factors include self-efficacy, knowledge on physical activity, practices of physical activity, and family or clinicians interpersonal influences. Interpersonal influences relate to social support and expectations of others (Galloway, 2003). As example, a respected clinician that advises a patient to do physical activity can provide the impetus for the patient to do it. Self esteem could be seen as a perceived benefit of physical activity or a personal factor that influences the behaviour of physical activity. For the purpose of this study, it is assumed that breast cancer patients would want higher self-esteem and might be more physically active if they recognized self-esteem as a perceived benefit.

A schematic representation of Health Promotion Model adapted for this study is presented as Figure 2.2





**Figure 2.2: Conceptual Model: Health Promotion Model and study variables of individual's practice on physical activity intervention.**

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter covers the research design, the population and setting of the study, sampling plan, and the procedure to conduct the study, instrumentation, ethical consideration and data analysis. This study focused on the knowledge and practices on physical activity among breast cancer patients in NROD.

#### **3.2 Research Design**

This research design was a cross-sectional study by using a self-administered questionnaire assessing knowledge and practices on physical activity among breast cancer patients in NROD, Hospital USM. Then, the data had been collected from December 2014 until February 2015.

#### **3.3 Population and Setting**

The study was conducted on breast cancer patients who were undergone chemotherapy, radiotherapy or both as outpatients at NROD in Hospital USM, Kubang Kerian, Kelantan. The number of patients was obtained from coordinator in NROD. The study was selected this population and setting because there was higher number of breast cancer patients every year compare to other type of cancer. The study was held in NROD in Hospital USM because Hospital USM is a teaching and referral hospital which is situated in urban area.

### **3.4 Sampling Plan**

#### **3.4.1 Sample**

When conducting the research, certain inclusion and exclusion criteria were been applied. The inclusion criteria were characteristics that the prospective respondents must have if they were available to be included in the study. While, exclusion criteria were those characteristics that were disqualify prospective respondents from inclusion in this study.

#### **Inclusion criteria**

1. Only women with diagnosed with breast cancer.
2. Aged 18 years and above.
3. All breast cancer patients who were undergoing chemotherapy, radiotherapy or both treatments at Nuclear, Radiotherapy and Oncology Department (NROD).
4. Breast cancer patients who understand, able to speak and wrote in Bahasa Malaysia or English.
5. Willing to participate in the study.

#### **Exclusion criteria**

1. Having difficulty in understanding the questionnaire or communicate in Bahasa Malaysia or English.
2. Mentally unstable.

#### **3.4.2 Sampling Method**

This study was used a non-probability purposive sampling method. This sampling method was selected breast cancer patients treated as outpatients undergoing chemotherapy, radiotherapy or both at NROD because they met specific criteria based on inclusion and exclusion criteria.

#### **3.4.3 Sample Size**

According to the statistic population reported in NROD, the total population which was started from December 2013 until January 2014 was 135. The researcher used Raosoft sample size calculation software to calculate the sample size and to ensure the accuracy by avoiding sampling error during representatives and parameters of the

sample. To determine the sample size, an analysis was conducted by using Raosoft with a confidence level 95% and a margin error that was been tolerated amount 0.05, thus the recommended sample size for breast cancer patients in Nuclear, Radiotherapy and Oncology Department (NROD) were 101. Then, the drop out for this study, 10% of calculated sample size was recorded. Therefore, the total patients involved for this study were:

$$= 101 + \text{drop out of } 10\%$$

$$= 101 + 10.1$$

$$\approx 111 \text{ patients}$$

### **3.5 Variables**

There were two types of variable for this study which were independent and dependent variables. The independent variable had been selected based on the demographic data. The demographic data included age, level of education, occupational status, financial status and marital status had been measured according the self reported. The variable for dependent was the practices on physical activity among breast cancer patients in NROD.

#### ***3.5.1 Variables Measurement***

In section A, the independent variable was selected socio-demographic data. The demographic data were included age, educational level, financial status, marital status and occupational status. Patients required to tick in the box that best suit with them.

In section B, the questions on the knowledge of physical activity on breast cancer was calculated computing the sum of the items in the scales which were range from one to three. The scale score had started from 1 for (incorrect answer), 2 for (I don't know answer) and 3 for (correct answer). The maximum obtainable score was 15 where a score with range from 13 to 15 was taken as excellent knowledge on physical activity among breast cancer patients, 8 to 12 denoted for average knowledge and 0 to 7 was indicated for poor knowledge.

In section C, practices of physical activity were assessed by the Leisure Time Index (LSI) of the Godin Leisure-Time Exercise Questionnaire. The LSI assessed the

average frequency of mild, moderate and strenuous intensity exercise during free time in a week. The leisure time physical activity score was expressed in units. The weekly frequencies of strenuous, moderate, and mild activities were multiplied by nine, five and three respectively for the first question. The total weekly leisure activity score had been computing in arbitrary units by summing the products of the separate components, as shown in the following formula (Godin-, Leisure-, Physical, & Questionnaire, 2011).

Weekly leisure-time activity score = (9 x Strenuous) + (5 x Moderate) + (3 x Mild) + units in question 2.

Then, the second question was used to determine the often engaged in any regular activity that long enough to work up a sweat by using three categories which were one unit for never answered, two units for sometimes and three units for often answered regarding the frequency of weekly leisure time activity “long enough to work up a sweat”.

Then, after scoring the physical activity in units, we can adopt by the following rule:

- 24 units or more: Active (Substantial benefits)
- 14 to 23 units: Moderately active (Some benefits)
- Less than 14 units: Insufficiently active (Less substantial or low benefits)

### **3.6 Instrumentation**

#### **3.6.1 Instrument**

A self-administered questionnaire had been used in this study. The questionnaires were categorized into three sections as follows:

Section A: The demographic data which comprised of five questions that included age, occupational status, marital status, level of education and financial status. The age had been filled by respondents and depends on the year of birth. For occupational status, respondents had been choice government servant, private sector, unemployed or others. For marital status, the respondents had been choice either single, married, divorce or widowed. Then, for educational level primary, secondary, college or university had been choice by the respondents. Lastly, respondents had been choice the financial

status according their income per month which was range from RM500 to RM1000, RM1100 to RM 1500 or more than RM 2000.

Section B: There were five questions in this section regarding general knowledge of physical activity among breast cancer patients. A correctly answered question attracts '3' marks, I don't know attracts '2' marks, and incorrect answer attracts '1' marks. The maximum obtainable score was 15 while the least obtainable was 7. So, a score 13-15 was taken as excellent knowledge on physical activity among breast cancer patients, 8 to 12 denoted for average knowledge and 0 to 7 was indicated for poor knowledge.

Section C: This section comprised of two main questions regarding practice on physical activity among breast cancer patients. The average frequency of mild, moderate and strenuous intensity exercise during free time in a week had been assessed among breast cancer patients. The leisure time physical activity score was expressed in units. The weekly frequencies of strenuous, moderate, and mild activities were multiplied by nine, five and three respectively. Then, the score for active in physical activity was 24 units and more, 14 to 23 units for moderately active and less than 14 units for insufficiently active.

### ***3.6.2 Translation of Instrument***

The instrument used in this study had been translated from English language to Malay language for easy to understand by the respondents during fill form. By using forward and backward translation, the instrument had been translated adjust to new version. First, the instrument had been translated into Bahasa Malaysia version by an expertise from Pusat Pengajian Bahasa Literasi dan Terjemahan Universiti Sains Malaysia (USM). After the Bahasa Malaysia version was done, this new version of questionnaires had been translated again into English version by another expertise. The processed of this translation was to maintain the original meaning of the questionnaire. Then, the instrument had been distributed to three content experts. If all of three content experts agreed, the instrument in new version was remained. If two content experts agreed, the new version of instrument had been taken too. If none content expert agreed, the instrument had been do again.

### ***3.6.3 Validity and Reliability of the Data Collection Instrument (Pilot study)***

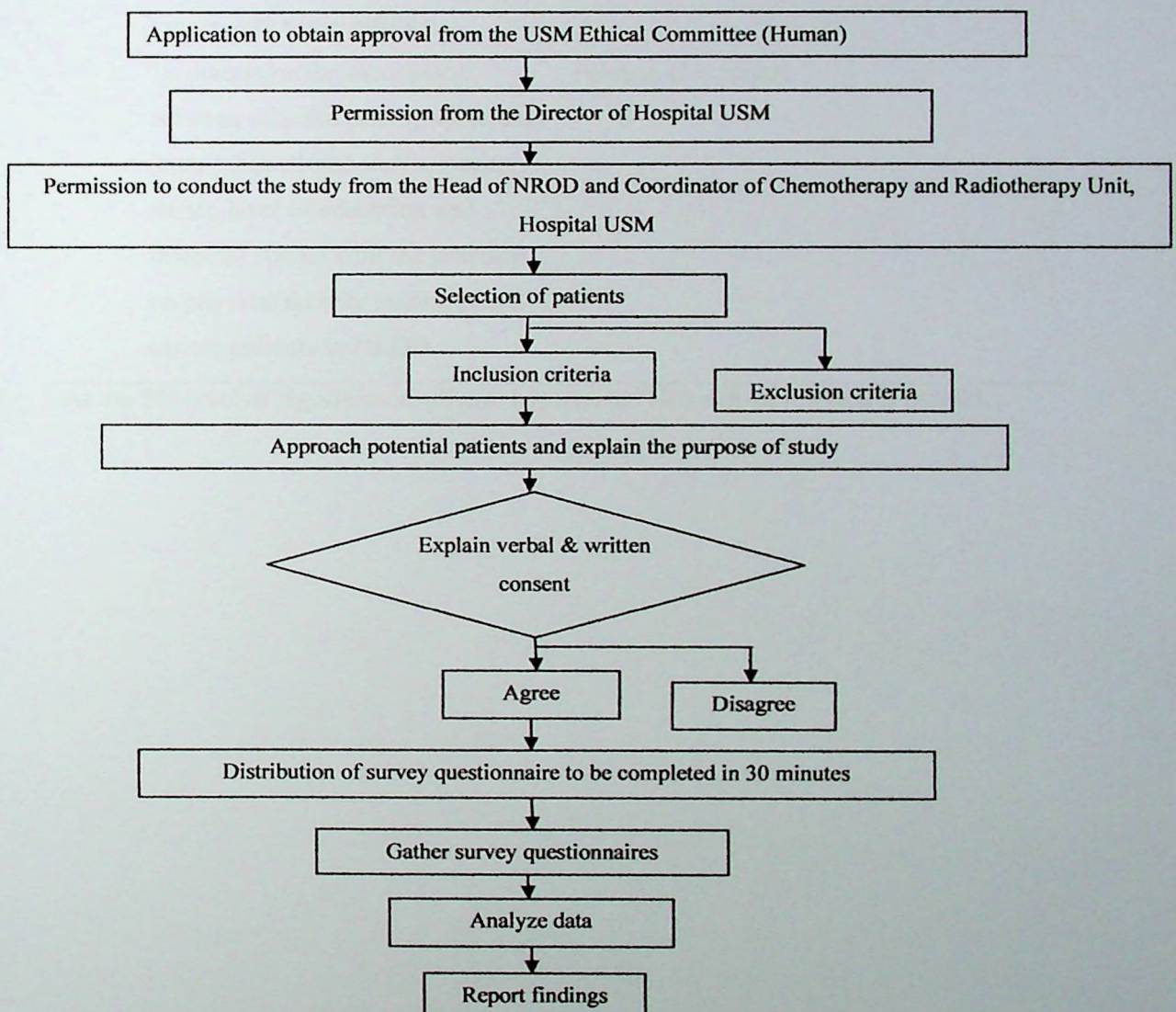
In research, the issue of validity and reliability of the data collection instrument was important in order to make sure the patients are treated ethically. One approach which was pilot testing was used to check for validity of the research instrument tool had been performed to construct validity. For this study, the instrument used was being modified and translated set of questionnaires. The validity and reliability of questionnaires were established from the previous researcher and the Cronbach's alpha is 0.93, (Godin, 2008). Since, the previous study were used the questionnaires in different setting and population, the questionnaires were been checked by nursing lecturer in the aspect of content and face validity. Questionnaires had been undergoing content validity and pilot study (10% from the total sample size) before the real study had been started to test its reliability. The pilot study was important to know that the questionnaire was easy to understand and answered. For this purpose, pilot study was conducted on 10 samples of patients from breast cancer patients in NROD to test the reliability. The Cronbach's alpha for the study was 0.73.

### **3.7 Ethical Considerations**

The study was conducted upon gaining approval from the Human Research Committee (HREC), Universiti Sains Malaysia. Permission for collect data was obtained from Director of Hospital Universiti Sains Malaysia, Head of Nuclear, Radiotherapy and Oncology Department (NROD), Coordinator of Chemotherapy and Radiotherapy Unit, Hospital USM. The written consent was a solid evidenced that verify the patients agreed to participate in this study. For the ethical issues, patients were informed that all of the information gathered in this study was strictly confidential and was used only for this study and academic purpose. Explanation on the purposes of the study was given to the patients prior to survey. Apart from that, how they were involved and their rights to discontinue from the study were honestly explained to them. They were informed that confidentiality and anonymity would be protected.

### 3.8 Data Collection

After approval from the Human Research Committee (HREC), University Sains Malaysia (USM), and permission for data collection was permitted from Director of Hospital USM, patients were approached. Written consents were sought from patients who fulfilled the inclusion criteria and were willing to take part in the study. After consents were obtained, patients were briefed and got questionnaires to fill up. Then, the questionnaires were collected after 30 minutes, so that they have adequate time to complete the questionnaires before or after treatment. Data collections were carry out from December 2014 until January 2015. Figure 3.1 illustrates the data collection procedures of research at study site.



**Figure 3.1: Flow Chart Outlining of Data Collection Procedures**