

**WHAT ARE THE SOCIO-DEMOGRAPHIC  
VARIABLES THAT CAN INFLUENCE HEALTH  
RELATED BEHAVIORS? A CASE AMONG  
PATIENTS WITH NON-COMMUNICABLE  
DISEASES (NCDS) IN QUEEN ELIZABETH  
HOSPITAL.**

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**DISSERTATION SUBMITTED IN PARTIAL  
FULFILLMENT FOR THE DEGREE OF MASTER  
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**SCHOOL OF BUSINESS AND ECONOMY  
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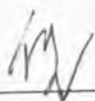
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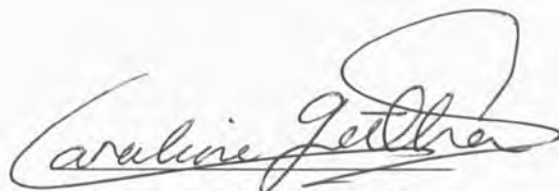


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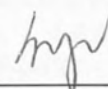
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## DECLARATION

I hereby declare that the material in this dissertation is my own except for quotations, excerpts, equations, summaries and references, which have been duly acknowledged.

11 July 2011



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## CERTIFICATION

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## ABSTRACT

### **WHAT ARE THE SOCIO-DEMOGRAPHIC VARIABLES THAT CAN INFLUENCE HEALTH RELATED BEHAVIORS? A CASE AMONG PATIENTS WITH NON-COMMUNICABLE DISEASES (NCDs) IN QUEEN ELIZABETH HOSPITAL.**

The main purpose of this dissertation is to determine the influence of socio-demographic variables on the health related behaviors among NCD patients in Queen Elizabeth Hospital. Statistics revealed that non-communicable diseases (NCDs) which are chronic diseases are increasing worldwide contributing to increased mortality and morbidity. These behaviors were shown to be different according to socio-demographic factors. The socio-demographic variables identified as the independent variables were age, gender, income and education level. Meanwhile, the dependent variable that represents health related behaviors was measured using five dimensions. Fruit and vegetable consumption, alcohol consumption, smoking, interest in health promotion programs and exercise. All these dimensions were measured using likert scale. Sabah patients may differ in terms of perception and behavior due to different socio-demographic characteristics, region and culture that can contribute to different patterns of health related behaviors. Identifying these factors can contribute to effective counseling educational programs and creation of wellness centers tailored to the needs of local patients. This is a non-probability and purposive sampled study, conducted in Queen Elizabeth Hospital among 181 NCD patients. Questionnaire was used to interview subjects after obtaining verbal consent and collected for data analysis. Response rate was 100 percent. Respondents' characteristics were presented using descriptive statistics and frequency table. Cronbach's Alpha was used to test the reliability of the results. The value of 0.864 obtained showed that the results were reliable. Pearson Correlation and multiple regressions were performed for hypotheses testing. The results revealed that the socio-demographic variables had significant positive influence on health related behaviors. Socio-demographic variables influence significantly fruit and vegetable consumption, with positive influence from age. Socio-demographic variables influence significantly interest in health promotion programs, with positive influence from education level. Socio-demographic variables influence insignificantly alcohol consumption. However, gender has significant influence on alcohol consumption with males more likely to drink. Socio-demographic variables influence significantly smoking, with significant influence from age and gender. Socio-demographic variables influence significantly exercise, with positive influence from education level. As conclusion, socio-demographic variables such as age, gender and education level were shown to influence health related behaviors.

## ABSTRAK

### **APAKAH VARIABEL SOSIO-DEMOGRAFI YANG BOLEH MEMPENGARUHI PERILAKU BERKAITAN KESIHATAN? SEBUAH KES DI KALANGAN PESAKIT "NON-COMMUNICABLE DISEASES" (NCDs) DI HOSPITAL QUEEN ELIZABETH.**

Tujuan utama disertasi ini adalah untuk mengenalpasti pengaruh sosio-demografi terhadap perilaku berkaitan kesihatan. Statistik menunjukkan bahawa penyakit "Non-communicable" (NCDs) yang merupakan penyakit kronik semakin meningkat dan menyumbang kepada peningkatan mortaliti dan morbiditi. Kelakuan tersebut adalah berbeza mengikut sosio-demografi. Pembolehubah sosio-demografik yang dikenalpasti sebagai pembolehubah tetap adalah umur, jantina, pendapatan dan tahap pendidikan. Sementara itu, pembolehubah bersandar yang mewakili perilaku kesihatan diukur dengan menggunakan lima dimensi, iaitu pemakanan buah-buahan dan sayuran, pengambilan alkohol, tabiat merokok, minat terhadap program promosi kesihatan dan tabiat bersenam. Kesemua dimensi diukur dengan skalar Likert. Perilaku kesihatan pesakit Sabah mungkin berbeza dari segi persepsi dan kelakuan kerana ciri-ciri sosio-demografi, kawasan dan budaya yang berbeza boleh menyumbang kepada perbezaan corak perilaku kesihatan. Pengenalan faktor-faktor tersebut boleh menyumbang kepada program kaunseling, pendidikan efektif dan pengwujudan "wellness center" yang memenuhi keperluan pesakit tempatan. Kajian ini merupakan "non-probability" dan "purposive" yang dilakukan di Hospital Queen Elizabeth Sabah di kalangan 181 pesakit NCD. Borang soal-selidik diedarkan setelah mendapat keizinaan secara lisan. Sebanyak 181 borang soal selidik telah diedarkan dan dikumpulkan untuk analisis data. Kadar respons adalah 100 peratus. Ciri-ciri responden dipaparkan dengan statistik deskriptif dan jadual frekuensi. Kebolehpercayaan soal selidik diuji dengan menggunakan "Cronbach Alfa". Nilai 0.864 yang didapati menunjukkan bahawa soal-selidik tersebut boleh dipercayai. Korelasi Pearson dan Regresi Berbilang dilakukan untuk ujian hipotesis. Keputusan menunjukkan pembolehubah sosio-demografik mempunyai pengaruh yang positif dan signifikan ke atas perilaku kesihatan. Pembolehubah sosio-demografik mempengaruhi pemakanan buah-buahan dan sayuran secara positif, dengan umur. Pembolehubah sosio-demografik mempengaruhi minat terhadap program promosi kesihatan secara positif, dengan pengaruh positif daripada tahap pendidikan. Pengaruh pembolehubah sosio-demografik terhadap pengambilan alkohol adalah tidak signifikan. Namun, pengaruh jantina terhadap pengambilan alkohol adalah signifikan. Pembolehubah sosio-demografik mempengaruhi tabiat merokok secara signifikan dengan umur dan jantina. Pembolehubah sosio-demografik mempengaruhi tabiat bersenam secara positif dengan pengaruh positif tahap pendidikan. Kesimpulannya, pembolehubah sosio-demografik seperti umur, jantina dan tahap pendidikan dikenalpasti mempengaruhi perilaku kesihatan.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Non-communicable diseases (NCDs) kill 3 out of 5 people or 36 million annually. The main NCDs are cardiovascular diseases, cancers, chronic lung diseases and diabetes that share four modifiable risk factors: smoking, excessive alcohol consumption, poor diet and physical inactivity. A quarter of NCD deaths are from people aged less than 60 years, who are in the prime of their lives, while 9 in 10 of these people are from developing countries (WHO, 2011). Dr Shanthi Mendis (2011), WHO coordinator of the cardiovascular programme and the global programme for prevention and management of non-communicable diseases said 90 percent of these deaths occurred in the low and middle-income countries and 9 million of those who died because of non-communicable diseases were below the age of 60. According to the latest Malaysian Ministry of Health statistics (2011), 11.6 out of 16 million adults nationwide are sick with non-communicable disease (NCD). All predictions show the numbers are going to get worse, accounting to almost 51 percent of all deaths in the country. In the future, it is predicted that 7 out of 10 Malaysians adults will have at least one NCD like diabetes, heart-related diseases, hypertension and cancer (Cruetz, 2007). In the statistics published by WHO (2008), 50,367 males and 39,125 females died of NCDs in Malaysia. In Malaysia, the Disease Control Division of the Ministry of Health, which was created in 1992, focused on health promotion, early diagnosis and prompt treatment of NCDs like CVD, cancer and diabetes.

Currently, the major cause of death identified in America and other developed countries are chronic diseases such as heart disease, cancer and stroke. The epidemiologic transition from infectious to chronic diseases as leading causes of death, aging populations, increase in health care costs and findings showed that health behaviours increased risk of morbidity and mortality. This have promoted



interests of public, private and health professionals in lifestyle-change and screening programs (Glanz, 2008).

A study by Asiskovitch (2010) revealed that the expenditure on health related programs can influence health related behaviors. In addition the degree of contribution from private or public sector can also influence the effectiveness of the programs in influencing the health related behaviors. Asiskovitch (2010) carried a cross sectional analysis on 19 out of 30 OECD countries using data obtained from 1960 to 2008. The researcher found that positive health related behaviors among the respondents were due to the health care programs. This has helped to increase the life expectancy of the country. In countries like Australia, Germany, Ireland and Switzerland, public funding were relatively 25 percent higher compared to private funding. The life expectancy in all the countries mentioned above increased for both sexes. In contrast, countries like Canada, Sweden, Finland and Italy had private spending relatively higher than public funding. But its effectiveness in improving its life expectancy was much lower. Moreover, the effectiveness was also found to be higher among elderly compared to the young (Asiskovitch, 2010).

Health related behaviours such as smoking, diet, activity patterns and alcohol consumption are the most prominent contributors to mortality (Glanz, 2008; Kvaavik *et al.*, 2010; Stringhini *et al.*, 2010). As compared to those without poor health related behaviours, the mortality risk rose for each outcome as the number of poor health related behaviours increased with 96 percent adjusted cumulative survival in those without poor health related behaviours compared to 85 percent survival in those with four poor health behaviours (Kvaavik *et al.*, 2010). On the other hand, physical activity was associated with significantly lower mortality risk according to Kvaavik *et al.* (2010).

Over the pasts five decades, health education leaders have stressed the importance of political, economic and social factors as determinants of health (Glanz, 2008). To maintain good health related behaviors, economic status is crucial. The amount of income earned as well as the amount spent on drugs/herbs to maintain good health is good health related behaviors. Other than that, current



health status of individuals and lifestyle changes can also influence health related behaviors. Self-rated health questionnaire can measure the current health status, the intake of dietary supplements and the consumptions of fruits and vegetables. Body mass index and also the level of physical activity were also important dimensions. Meanwhile, lifestyle changes can be measured based on up-to-date information on diet, attendance on health care programs, types of beverage or alcohol consumed, regular health screening and finally emotional well being that includes relationships with family, friends and spiritual leaders. Cutler and Lleras-Muney (2009) reported that more educated individuals live longer than less educated individuals due to differences in health related behaviours. Access to resources can be accounted to approximately 30 percent of the education gradient in health behaviours.

Wannefried *et al.* (2000) believed the number of cigarettes consumed and the frequency on the visits to the fast food outlets should not be left out when the changes in life style are measured. Changes in life style can be distinguished into positive and negative to provide a better understanding in its relation to health related behaviors.

Deeks *et al.* (2009) used risk factors as important variables in influencing health related behaviors. If an individual is exposed to chemical exposure or even has a family history of malignancy, their risk perception will lead them to increase their attendance to health care providers, promote behavioral and lifestyle changes that can influence decisions regarding treatments.

According to Hawkins *et al.* (2010), cancer survivors were reported to be more likely to make positive change than negative change in health related behaviours. Positive behaviour changes can lead to reduced suffering, premature mortality and medical costs. Managed health care and increasing costs result in the growing importance of cost-effectiveness (Glanz, 2008). In contrast, there could also be negative changes after cancer diagnosis that lead to negative health related behaviours. Poor health status resulting in diminishing energy, motivation and increased depression was the most powerful predictor of negative health related

behaviour change. The findings were based on the study conducted by Hawkins *et al.* (2010) using SF-36® and the Rotterdam Symptom Checklist-Modified.

## 1.2 Research Problem

NCD is a global threat and is claimed to originate from weakness in maintaining positive health related behaviors. All NCDs share a small number of behavioural risk factors, which include a diet high in saturated fat and low in fresh fruit and vegetables, physical inactivity, tobacco smoking, and alcohol excess according to Unwin and Alberti (2006) and supported by the WHO (2011). Current health state, changes in lifestyles, economic status and risk factors were claimed to influence health related behaviors. All these factors were believed to have created unfavorable dietary behaviors and sedentary lifestyle that can increase NCD. Up to 80 percent of all cases of cardiovascular disease or type-2 diabetes and 40 percent of all cases of cancer, for example, are probably preventable based on current knowledge. By understanding health related behaviors, a base and guideline for health care programs can be jointly organized by both private and public sector to help change health related behaviors of individuals. According to the National Cancer Institute and the Texas Cancer Information (2011), the risk factors for cancer should be identified based on socio-demographic variables. By identifying the relationship between risk factors based on age, gender, lifestyle behaviors such as smoking, alcohol, poor diet and lack of physical activities with health related behaviors, effective wellness programs can be designed to promote positive health related behaviors. This is due to the overwhelming increase in the number of chronic diseases and the real challenges lie in postponing the disease to later years of life.

Therefore, studies influencing national diets and lifestyle changes are one of the key issues that need to be addressed. Updated and evidence-based recommendations for health care professionals on health related behaviors will prevent and control NCDs in the nation. Up-to-date, studies related to health related behaviors were focused on specific issues were like consumption of alcohol, smoking, sexual activities and cancer risk based on genetics. Unfortunately, health related behaviors are more complex and can be influenced by various factors at the

micro level. In addition, a great insight can be derived if these factors were distinguished based on socio-demographic characteristics that will help the private and the public sector in designing appropriate base and guidelines in managing health related behaviors.

With this, the aim of this study is to identify the influence of socio-demographic variables that can influence health related behaviors among the NCDs' patients. Therefore, the study seeks to address the following question. What are the socio-demographic variables that influence health related behaviors?

### **1.3 Research Questions**

The objective of the study can be achieved by answering the questions below:

- a. Can age of individuals influence health related behaviors?
- b. Can gender of individuals influence health related behaviors?
- c. Can economic status of individuals influence health related behaviors?
- d. Can education level of individuals influence health related behaviors?

### **1.4 Research Objective(s)**

The overall objective of this study is to identify the socio-demographic variables that influence health related behaviors among NCD patients. The specific objectives are as below:

- a. To investigate the influence of age on health related behaviors.
- b. To investigate the influence of gender on health related behaviors.
- c. To investigate the influence of education level on health related behaviors.
- d. To investigate the influence of income level on health related behaviors.

### **1.5 Scope of the Study**

The study aims to identify the factors that can influence health related behaviors based on socio-demographic variables such as age, gender, education level and income level. A cross sectional data obtained from a structured questionnaire would be used to interview the respondents. According to Coakes *et al.* (2010), around 80 respondents (four independent variables X twenty respondents = 80 respondents) will be selected based on non-probability purposive sampling method. The

respondents would be patients who are receiving treatment at the Queen Elizabeth Hospital in Kota Kinabalu. The structured questionnaire will be used as an instrument to collect data.

### **1.6 Significance of Study**

The aim of the study is to identify the factors that contribute to health related behaviors. Firstly, previous studies that had been carried out only measured the risk of obesity, stress, alcohol consumption, and sexual activity towards health related behaviors. Since health is a complex issue, micro level socio-demographic variables should be included in understanding the complexity of health related behaviors. This will provide a detailed understanding of health related behaviors so that a base and guideline can be used by professional health care experts in either public or private sector in designing an appropriate health care system, which targets high risk groups in a more efficient manner. Programs can be tailored according to the populations' needs with higher success rates and optimum usage of resources and funds.

Secondly, the study also distinguishes the data based on gender and age to cater the appropriate health care program to the suitable individuals. This will help to reduce wastage of resources in both private and public sectors in terms of money and labor.

Thirdly, the study is also found to be significant since incurable terminal diseases are experienced by 7 out of 10 patients. Patients with NCD's may have different perceptions and behave differently compared to normal populations. Patients who have NCDs may either be more concerned to their health leading to improvement on health related behaviors or react by changing their health behavior negatively due to depression, motivation and diminished energy according to Hawkins *et al.* (2010). The patients' emotional status may influence a different pattern of health related behaviors. Thus, in order to develop programs to cater NCD patients' needs, a thorough understanding on the factors based on socio-demographic variables that influence their health related behaviors is crucial. Fourthly, these findings will cover the gap and contribute to the body of literature.

## 1.7 Definition of terms

**1.7.1 Health related behaviours** refer to behaviors that influences or are believed to influence physical health outcomes by increasing or decreasing their risk or severity. In this study, health related behaviors are measured using five dimensions as recommended by Wahnefreid *et al.* (2000). The five dimensions are fruit and vegetable consumption, alcohol consumption, smoking, exercise and interest in health promotion programs.

- a) **Fruit and vegetable consumption.** One serving of fruit is defined as one medium piece, half fresh, frozen or canned fruit, or a quarter cup of dried fruit; whereas one serving of vegetable is defined as half cup of cooked or one cup of raw vegetables (Wahnefried *et al.*, 2000).
- b) **Alcohol consumption** is calculated as number of units per week with one unit equivalent to eight grams of alcohol (Kvaavik *et al.*, 2010).
- c) **Smoking.** Tobacco smoking includes cigarettes, cigars, pipes and any other form of smoked tobacco (WHO, 2009).
- d) **Exercise** is a subset of physical activity which is planned, structured and repetitive with the intension to improve or maintain physical fitness (WHO, 2011; Caspersen *et al.*, 1985).
- e) **Interest in Health Promotion Programs.** Health promotion is defined by the *Ontawa Charter for Health Promotion* as “the process of enabling people to increase control over, and to improve, their health” and involves the responsibility of the health sector, healthy life-styles and well-being (WHO, 2009).

**1.7.2 Socio-demographic characteristics** consist of gender, age, marital status, ethnicity, occupation and education.

**1.7.3 Socioeconomic status** is usually measured by determining education, income, occupation, or a combination of these dimensions (Winkleby *et al.*, 1992).

## **1.8 Organization of Study**

Chapter 1 consists of introduction, problem statement, research questions, objectives, scope of the study, significance of the study, definition of terms and the summary of the study. Chapter 2 discusses the literature review while chapter 3 explains the methodology of the study. Chapter 4 discusses the analysis while chapter 5 provides the conclusion and policy options.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The study investigates the influence of independent variables on the dependent variables. The independent variables identified were gender, age and income and education levels whereas the dependent variables were health related behaviors. The understanding of factors that influence these health related behaviours is important because these behaviours are strongly associated with increased morbidity, mortality and decreased quality of life (Redding *et al.*, 2000; Asiskovitch, 2010; Diehr *et al.*, 2003; Lantz *et al.*, 2010; Khaw *et al.*, 2008; Kvaavik *et al.*, 2010; Geckova *et al.*, 2003, Winkleby *et al.*, 1992).

#### 2.2 Conceptual Theory

The conceptual framework used in the study is The Transtheoretical Model (TTM) (Redding *et al.*, 2000). This model guided the understanding of the health behaviours and provided directions for the research.

The model has identified common principles of behaviour change which can be applied to many health related behaviours which include smoking cessation, physical activity adoption and dietary changes (Velicer *et al.* 1998; Redding *et al.*, 2000; Sutton, 2002).

TTM is one of the models categorised under Stage Models, which divided behaviour changes into different stages and assumes that different stages required different interventions as encouragement to move to the next stage in sequence (Sutton, 2002; Redding *et al.*, 2000; Velicer *et al.*, 1998). It is the processes of change that drive movement through the stages of change. These are all intentional changes (Velicer *et al.*, 1998). Variables that are associated with each stage are studied. This contributes to intervention development and a clear focus on measurement of constructs (Redding *et al.*, 2000). These model-based



interventions are multi-dimensional. The Transtheoretical Model integrated different constructs such as stages of change and their relationship among each others, the pros and cons of behaviour change (decisional balance), self- efficacy or confidence in behaviour change, temptation to relapse, and the ten processes of change into a single framework (Velicer *et al.*, 1998; Redding *et al.*, 2000; Sutton, 2002).

Humans make behavioural changes in incremental or step-by-step (stages) basis. The stages identified in order are Pre-contemplation, contemplation, preparation, action and maintenance (Velicer *et al.*, 1998; Redding *et al.*, 2000; Sutton, 2002). However, this does not imply that humans move linearly through the identified stages, instead they often progress and then re-cycle back to the previous stages before moving forward again to achieve long term successful change. This process is conceptualized as "spiral". Although individuals "re-cycle" to the previous stages, they still learn from previous experiences (Velicer *et al.*, 1998; Redding *et al.*, 2000; Sutton, 2002).

Pre-contemplation is a stage that describes individuals who do not intend to change their behaviours within the next six months. Due to many reasons, they may or may not want to make behavioural changes in the future. This may implied a strong commitment to their problematic behaviours (Redding *et al.*, 2000). This group of individuals often tend to avoid reading, talking or thinking about their risk behaviours, resistant or unmotivated or as not ready for health promotion programs (Velicer *et al.*, 1998).

Contemplation is a stage where individuals are considering about changing their problematic behaviours within the next six months (Redding *et al.*, 2000; Velicer *et al.*, 1998). They are weighing the costs (cons) and benefits (pros) of changing. This may be one of the reasons that kept individuals stuck in this stage for long periods of time. This phenomenon is often called "chronic contemplation" or "behavioural procrastination" (Velicer *et al.*, 1998).

Preparation is a stage where individuals are committed in changing their behaviours soon, which is within the next thirty days. This group of individuals have



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