

UNIVERSITI SAINS MALAYSIA



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**DIETARY ADHERENCE AND HEALTH BELIEF
AMONG MALAY WITH TYPE 2 DIABETES
MELLITUS PATIENTS IN THE
DIABETES CENTRE,
HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)**

by

KOW FANG FANG

**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 'Dietary Adherence and Health Belief among Malay with Type 2 Diabetes Mellitus Patients in the Diabetes Centre, Hospital Universiti Sains Malaysia (HUSM)' is the bonafide record of research work done by Kow Fang Fang, matric number: 87437 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.



.....
Supervisor
Mdm. Rahimah bt. Mohd Anshari
Lecturer
Nursing Program
School of Health Sciences
Health Campus
Universiti Sains Malaysia
16150 Kubang Kerian
Kelantan
Date: 23 June 2009

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CONTENTS

	Pages
CERTIFICATE	ii
ACKNOWLEDGEMENT	iii
CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABSTRACT	x
ABSTRAK	xii
CHAPTER 1: INTRODUCTION	
1.1 Background of The Study.....	1
1.2 Problem Statement.....	3
Conceptual /Theoretical	5
1.3 Objectives of The Study.....	5
1.3.1 Specific Objectives.....	5
1.4 Research Questions.....	6
1.5 Hypothesis.....	6
1.6 Definition of Terms (Conceptual).....	7
1.7 Significance of The Study.....	9
CHAPTER 2: LITERATURE REVIEW	
2.1 Introduction.....	11
2.2 Dietary Adherence.....	12
2.3 Health Belief	16
2.4 Theoretical Framework of Health Belief.....	21
CHAPTER 3: RESEARCH METHODOLOGY	
3.1 Research Design.....	24
3.2 Population and Study Setting.....	24

CONTENTS (Continued)

	Pages
3.3 Research Sample.....	24
3.3.1 Sample Size.....	24
3.3.2 Sampling Design.....	25
3.3.3 Inclusion and Exclusion Criteria.....	25
3.4 Instrument.....	27
3.4.1 Instrument.....	26
3.4.2 Variables Measurement.....	27
3.4.3 Translation of Instrument.....	28
3.4.4 Validity.....	28
3.4.5 Reliability.....	29
3.5 Ethical Considerations.....	29
3.5.1 Informed Consent.....	30
3.5.2 Confidentiality.....	30
3.6 Data Collection Methods.....	30
3.6.1 Flow Chart of Data Collection.....	31
3.7 Data Analysis.....	31
 CHAPTER 4: RESULTS	
4.1 Characteristic of Respondents.....	33
4.2 Diabetic Dietary Adherence.....	36
4.3 Diabetic Health Beliefs of Respondents and Their Relationships with Dietary Adherence.....	38
4.3.1 Belief about Susceptibility.....	38
4.3.2 Belief about Severity.....	38
4.3.3 Belief about Benefits.....	39
4.3.4 Belief about Barriers.....	39
 CHAPTER 5: DISCUSSIONS	
5.1 Characteristic of Respondents.....	43

CONTENTS (Continued)

	Pages
5.2 Diabetic Dietary Adherence.....	44
5.3 Diabetic Health Beliefs of Respondents and Their Relationships with Dietary Adherence.....	47
5.3.1 Belief about Susceptibility.....	48
5.3.2 Belief about Severity.....	50
5.3.3 Belief about Benefits.....	51
5.3.4 Belief about Barriers.....	53
 CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS	
6.1 Summary of the Study Findings.....	56
6.2 Strengths and Limitations.....	57
6.2.1 Strengths.....	57
6.2.2 Limitations.....	58
6.3 Implications and Recommendations.....	58
6.3.1 Nursing Practice.....	59
6.3.2 Nursing Education.....	60
6.3.3 Nursing Research.....	61
6.3.4 Theory of Health Belief Model.....	62
 REFERENCES.....	 64
 APPENDIX	
Appendix A1: Consent Form in English.....	70
Appendix A2: Consent Form in Bahasa Malaysia.....	74
Appendix B1: Questionnaires in English.....	79
Appendix B2: Questionnaires in Bahasa Malaysia.....	83
Appendix C: Ethical Approval Letter.....	88

LIST OF TABLES

	Pages
Table 3.1 Independent and Dependent Variable.....	28
Table 4.1 Demographic Characteristics of the Respondents (n=136).....	35
Table 4.2 Frequency and Percentage for Dietary Adherence of Responses to Each Question (n=136).....	37
Table 4.3 Frequency and Percentage of Health Belief of Responses to Each Question (n=136).....	41
Table 4.4 Generalized Level of Diabetes Health Belief (n=136).....	42
Table 4.5 The Relationships of Each domain of Health Beliefs with Dietary Adherence (n=136).....	42

LIST OF FIGURES

	Pages
Figure 1.1 Total Cases of Diabetic Outpatients in HUSM from Year 2005 to 2007.....	3
Figure 2.1 Image of the Health Belief Model	22
Figure 3.2 Flow Chart of Data Collection.....	31
• Figure 4.1 Dietary Adherence among Type 2 DM patients in Diabetes Centre, HUSM.....	37
Figure 6.1 Modified of the Health Belief Model.....	63

**DIETARY ADHERENCE AND HEALTH BELIEF AMONG MALAY WITH
TYPE 2 DIABETES MELLITUS PATIENTS IN THE DIABETES CENTRE,
HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)**

ABSTRACT

Type 2 Diabetes mellitus (DM) is now recognized as a major global health problem of pandemic proportions. Adherence to diabetes self care management regimen is important for controlling Type 2 DM. Unfortunately, low rate of dietary adherence had been found. Health belief is considered as one of the factors that influence the performance of dietary adherence. The purpose of this study was to determine the level of diabetic dietary adherence, diabetic health beliefs and their association. A quantitative study using the HBM framework was involved with 136 Malay subjects with Type 2 DM in Pusat Diabetes, HUSM, Kelantan, Malaysia. The validated Summary Diabetes Self-Care Activities (SDSCA) scale with reliability alpha 0.68 and modified Health Belief Model Diabetes Scale with reliability alpha 0.69-0.82 being used. Ethical clearance was obtained from Ethical and Research Committee of USM. Duration of data collection is approximately 1 month from February 2009 to March 2009. Data were analyzed via Chi-Square and Fisher's Exact test. There were 64% respondents in this study who adhered to their diabetic dietary regimen. Majority of the respondents had high positive beliefs of diabetes on susceptibility to diabetic complication and benefit which were 90% and 95% respectively. While both of the severity and barriers domain showed just 23% of respondent had high positive belief. However, this study had identified that there were certain false beliefs of diabetes especially in severity and barriers domain. Perceived susceptibility, benefits, and barriers in following diabetic dietary regimens were

significantly associated with diabetic dietary adherence with the $p < 0.0001$, $p = 0.009$, and $p = 0.028$ respectively, while perceived severity showed no significant association with dietary adherence ($p = 0.843$). As a conclusion, the prediction of HBM is most likely true except for the perceived severity domain. Thus, health care providers need to establish methods, techniques or guideline to change false belief of diabetes and overcome the barriers among DM patients.

**PEMATUHAN SAJIAN MAKANAN DAN KEPERCAYAAN KESIHATAN DI
KALANGAN PESAKIT MELAYU DIABETES MELLITUS JENIS 2 DI PUSAT
DIABETES, HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM).**

ABSTRAK

Diabetes mellitus (DM) Jenis 2 merupakan masalah kesihatan sedunia. Pematuhan terhadap penjagaan sendiri adalah penting untuk mengawal DM Jenis 2. Malangnya, kadar pematuhan sajian pemakanan DM adalah rendah. Kepercayaan kesihatan terhadap DM merupakan salah satu faktor yang mempengaruhi sikap pematuhan sajian pemakanan. Objektif kajian ini ialah mengenal pasti tahap kepercayaan kesihatan dan pematuhan sajian pemakanan DM dan mengkaji hubungkait mereka. Kajian ini menggunakan pendekatan kuantitatif dan rangka HBM dengan melibatkan 136 subjek orang Melayu yang menghidap kencing manis Jenis 2 di Pusat Diabetes, HUSM, Kelantan, Malaysia. Skala *Summary Diabetes Self-Care Activities* (SDSCA) dan skala *Health Belief Model Diabetes* yang masing-masing mempunyai alfa reliabiliti 0.68 dan 0.69-0.820. Kelulusan etika telah diperolehi daripada Persatuan Etika dan Kajian USM. Tempoh yang digunakan dalam mengumpul data adalah selama 1 bulan iaitu dari Februari 2009 hingga Mac 2009. Ujian *Chi-Square* dan *Fisher's Exact* digunakan untuk menganalisis data. Seramai 64% peserta patuh kepada sajian pemakanan. Kebanyakan mereka masing-masing mempunyai kepercayaan mudah mendapat komplikasi DM dan persepsi tentang kebaikan pematuhan pemakanan iaitu 90% dan 95%. Manakala kedua-dua persepsi keterukan DM dan rintangan dalam pematuhan pemakanan hanya mengandungi 23% peserta mempunyai persepsi positif yang tinggi. Kajian ini telah berjaya mengenal pasti beberapa kepercayaan yang tidak benar

terutamanya dalam persepsi halangan dan keterukan DM. Hubungan nyata antara kepatuhan pemakanan DM dengan kepercayaan mudah mendapat komplikasi DM, persepsi tentang kebaikan pematuhan pemakanan, dan rintangan dalam pematuhan pemakanan masing-masing mempunyai nilai $p < 0.0001$, $p = 0.009$, dan $p = 0.028$. Akan tetapi persepsi keterukan DM tidak mempunyai hubungan nyata dengan kepatuhan pemakanan DM ($p = 0.843$). Kesimpulannya, ramalan HBM hampir dicapai kecuali ramalan persepsi keterukan DM. Oleh itu, kakitangan perkhidmatan kesihatan harus berusaha untuk membentuk cara, teknik, atau panduan untuk mengubah persepsi negatif terhadap DM dan mengatasi halangan pematuhan terhadap pemakanan di kalangan pesakit DM.

CHAPTER 1

INTRODUCTION

1.1 Background of The Study

How many of us follow a healthy dietary intake perfectly? We know that some foods are not healthy but we can not resist from eating them. Eating unhealthy food is not the end of the world. However, for patients with life threatening diseases such as diabetes, failing to adhere to dietary regimen can result in slow consequences and insidious complication (Klein, Wustrack, & Schwartz, 2006). Diabetic patients who failed to keep their blood glucose under tight control may not notice consequences immediately, but years later they may suffer unnecessary amputation or loss of vision (Klein, Wustrack, & Schwartz, 2006).

Diabetes mellitus (DM) is a non-communicable “silent killer” and multi-factorial disease caused by inherited and/or acquired deficiency in the production of insulin by the pancreas or by ineffective insulin production (WHO, 2008a). Diabetes is now recognized as a major global health problem of pandemic proportions. The worldwide prevalence for the number of people with diabetes in year 2000 was 171 million. This figure is projected to rise to at least 366 million by year 2030 (WHO, 2008b). WHO attributes this to population aging and growth, as well as to obesity, unhealthy diets, and the sedentary lifestyles associated with urbanization and industrialization (WHO, 2008a).

Prevalence of DM in Malaysia estimated that in year 2000 there were around 942,000 suffered from diabetes. The number is likely to reach at least 2,479,000 by the year 2030 if successful strategies are not implemented for its prevention and control (WHO, 2008b). Statistics from the Ministry of Health records also showed that the

number of admissions to Government Hospitals in Peninsular Malaysia for Diabetes Mellitus had increased. Admission to hospitals due to diabetes had increased from 19,629 cases in 1991 to 30,661 cases in 2001, which showed an increase of 56% over a span of 10 years (Shafie, Fatanah, & Azah, 2004).

Diabetes is a major public health problem due to its complications like coronary artery diseases, peripheral vascular disease, stroke, diabetic retinopathy, amputations, renal failure, and blindness which resulted in increased disability, premature mortality and loss of productivity (Morgan, Currie, Scott, Smithers, Butlert, & Peter, 2000). Study had also shown that glycemic control amongst diabetic patients is very important to prevent or delay the onset of diabetic complications (Fauziah & Suhaiza, 2004). In order to cope with the increasing prevalence of diabetes and control glycaemia level, Malaysian National Diabetes Program was further reorganized and strengthened in year 2000 to provide primary prevention and health promotion (Shafie, Fatanah, & Azah, 2004).

Health promotion on healthy lifestyles and behaviors are also encouraged through enhancing individual, family and community responsibilities. A study done by Tuomilehto, Lindstrom, Eriksson, Valle, Hamalainen, Ilanne-Parikka, Keinanen-Kiukaanniemi, Laakso, Louheranta, Rastas, Salminen and Uusitupa (2001) showed that, lifestyle intervention (targeting diet and exercise) over a 3 years period, reduced the risk of progressing from impaired glucose tolerance (IGT) to diabetes by 58%.

Diabetic programmes and medical interventions in Malaysia have long been in the health care service. Unfortunately, after the intensive health promotion programmes there are still high relapse rates with weight gain, increased in blood glucose and increasing diabetes prevalence (Tan, 2004). The prevalence of diabetes and its complications remained high despite these interventions. It is possible due to lack of

adherence to the treatment regimen and self care behavior that require multiple lifestyle changes for long term disease management (Tan, 2004). Thus, identifying the barriers to behavior change is important. The health beliefs of individuals with diabetes have been suggested as one of the factors that influence the performance of health behaviors, which contribute to complication (Tan, 2004).

1.2 Problem Statement

Prevalence for total cases of diabetic outpatient in Hospital Universiti Sains Malaysia (HUSM) showed a significance increase from year 2005 to year 2007 which was 14,034, 15,578 and 17,178 of DM patient respectively (Medical Record Department HUSM, 2008).

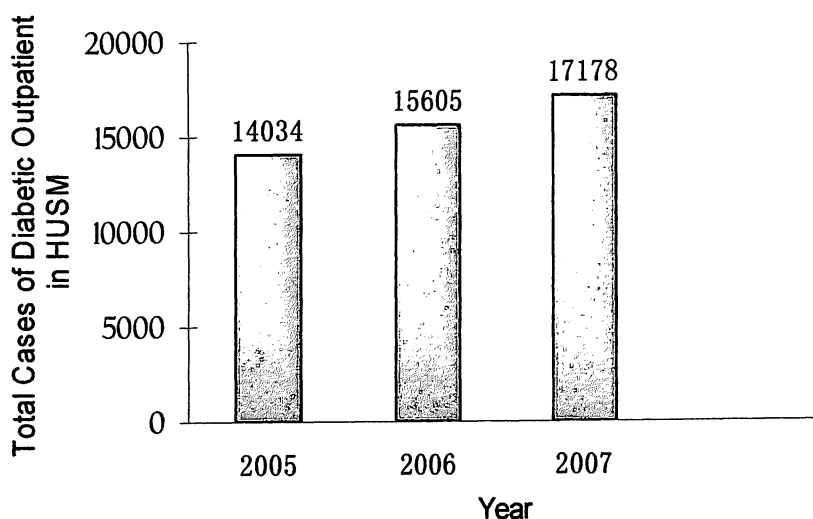


Figure 1.1: Total Cases of Diabetic Outpatients in HUSM from Year 2005 to 2007

Kelantan diabetic population still had poor glycemic control where 85.7% of them had a poor glycemic control and these patients were at risk of developing diabetic complications (Suhaiza, Ahmad, Jeriah, Abdul Aziz Al-Safi, Wan Mohammad, &

Mafauzy, 2004). It has been reported that one of the reasons for this is lack of self-care by diabetic people (Whittemore, Melkus, & Grey, 2005). The four main diabetic management of self-care practices included adherence of dietary intake, medication, physical activity and self monitoring of blood glucose (Tan & Magarey, 2008).

In response to this problem, Malaysian Government has increased resources such as diabetic centers and education facilities. Despite these initiatives, there are less than 400 trained diabetic educators or dieticians in the current healthcare system to meet the health care needs of the 27 million Malaysian populations (Department of Statistic Malaysia, 2006). Hence, nurses and doctors with no specialized diabetic training at the out and in-patient departments play an importance role to deliver health education during their busy working hours (Tan & Magarey, 2008).

Dietary risk factors, especially intake of dietary fat, have been implicated in the etiology of diabetes mellitus (Costacou, Levin, & Mayer-Davis, 2000). There are 96% of subjects from the hospital settings reported being advised on diet, compared to exercise and self monitoring blood glucose advice. However, 54% of the subjects said they had forgotten their dietary advice and none recalled their allowable carbohydrate intake or recommended replacement in their meal plan (Tan & Magarey, 2008).

Obstacles to adherence are commonly seem to be related more to patient's knowledge about diabetes, beliefs and attitudes and the relationship with health care professionals (Vermeirea, Hearnshawb, Rätsepc, Levasseurd, Peteke, Damf, Horst, Vinter-Repalustg, Wensa, Daleb, & Royen, 2007). Qualitative study had coded one of the respondent's view which is "Diabetes Type 2 is not a 'real' disease. It is difficult to consider oneself ill and thus to follow the treatment or diet" (Vermeirea, et al., 2007). It appears that recognition of the seriousness of DM may lead to the dietary self-care adherence behavior.

Health Belief Model (HBM) is one of the most widely recognized conceptual frameworks of health behavior, will serve as the theoretical framework for this research. The model is used to explain self care activities with a focus on behavior related to the prevention of disease, and health motivation concept (Registe, 2008). The HBM rest on the basis that an individual's action to prevent a health problem and adherence to health behaviors is related to the individual's perceived susceptibility, severity, benefits, and barriers (Tan, 2004). In other words, individuals will take action if they perceive the problem to be severe, perceive the action they will take to have some benefit in producing favorable outcomes or perceive few barriers of taking a particular action.

The HBM concepts, perceived seriousness, perceived severity, perceived benefits, and perceived barriers are considered predictors of complication prevention behavior like diabetic dietary adherence (Tan, 2004). The main objective of using the Health Belief Model (HBM) in this study is to identify Malay ethnic difference in behavior towards dietary adherence and health beliefs about diabetes mellitus.

1.3 Objectives of the Study

The general objective of this study is to determine the dietary adherence and health belief among Malay with Type 2 diabetes mellitus patients in Diabetes Centre, HUSM.

1.3.1 Specific Objectives

The specific objectives of this study are:

1. To determine the level of dietary adherence among Malay with Type 2 DM patients in Diabetes Centre, HUSM.
2. To assess the health belief of Malay with Type 2 DM patients in Diabetes Centre, HUSM.

3. To identify the relationship of dietary adherence and health belief among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

1.4 Research Questions

1. What is the level of dietary adherence among Malay with Type 2 DM patients in Diabetes Centre, HUSM?

2. What is the health belief among Malay with Type 2 DM patients in Diabetes Centre, HUSM?

3. What is the relationship of dietary adherence and health belief among Malay with Type 2 DM patients in Diabetes Centre, HUSM?

1.5 Research Hypothesis

There are four hypothesis in this study with 95% of confidence interval (CI) and the value of $\alpha = 0.05$. Null hypothesis (H_0) will be accepted if p -value is >0.05 while null hypothesis (H_0) will be rejected if $p < 0.05$.

Dietary Adherence Regarding Perceived Susceptibility

H_0 = There is no relationship between dietary adherence and perceived susceptibility among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

H_A = There is a relationship between dietary adherence and perceived susceptibility among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

Dietary Adherence Regarding Perceived Severity

H_0 = There is no relationship between dietary adherence and perceived severity among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

H_A = There is a relationship between dietary adherence and perceived severity among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

Dietary Adherence Regarding Perceived Benefits

H₀= There is no relationship between dietary adherence and perceived benefits among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

H_A= There is a relationship between dietary adherence and perceived benefits among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

Dietary Adherence Regarding Perceived Barriers

H₀= There is no relationship between dietary adherence and perceived barriers among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

H_A= There is a relationship between dietary adherence and perceived barriers among Malay with Type 2 DM patients in Diabetes Centre, HUSM.

1.6 Conceptual Definitions

1.6.1 Diabetic Dietary

Specific diabetic dietary guidelines have been developed by the American Association and the American Dietetic Association to improve the management of diabetes. With Type 2 DM, the main focus is on weight control, because 80%-90% of people with this disease are overweight. Thus, the meal plans are to reduce calories, limited fats and consume plenty of fiber rich foods (Medical Encyclopedia, 2008).

1.6.2 Dietary Adherence

Adherence is conceptualized as the active, voluntary involvement of the patient in the management of his or her disease by following a mutually agreed course of treatment and sharing responsibility between the patient and health care providers, in which the patient strives to achieve good health (WHO, 2003). Dietary adherence is the extent to which a person's behavior following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider (Rowley, 1999).

1.6.3 Type 2 Diabetes Mellitus

Type 2 diabetes mellitus previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. It is typically associated with being overweight and is caused by insulin resistance. For patients with type 2 diabetes, weight control by means of dietary and physical activity regimens is the cornerstone of the treatment. However, pancreatic beta-cell function decreases over time, so many patients will eventually require treatment with oral medications or exogenous insulin (WHO, 2003).

1.6.4 Health Belief

According to Health Belief Model, an individual following the recommended diabetic diet is influenced by health beliefs which are perceived susceptibility and perceived severity of the disease, as well as perceived benefit versus perceived barriers to follow recommended action (Tan, 2004).

Perceived Susceptibility

Perceived susceptibility refers to an individual's perception of vulnerability to diabetes and its complication. It includes the probability of a person's perception they may develop problems due to diabetes (Patino, Sanchez, Margaret, & Delamater, 2005).

Perceived Severity

It is the perception of diabetes as a serious illness, ranging from perceiving few complications to viewing diabetes as a life threatening disease (Patino, et al., 2005).

Perceived Benefit

It concerns the perception that the diet regime is effective, such as the individual physically feels better if they follow dietary regimen (Patino, et al., 2005).

Perceived Barriers

Perceived barriers refer to the perceived costs or inconveniences of adhering the diet regime (Patino, et al., 2005).

1.7 Significance of the Study

Health promotion programmes worldwide have long been premised on the idea that providing knowledge about causes of ill health and choices available will go a long way towards promoting a change in individual's behavior towards a more beneficial health seeking behavior (MacKian, 2005). However, there is a growing recognition in both developed and developing countries, that providing education and knowledge at the individual level is not sufficient in itself to promote a change in behavior (MacKian, 2005).

A study done by Dye, Haley-Zitlin and Willoughby (2003) showed that many older adults with diabetes have the basic knowledge needed to gain better control of their diabetes and to reduce their risk of heart disease. They know which dietary practices are harmful and beneficial to their health. However, this knowledge does not translate into healthful behavioral practices. Thus, this study may create awareness among healthcare provider in HUSM to consider health belief especially perceived barriers as one of the factors that influence the performance of health behavior, dietary adherence among Type 2 DM patient in Diabetes Centre, HUSM. In addition, healthcare professionals are responsible to help people with diabetes to find ways and put their knowledge into practice.

Disease prevention behaviors like adhering to dietary regimen and health-related behavior may also be determine and explained via Health Belief Model in this study. It is also useful in organizing information about respondents' views of their state of health,

evaluating individuals' health behaviors and their beliefs and attitudes about diabetes illness. It is necessary to examine the health beliefs and attitudes of patients before starting an educational program in order to develop positive health behaviors, to acquire

Furthermore, Dye and his colleagues (2003) stated that older diabetic individual's perceptions of health benefits or risks of certain foods influence their dietary behavior. Hopefully through this study, Type 2 DM individuals' perceptions of dietary health benefits and barriers of dietary adherence can be assessed and determined. Adhering to diabetic diet regimen is crucial to prevent diabetes mellitus complications. This has been proved by recent researches that showed effective diabetic management intervention strategies which includes modification of lifestyle behaviors such as diet improves glycemic control which in turn reduces the risk of diabetic long term complications such as heart disease (Fauziah & Suhaiza, 2004).

In order to achieve a desired outcome, Type 2 DM individuals' perceptions of dietary health benefits and barriers of dietary adherence need to be considered within the context of the evidence-based recommendations when planning interventions to alter their food choices. In the nut shell, knowing significance of health belief as one of the factors that influence dietary behavior performance may lead to a better metabolic control, reduce risk of diabetic complication and thus reducing the rate of hospitalization among diabetes mellitus patient in HUSM.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Diabetes Mellitus (DM) is a group of metabolic disorders characterized by hyperglycemia (high blood sugar). The two broad categories of DM are Type 1 and Type 2 (American Diabetes Association, 2004). Older terminology for both Type 1 and Type 2 diabetes is insulin dependent diabetes mellitus (IDDM) and non-insulin dependent diabetes mellitus (NIDDM) respectively (American Diabetes Association, 2004). Type 1 DM is resulted from cellular-mediated autoimmune destruction of the beta cell of the pancreas. Type 2 DM encompasses individuals who have insulin resistance and impaired insulin secretion by the beta cells (American Diabetes Association, 2004).

The number of people with diabetes worldwide is currently estimated to be about 190 million. By 2025, this number is expected to increase to over 330 million, with the majority of cases being Type 2 diabetes (WHO, 2005). Time Magazine has called diabetes, “The Asian Disease”. The type of diabetes in the Asia Pacific region is predominantly Type 2 (WHO, 2005).

Due to Malaysia’s rapid socio-economic growth and changes in nutritional habits has resulted in an increased proportion of the total population who are overweight and obese and they have not been spared from this epidemic (Tan & Magarey, 2008). This is reflected in the increased prevalence of diabetes in Malaysia over the last few decades, from 0.65% in 1960 to 2.1% in 1982, 8.4% in 1996 and 11% in 2006 (Ministry of Health Malaysia, 2006). Similar scenario is seen in Hospital Universiti Sains Malaysia, Kelantan, where the total cases for diabetic outpatient increased from year 2005 to year 2007 which