CHAPTER TWO
REVIEW OF LITERATURE

This chapter reviews the literature in 3 main areas: (1) General knowledge of diabetes, (2) Health Belief Model, and (3) Relevant research.

2.1.1 GENERAL KNOWLEDGE OF DIABETES

2.1.1 What is diabetes mellitus?

Diabetes Mellitus is defined by the American Diabetes Association (ADA) Expert Committee in their 1997 recommendations as 'a group of metabolic diseases characterized by hyperglycemia (high blood sugar level) resulting from defects in insulin secretion, insulin action or both. Insulin is a hormone which converts sugar (glucose) and starches into energy for the body to use. Chronic hyperglycemia is associated with long-term damage, dysfunction and failure of various organs, especially the eyes, kidney, nerves, heart and blood vessels.' Thus, diabetes covers a wide range of heterogeneous diseases.

2.1.2 How to diagnose people with diabetes?

ADA and WHO recommend that for the diagnosis of diabetes, people should have a blood sugar test. At least one of three criteria must apply:

- Symptoms of diabetes (frequent urination, increased thirst, unexplained weight loss, etc.) as well as a casual plasma glucose concentration ≥ 200 mg/dL. This test measures blood glucose without fasting.
- Fasting Plasma Glucose (FPG) ≥ 126 mg/dL. The fasting plasma glucose test is done on an empty stomach. For eight hours before the test, the person must fast (nothing to eat or drink, except water).
- 2 hour plasma glucose ≥ 200 mg/dL during an OGTT. This test measures the amount of glucose in a person's plasma before and two hours after drinking a beverage containing 2.6oz (75g) of glucose.

Normally, most physicians prefer to measure FPG due to its shorter time for measuring.

2.1.3 Classification of diabetes

ADA and WHO classify diabetes into three main types:

1. Type 1 diabetes

Type 1 diabetes is caused by an absolute lack of insulin, which is due to autoimmune destruction of the β cells of the islets of Langerhans, cells that are responsible for insulin production, in the pancreas. Type 1 diabetes is usually diagnosed in children and young adults, and was previously known as juvenile diabetes. Type 1 diabetes represents 15-20% cases of diabetes mellitus.

2. Type 2 diabetes

Type 2 diabetes is the most common form of diabetes, accounting for 85-95% of all cases worldwide. Unlike with type1, type 2 diabetics produce insulin; however, the insulin that the pancreas secretes is either insufficient or the body's cells are unable to recognize the insulin and use it properly. Type 2 diabetes is related to age, family history, physical inactivity, and ethnicity. About 80% of people with type 2 diabetes are overweight or obese (Perez, & Cha, 2007, p. 3).

3. Other types of diabetes

There are several rare causes of diabetes mellitus that do not fit into type 1 or type 2. These consist mainly of specific genetically defined forms of diabetes or diabetes associated with other diseases or drug use. For example, any disease that causes extensive damage to the pancreas such as chronic pancreatitis may lead to diabetes (Canadian Diabetes Association Clinical Practice Guidelines Expert Committee, 2003)

2.1.4 Diabetes Symptoms

According to ADA, diabetes symptoms include:

- Frequent urination
- Excessive thirst
- Extreme hunger
- Unusual weight loss
- Increased fatigue
- Irritability
- Blurry vision

2.1.5 Diabetes Risk Factors

This study focuses on risk factors of type 2 diabetes, which is the most common type of the disease. According to the Diabetes Association of Thailand, risk factors that have been identified for type 2 diabetes are as follow: According to ADA, diabetes symptoms include:

- Obesity
- Age greater than 45 years
- Sedentary Lifestyle or low level of physical activity
- Family History of diabetes
- Ethnic Ancestry (Being of Aboriginal, African, Latin American or Asian ethnic ancestry increases the risk of developing of type 2 diabetes.)
- High Blood Pressure (greater than or equal to 140/90 mmHg)
- High Cholesterol Level (HDL cholesterol level under 35mg/dL or TG level greater than 250 mg/dL)
- Menopause
- Alcohol consumption
- Smoking

2.1.6 Diabetes Complications

Uncontrolled diabetes overtime may damage nerves and blood vessels. This increases the risk of many serious complications.

- Heart Disease Diabetes carries an increased risk for heart attack, stroke, and complications related to poor circulation.
- Kidney Disease Diabetes can damage the kidneys, which not only can cause them to fail, but can also make them lose their ability to filter out waste products. This is called nephropathy.
- Eye Complication Diabetes can cause eye problems and may lead to blindness.
- Foot Complications People with diabetes can develop many different foot problems which often happen when there is nerve damage in the feet or when blood flow is poor. This is called diabetic foot. It is the most common cause of adult amputation, usually of toes and or feet, in diabetic patients.

2.2 HEALTH BELIEF MODEL

In order to have a better understanding about people's awareness and perception of diabetes, this paper includes 'The Health Belief Model'. This model is an important tool that health professionals always use to explain and predict health behaviors. The Health Belief Model, constructed by Rosenstock, is based on the assumption that a person will take health-related action if that person:

- feels that a negative health condition can be avoided
- expects that taking a recommended action will prevent a negative health condition,
- believes that it is possible to take a recommended health action successfully

The Health Belief Model contains with 4 constructs representing the individual perception:

❖ **Perceived Susceptibility** – the perception of how likely he/she is to develop the illness.

People will not change their health behaviors unless they believe that they are at risk.

❖ **Perceived Severity** – the perception of how serious he/she views different conditions.

The probability that people will change their health behaviors to avoid a condition depends on how serious they consider the condition to be.

❖ **Perceived Benefits** – the perception of how effective the advised action to reduce risk or seriousness of a condition is.

People will take the advised action if they feel the action creates positive effects and helps people to recover from the illness.

❖ **Perceived Barriers** – the perception of the negative effects of the advised action such as expensive, painful or dangerous treatment.

One of the major reasons people don't change their health behaviors is that they think doing so is going to be hard or causes disadvantages. Changing your health behaviors can cost effort, money, and time.

2.3 RELEVANT RESEARCH

Tessaro, Smith, and Rye (2005) conducted research 'Knowledge and Perceptions of Diabetes in an Appalachian Population'. Findings showed that among this population there was lack of knowledge about diabetes before and after diagnosis and little perception that a risk of diabetes existed (unless there was a family history of diabetes). Participants believed that diabetes was self-induced; the disease most likely developed from inactivity (laziness) and lack of self-discipline (eating too much sugar). When they were asked about their perceptions of the risks of acquiring diabetes, more than one third (35.9%) did not know their risk. The inability to recognize symptoms of diabetes was cited as a major barrier to early detection and diagnosis. Participants generally perceived that if there were no recognizable symptoms, there was no need to go to a doctor or to think they were at risk.

Bancha Pimjumpa (บรรชา พิมพ์จำปา, 2550) studied the knowledge and Health cared behavior in diabetic patients in the Mahachanachai Hospital, Yasothorn. He presented that 35.72% of the respondents of his study had a moderate level of knowledge about diabetes. They knew that the symptoms of diabetes are frequent urination, excessive thirst and hunger. However, they still lacked knowledge in some aspects. Only 28.2% know that eating before having blood test had an effect on the blood sugar level.

The study from Supakit Wongwiwatthananukit, Sarinee Kritiyanunt, Thongkum Sunthornthepvarakul, and Aunchalee Wannapinyo (2004) indicated that there is a relationship between patients' demographic characteristics (i.e. education level, family history, marital status and receiving diabetes-related education in the past) and the level of knowledge and attitudes toward diabetes. He suggested that these results might be useful targets for designing diabetes management strategies for patient education and counseling programs.

According to the research 'Prevalence of Metabolic Syndrome among Professional and Office Workers in Bangkok, Thailand' of Vitool Lohsoonthorn, Somrat Lertmaharit and Williams (2007), it found that the prevalence of MetS among

Thai professional and office workers was 15.2% which was as high as those observed in developed countries. Men with MetS experienced a 3.7-fold increased risk of coronary heart disease and a 24.5-fold increased risk for diabetes compared with men with no MetS. These findings emphasized the urgent need to develop strategies for the detection, treatment and prevention of MetS which may help reduce the incidence and morbidity associated with cardiovascular disease and diabetes in the Thai population.