TREATMENT COMPLIANCE AND SELF CARE PRACTICES AMONG TYPE 2 DIABETES MELLITUS PATIENTS AT KOTA SAMARAHAN HEALTH CLINIC, SARAWAK 2009

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A thesis submitted in fulfillment of the requirements for the Masters of Public Health

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DECLARATION

No portion of the work referred to in this thesis has been submitted in support of an application for another degree of qualification of this or any other university or institution of higher learning.

Signature: [signature]

Name: NUR FATIHAH OH BT ABDULLAH

Date: June, 3rd, 2009
DEDICATION

To my husband Wiani B.Eli whom teach me patience, whom support me endlessly. To my princess and princes, Ain, Aiman, Afif and Asyraf who’s always gave me continuous inspiration.
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<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>CDC</td>
<td>Centres for Disease Control and Prevention</td>
</tr>
<tr>
<td>CPG</td>
<td>Clinical Practice Guideline</td>
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<tr>
<td>DM2</td>
<td>Diabetes Mellitus Type 2</td>
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<tr>
<td>FBS</td>
<td>Fasting Blood Sugar</td>
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<tr>
<td>HBGM</td>
<td>Home Blood Glucose Monitoring</td>
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<td>SBGM</td>
<td>Intensified Self Blood Monitoring</td>
</tr>
<tr>
<td>N</td>
<td>Sample size</td>
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ABSTRACT

TREATMENT COMPLIANCE AND SELF CARE PRACTICES AMONG TYPE 2 DIABETES MELLITUS PATIENTS AT KOTA SAMARAHAN HEALTH CLINIC.

Nur Fatihah Oh Bt Abdullah

(Treatment compliance and self care practices are important factors in the management of diabetes. It can improve glycaemic control and prevent or delay diabetes related complications which cause reduction in quality of life and disease burden in term of treatment cost. A primary health care clinic was chosen for this study. The objectives of this study were to determine the status of compliance and self care practices and its relation to fasting blood sugar among Type 2 Diabetes Mellitus patients.) A cross sectional study was done by using guided self report questionnaire and involving 163 respondents aged above 30 years old. The questionnaire includes socio demographic status, fasting blood sugar result, risk factors, compliance towards treatment and follow up visit as well as self care practices. SPSS version 14 was used to analyse the variables with test of significance at \( p < 0.05 \). Among the respondents the good compliance was 93.3%. Based on fasting blood glucose 49.1% were good control (FBS = 4.4 – 6.1 mmol/L) and 50.9% were poor control (FBS > 6.1 mmol/L). There was a significant association between compliance and fasting blood glucose \( (p< 0.05) \). There was significant association between level of income and types of occupation with compliance \( (p< 0.05) \). The good compliance was observed among female as compared to male with test of significance \( p<0.05 \). However there was no association between self care practices and fasting blood glucose. As a conclusion treatment compliance influence fasting blood sugar and factors like income and occupation do influence compliance among these respondents.)
ABSTRAK

KAWALAN GULA DALAM DARAH, PEMATUHAN DAN PENJAGAAN Diri
DIKALANGAN PESAKIT KENCING MANIS JENIS KEDUA DI KLINIK KESIHATAN
KOTA SAMARAHAN.

Nur Fatihah Oh Bt Abdullah

Pematuhan terhadap rawatan dan penjagaan diri amat penting untuk pesakit kencing manis. Ianya adalah untuk mencapai tahap gula dalam darah yang baik serta mengelakkan atau melambatkan terjadinya komplikasi yang memberi kesan terhadap kualiti hidup pesakit, beban penyakit kerana kos rawatan dan sebagainya. Klinik kesihatan primer telah dipilih dalam kajian ini. Tujuan kajian ini adalah untuk mengenalpasti status pematuhan terhadap rawatan, penjagaan diri dan kaitannya dengan status kawalan gula dalam darah dikalangan pesakit kencing manis jenis kedua. Satu kajian hirisan lintang telah dijalankan kepada responden seramai 163 yang berumur 30 tahun ke atas. Temuduga ke atas pesakit kencing manis jenis kedua telah dijalankan dengan menggunakan soalan kaji selidik berdasarkan laporan dari pesakit. Soalan kaji selidik merangkumi data sosio demografi pesakit, keputusan ujian kandungan gula dalam darah ketika berpuasa (FBS), pematuhan terhadap ubat-ubatan dan temujanji serta amalan penjagaan diri. Data kajian telah dianalisa dengan menggunakan SPSS versi 14. Kajian mendapati 49.1% adalah terkawal (FBS= 4.4 - 6.1 mmol/L) dan 50.9% adalah tidak terkawal (FBS > 6.1mmol/L). Kajian ini mendapati adanya kaitan antara status gula dalam darah dengan pematuhan (\( p<0.05 \)). Terdapat juga hubung kait di antara faktor pendapatan dan jenis pekerjaan dan pematuhan terhadap rawatan (\( p< 0.05 \)). Secara kesimpulannya pematuhan mempengaruhi kandungan gula dalam darah dan pendapatan serta jenis pekerjaan juga mempengaruhi pematuhan di kalangan responden.
CHAPTER 1

INTRODUCTION

1.1. Introduction.

Malaysia is a developing country and with increasing urbanization, there is a tendency for its people to lead a sedentary lifestyle. This condition predisposes the population to obesity and diabetes (Lakerveld et al, 2008). Diabetes mellitus is a common metabolic disorder resulting from defects in insulin action, insulin production, or both. Type 2 Diabetes mellitus is mainly caused by insulin resistance or decreased insulin secretion as a result of obesity. It is the most common form of diabetes mellitus, accounting for 90 to 95 percent of all diabetes cases worldwide (CDC, 2008). Diabetes mellitus is characterized by hyperglycaemia giving rise to acute and chronic complications.

As a result it causes high morbidity and mortality (Rizvi, 2004). A number of risk factors are attributed to the incidence of diabetes, including family history, age, ethnicity, and economic status, as well as behavioural, lifestyle, psychological, and clinical factors (CDC, 2008). The prevalence of diabetes varies with age, gender, race, and ethnicity. Genetics and environmental factors are the main contributors to Type 2 diabetes. Physical inactivity and adoption of a western lifestyle (particularly choosing foods with more
animal protein, animal fats, and processed carbohydrates) also predispose people to get diabetic (Rizvi, 2004).

People with diabetes are at increased risk for serious long-term complications. Hyperglycaemia causes micro vascular and macro vascular complications. Therefore good compliance and self care practices to ensure good glycaemic control is a vital part of management of diabetes mellitus to prevent or delay these complications. Management of diabetes involve multidisciplinary approach which includes dietary advice or prescription, exercise, weight reduction, self-monitoring of blood glucose and taking medication or insulin injections (Shaw et al, 2005).

In the ideal setting, following the diagnosis of diabetes, a diabetic patient undergoes medical nutrition therapy. In other words, a registered dietician performs a nutritional assessment to evaluate the diabetic patient's food intake, metabolic status, lifestyle, and readiness to make changes, along with providing dietary instruction and goal setting (Christensen, 2000).

The nutritional assessment is individualized and takes into account cultural, lifestyle, and financial considerations. The goals of medical nutrition therapy are to attain appropriate blood glucose, lipid, cholesterol and triglyceride levels as well as blood pressure control, which are critical in preventing the chronic complications associated with diabetes (Christensen, 2000).
Exercise and blood glucose monitoring are also critical components of a diabetic patient's self-management. Exercise improves blood glucose control, increases sensitivity to insulin, reduces cardiovascular risk factors, contributes to weight loss and improves well-being (CDC, 2008). It can further contribute to a reduction in the risk factors for diabetes-related complications.

The compliance and self care practice of diabetes are poor among diabetic patients in many developing countries (Mohammed et al., 2008). This is due to many factors like health care availabilities, socio demographic, socio economic and others.

Treatment compliance and self care practices do influence glycaemic control (Lutfey & Wishner, 1999). In diabetics good glycaemic control is a standard care to prevent and delay the onset or progression of complications due to diabetes (Rizvi, 2004).

There are a few studies done in Peninsula Malaysia regarding glycaemic control (Suhaiza et al., 2004, Shafiee, 2004). However there were limited studies to identify the relationship between glycaemic control and compliance and self care. Therefore this study will demonstrate socio demographic characteristics, treatment compliance and self care practices in local setting.
1.2. Background of study area and population.

Kota Samarahan is the 8th division in Sarawak which has undergone progressive infrastructure development including improvement of health care facilities. It is located about 35 km from Kuching City. The main health clinic is Kota Samarahan Health Clinic which is a type 3 health clinic, which provides outpatient health care for its 21,000 population. The Malays represent the majority ethnic group, followed by Iban, Chinese and others. Most of them are farmers and self employed. The study population is Type 2 Diabetes Mellitus (DM2) patients who are under regular follow up at Kota Samarahan Health Clinic.

1.3. Significance of the study.

Type 2 Diabetes gave rise to higher mortality and morbidity. This can be reduced by improving treatment compliance and self care practices so that it further improves glycaemic control. In order to organize the education programme for improvement on treatment compliance and self care practices, it is useful to explore patient’s socio demographic factors, glycaemic status, compliance and self care practices before developing appropriate intervention programme.
1.4. Literature Review.

1.4.1. Introduction.

Chronic disease by far is the most common underlying cause of death in the world (WHO, 2008a). It accounts about 60% of total deaths (CDC, 2008). Approximately 17 million people die prematurely each year as a result of the global epidemic of chronic diseases (WHO, 2008b). The causes of premature death are mainly stroke, heart disease, cancer and diabetes (WHO, 2008c).

The changes of epidemic of infectious disease to predominant chronic diseases were described in theory of epidemiology transition (Nguyen & Frenk, 2002). This was related to changes in socio economic of the countries predispose people to change their lifestyle, physical inactivity, sedentary life, eating high sugar and calories diet causing chronic diseases including diabetes (Nguyen & Frenk, 2002).

Diabetes is a non communicable disease, which occurs when the pancreas does not produce enough insulin, or when the body cannot effectively use the insulin it produces (WHO, 2009). This leads to an increased concentration of glucose in the blood (hyperglycaemia) (WHO, 2009). There are different types of diabetes namely pre diabetic or previously known as impaired glucose tolerance (IGT), insulin dependent diabetes (type 1), non insulin dependent diabetes (type 2) and gestational diabetes (CDC, 2008).
Type 1 diabetes is characterized by a pancreatic insulin deficiency due to destruction of Islet cell. Tissue resistance to insulin mediated glucose uptake is recognized as major pathophysiologic determinants of types 2 diabetes (Rizvi, 2004). It often results from excess body weight and physical inactivity (WHO, 2009). Type 1 diabetes has genetic predisposition as compared to type 2 diabetes (ADA, 2007). In type 2 diabetes the risk factors are modifiable through good dietary habit, healthy lifestyle and physical activity (Wild et al, 2004). Management of diabetes is very complex and requires everyone’s effort including patients, healthcare providers and families (Sridhar & Madhu, 2002).

1.4.2. Public health implications of type 2 diabetes.

Type 2 diabetes can affect almost all organs in the body (Shaw, 2005). It gives rise to acute and long term complications (Dey et al, 2000). In acute complication patients can go into delirium as well as diabetic coma (Shaw, 2005). In long term it causes micro vascular complications and macro vascular complications (CDC, 2008) as a result of hyperglycaemia. Hyperglycaemia causes an elevation of pro inflammatory cytokines that trigger endothelial dysfunction and promotes vascular abnormalities responsible for atherosclerosis causing macro vascular complications (Rizvi, 2004). Once this occur there will be multiple organ damage like retinopathy, stroke, ischaemic heart disease, nephropathy and neuropathy (Shaw, 2005).
Type 2 diabetes is one of the preventable causes of death and is a major public health problem worldwide (Wild et al, 2004). It is estimated by 2025 there will be around 300 million cases and 80% of the cases will be from developing countries (WHO, 2008). In developed countries like United States, based on the National Health Data Survey, the total number of hospitalizations were calculated to be 38.8 million (95% CI 36.0–41.5 million) in 2004. Approximately 5.2 million admissions had at least one diagnostic coding indicative of diabetes with 609,000 admissions primarily due to diabetes (ADA, 2007). Among these 609,000 admissions, 191,181 (or 32%) were due to uncontrolled diabetes conditions.

The cost burden resulting from avoidable hospitalizations due to short term uncontrolled diabetes is substantial 2.8 billion dollars (Kim, 2007). However, the long term impact of uncontrolled diabetes and its economic burden could be more significant (ADA, 2003). In Malaysia 5 to 10 percent national’s health budget goes to diabetes management either in the hospital or in primary care (Shafiee et al, 2004). Meanwhile direct provider cost was RM 183.53 per diabetic patient per year and RM 53.03 per visit per patient (Nabila, 2002). Over time, uncontrolled diabetes can contribute to various tremendous complications (Wild et al, 2004).

Given the steep and ever-increasing prevalence of diabetes, the avoidable burden associated with preventable diabetes hospitalizations will increase if this problem is not addressed immediately (WHO, 2008). Improved accessibility to primary health care and patient’s education would save substantial social costs (ADA, 2007).
As a developing country Malaysia is facing increasing number of ageing population, giving rise to higher incidence of diabetes mellitus (IPH, 2008). To overcome this, health intervention should be done at the national and local levels as to provide information and appropriate measures in controlling the incidence of diabetes mellitus and its complications (Shafiee et al, 2004).

In Malaysia the prevalence of diabetes is escalating despite many intervention strategies. The latest figures showed the prevalence is increasing from 8.3% to 11.6% based on NHMS II & III (IPH, 2008). Based on this survey also the numbers of new cases are also increasing from 2.5% to 5.5%. The prevalence is higher among the age group 50 to 64 years old and those living in urban areas.

The population with higher prevalence of diabetes was among the unemployed, housewife, technical staff, officials and managers (IPH, 2008). The major concern was that the glycaemic controls among these cases were poor (Shafiee et al, 2004). As an example the prevalence of poor control Type 2 diabetes was 87.5% in Kelantan in a year (Suhaiza et al, 2004).

The Diabetes Care Data Collection Project (DCDCP) conducted in 1997 showed that more than half of the diabetic patients had poor glycaemic control where 68% had fasting blood glucose of 7.8 mmol/L and above (Shafiee et al, 2004). Malaysia’s Ministry of Health (MOH) Annual Report in 2006 also documented that among 164,705 cases of diabetes, 33.2% showed good control and 66.8% were poorly control. In many developing countries including
Malaysia the use of HbA1c test is limited due to financial constraint (Mohamed et al, 2008). Therefore the use of FBS is still applicable and useful (Benoit et al, 2005).

In term of management, evidence-based guidelines for the treatment of type 2 diabetes mellitus focuses on three areas: intensive lifestyle intervention that includes at least 150 minutes per week of physical activity, weight loss with an initial goal of 7 percent of baseline weight, and a low fat, reduced calorie diet, aggressive management of cardiovascular risk factors (i.e., hypertension, dyslipidaemia and microalbuminuria) with the use of aspirin, statins and angiotensin-converting enzyme inhibitors and normalization of blood glucose level (Rispin et al, 2009).

Good glycaemic control now is accepted standard to prevent or delay the progression of various complications namely stroke, myocardial infarction, nephropathy, neuropathy, retinopathy, gastrointestinal problems and impotence (Christensen et al, 2000). If the glycaemic control is good (FBS of 4.4 to 6.1 mmol/L) or one percent reduction in HbA1c, there is 40% reduction in macro vascular and micro vascular complications (CDC, 2008).

In Japan it was found that good glycaemic control predicts better survival of diabetic end stage renal failure patients starting haemodialysis treatment (Morioka, 2001). Meanwhile in U.S. a high proportion of haemodialysis patients with diabetes had inadequate glycaemic control, particularly those with longstanding disease had a significantly higher burden of micro vascular complications (Tascona, 2006).
Macro vascular events in diabetes like cardiovascular diseases are the primary cause of morbidity and mortality among patients with diabetes (Robbins et al, 2005). Therefore the tremendous impacts of diabetes on cardiovascular disease can be reduced by educating the public and healthcare personnel for proper glycaemic control (Rizvi, 2004).

As diabetes is a chronic debilitating disease (Shaw, 2005) the impact to psychosocial or the need for psychosocial support are always there. Type 2 diabetes patients especially with complications related to impairment of physical like stroke, blindness, renal failure and many others will contribute to psychosocial problems (Sridhar & Madhu, 2002). The psychosocial problems include psychological reactions, quality of life, well being, social support and coping with diabetes (Sridhar & Madhu, 2002). Tremendous impacts due to diabetes to health economic and psychosocial will be further increase in Malaysia if the importance of treatment compliance, self care practices and glycaemic control were not addressed continuously.

1.4.3. Compliance and associated factors.

As diabetes is a chronic disease and need long term management and treatment therefore compliance towards drugs regimen, diet and self care practice are major issues (Lutfey & Wishner, 1999). Patients' ability to comply or adhere to their treatment regimen is crucial for successful management of type 2 diabetes. However, several studies have shown difficulties in maintaining optimal compliance or adherence with all aspects of diabetic therapy (Dey et al, 2000).