CHAPTER 1

INTRODUCTION

The prevalence of the Non Communicable Diseases (NCD), including diabetes mellitus is increasing worldwide (Murray & Lopez, 1996). On December 2006, the United Nations (UN) recognized diabetes mellitus as a chronic, expensive and disabling condition and defined a diabetes world day (UN, 2006).

The World Health Organization Regional office for Africa survey of the STEPwise approach for the surveillance of NCDs found that the African prevalence of diabetes mellitus is ranked between 1 to 20% among chronic illnesses (WHO regional office for Africa, 2006). In 1990, it was estimated that Non Communicable Diseases contributed to 14% of the total burden of diseases in sub-Saharan Africa and, that figure will double by the year 2025 (Murray & Lopez,1996). In 2007, the 57th session of the WHO regional committee for Africa in recognition of the increasing incidence of diabetes in Africa called for control strategies (Boureima, 2007). Sobngwi and colleagues suggested that ageing of population and lifestyle changes associated with rapid urbanization and westernization are the major factors linked to the increase of the prevalence of diabetes mellitus in African communities (Sobngwi et al, 2001). They reported also that type2 diabetes is the predominant form of diabetes (70-90%), the rest of the patients have type1 diabetes and some atypical presentations that require more pathophysiological insight. They reported that traditional rural communities in sub-Saharan Africa had a very low prevalence of around 1–2 %, except in some specific high risk groups where the prevalence could be higher.

According to the International Diabetes Federation, the Democratic Republic of Congo (D R Congo) is the country with the third highest rate in sub-Saharan Africa when taking in account its prevalence of diabetes mellitus (IDF, 2010). The study was conducted at the Vanga Health Zone, a rural health zone in the Bandundu Province, in the D R Congo that covers an area of 2600 kilometers and comprises 52 health centers and a general hospital, Vanga Hospital. The Vanga Health Zone has 242 326 inhabitants the majority of whom are dependent on agriculture (Vanga Health Zone, 2010). The population is very poor, with very scanty transport routes and business markets. The population mainly uses traditional medicine. There is a high incidence and prevalence of communicable diseases in the Vanga Health Zone. The incidence and prevalence of non-communicable diseases like hypertension and diabetes mellitus is also increasing. However, the health system is not well developed to meet the challenge, especially of the rising incidence and prevalence of non-communicable diseases. Health centers are managed by nurses whose work is focused on immunization and the management of infectious diseases. The non communicable diseases are managed in the hospital. In the Vanga Health Zone, the exact prevalence of diabetes mellitus is unknown. Nevertheless, according to records of Vanga Hospital which organizes a clinic for diabetes patients, the number of patients diagnosed with diabetes is increasing.

Diabetes mellitus has physical, economical and psychosocial effects on patients, their families and communities. Diabetes and its complications are largely preventable through relatively simple interventions (Michael et al, 2003). The control of diabetes in rural Africa where there are limited resources and misinformed patients raises real challenges for health workers (Nthangeni et al, 2002). In the Vanga Health Zone, patients consult late after the first symptoms of diabetes. There is common talk in the population that the reason for some of the diabetic patients not to adhere to the scheduled appointments is

the belief that diabetes is due to witchcraft. These ideas can interfere with the prevention and management of diabetes in this area because patients are wasting time and resources in trying to escape bewitchment instead of approaching medical service earlier.

To ensure the identification and dissemination of information, education and communication to empower people with diabetes, the profile of the greatest amount of patients diagnosed with diabetes should be known. Some studies have addressed the issues of beliefs and knowledge among diabetics but none have been conducted in our setting.

The purpose of this study was to determine the profile of patients diagnosed with type 2 diabetes mellitus at Vanga Hospital, DR Congo. The objectives of the study were to assess the patients' socio-demographic characteristics and health beliefs about diabetes mellitus.

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CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The purpose of this literature review is to report key research topics related to demographic characteristics and health beliefs of diabetic type 2 patients. It begins by exposition of the means used to access to literature. It also covers important areas of epidemiology, diagnosis and management of type 2 diabetes mellitus.

The findings on the profile of type 2 diabetic patients are presented in three sections as the worldwide, Continental and sub-Saharan Africa views. Finally, a summary of critical points of the literature will be presented.

2.2 Access to the literature

A literature search was conducted at the Vanga hospital library (books and CDs) and Internet. The Resource centre of the Department of Family Medicine of Medunsa was also used.

The databases used were International Diabetes Database and Pub Med.

The keywords used were: type 2 diabetes mellitus, knowledge and, health belief.

Only English publications were considered without limitation in the year of publication. The type of literature favored were systematic reviews, reviews and practice guidelines.

The lack of financial means to purchase full texts of some articles was the main limitation for critical appraisal of some articles cited in the present review.

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2.3 Profile of diabetic patients

2.3.1 Worldwide

2.3.1.1 Definition

Diabetes mellitus is seen as a group of common metabolic disorders that share the phenotype of hyperglycemia (Powers 2008, p2275).

Diabetes mellitus is classified into four principal types (WHO, 1999). It includes type 1 diabetes mellitus, type 2 diabetes mellitus, gestational diabetes and other specific types of diabetes. Type 2 diabetes is the most common type of diabetes mellitus.

Until 1998, according to the World Health Organization, diabetes mellitus was the fasting plasma glucose above 7.8 mol/L (140 mg/dl) or hyperglycemia above 11 mol/L (198 mg/dl) two hours after an oral glucose load (ingestion of 75 grams). Taking into consideration epidemiological studies concerning the late diagnosis of the diabetes mellitus, the American Diabetes Association modified the biological criteria of diabetes mellitus in 1998, while decreasing the thresholds of the fast plasma glucose to 7 mmol/l (126 mg/dl). Powers (2008) gives the following criteria for the diagnosis of diabetes mellitus:

- Symptoms of diabetes plus random blood glucose concentration above 11.1 mmol/L (200mg /dl)

- Fasting plasma glucose above 7.0 mmol/L (126mg/dl)

- Blood glucose level above 11.1mmol/L (200mg/dl) two hours after 75g glucose ingestion (Glucose Tolerance Test).

According to Grimaldi and Heurlier (1999), criteria for diagnosing type 2 diabetes mellitus are:

- Presence of chronic hyperglycemia

- Absence of another type of diabetes (for example insulin-dependent type, autoimmune diabetes, secondary diabetes, in particular maturity onset diabetes of the young (MODY) and diabetes secondary to pancreatitis).

But research for all these secondary causes would not be systematic indeed, it is - useless if hyperglycemia occurs in patients after 40 years of age with a family history of - type 2 diabetes and/or signs of insulin resistance (central obesity, high blood pressure, dyslipidemia or hyperuricemia). Grimaldi and Heurlier (1999) concluded that the diagnosis of type 2 diabetes is probabilistic.

The type2 diabetes results from insulin resistance, but a single pathophysiology could not explain this disease.

The risk factors for type2 diabetes are age, ethnicity and a positive family history.

2.3.1.2   Importance of diabetes mellitus

The worldwide prevalence of diabetes is increasing (Wild et al, 2004). According to the World Health Organization (King, Albert & Hermann, 1998), there will be 300 million people with diabetes by the year 2025.

It is recognized that type 2 diabetes comprises about 70–90% of patients with diabetes mellitus around the world (EBMG, 2003).

The adverse effects of Diabetes lead to the increasing of demand and cost of medical care (Caro, Ward & O' Brien, 2002).

The International Diabetes Foundation (IDF) considers the diabetes as a real public health problem (IDF, 2010).

2.3.1.3 Patients' profile

Few studies were done to assess socio-demographic characteristics and health beliefs about type 2 diabetes mellitus.

Type 2 diabetes affects minority populations including African-Americans, Hispanics, Native Americans, and Alaska native, Asian-American and Pacific Islanders (Wing et al, 2001).

Rewers & Hamman (1995) discussed that risk factors to these populations include genetic, behavioral and lifestyle factors.

2. 3.1.3.1 Age of diabetic patients

In the past, clinicians worldwide thought that type 2 diabetes occurred primarily in individuals above 40 years of age. But Pinhas-Hamiel, Dolan & Daniels (1996) argued that there is an increase in the incidence of non-insulin-dependent diabetes mellitus among adolescents. Indeed, the increasing prevalence of childhood obesity has led to a marked increase in type 2 diabetes in adolescents and young adults.

In the United States, the National Center for Health Statistics (Adams and Benson, 1990)

estimates showed the mean age of 51.1 years at the diagnosis of type 2 diabetes (50.8 years for men and 51.3 years for women).

The mean age for diagnosis of type 2 diabetes varied according to ethnicity:

- 52.2 years old for Caucasians (51.9 years for men and 52.4 years for women)

- 49.2 years old for African-Americans (47.8 years for men and 50.0 years for women)

- 43.3 years old for Hispanics (46.2 years for men and 44.7 years for women)

In France, the mean age at the diagnosis of the diabetes mellitus type 2 was 57.0 years old (Agence Nationale d'Accréditation et d'Evaluation en Santé, 2003).

In Asians the age at the diagnosis of type 2 diabetes mellitus is lower as following: 15-23 years in Japanese and 16-46 years in Chinese (Nagasaka et al, 1998).

2.3.1.3.2 Gender

There is a male dominance for diabetes but in France, the type 2 diabetes is largely seen among women than men (Simon et al, 1998).

2.3.1.3.3 BMI

Some epidemiological studies in US show that obesity and a sedentary lifestyle are independently related to the chances of developing diabetes. Data from the Nurses' Health

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Study suggest that the lowest risk of diabetes occurs in individuals who have a BMI <21, with increasing prevalence seen as obesity levels increase (Carey et al, 1997). In British Columbia, Daniel and Messer (2002) found a BMI of 30.9 Kg/m^2 with 5.7 as standard deviation.

2.3.1.3.4 Diabetic patients' knowledge and beliefs

Because the recognition of the role of patient knowledge and its promotion have become unfashionable at the end of 20th century and replaced by a growing interest in attitudes and health beliefs, few studies address only the knowledge of type 2 diabetic patients (Wooldridge et al, 1992).

Indeed, diabetes education provides the required knowledge, but despite this, self-care is often suboptimal. The degree to which patients follow advice as regards the various self-care behaviors is determined by their health beliefs (Illness Representations or Personal Models) of diabetes (Harvey and Lawson, 2009). Similar conclusion has been found in Aboriginal Canadians -a population at high risk for diabetes and its complications. Indeed, Daniel and Messer (2002) found that there was an association between blood glucose and belief with the strength of the association (ß[SE]) ranging from 0.39 (0.18) (when specified with knowledge) to 0.50 (0.22) (when specified with carbohydrate intake).

A review has been done in 2006 on the Hispanic adults' beliefs about type2 diabetes by Hatcher and colleagues (2007). The understanding of the etiology of type 2 diabetes was found to be an integration of biomedical causes and traditional or folk beliefs such as susto, which is the concept of strong emotions. These religious beliefs also factored into the Hispanic adult's explanatory model of type2 diabetes.

In New-Zealand, results on comparisons of glycosylated hemoglobin levels showed that Tongan patients had significantly poorer control over their diabetes than did European patients because of the health beliefs. Tongan patients perceived their diabetes as acute and cyclical in nature, uncontrollable, and caused by factors such as God's will, pollution in the environment, and poor medical care in the past. Tongan patients perceived less necessity for medication, and exhibited higher emotional distress related to their diabetes. The beliefs that characterized the Tongan patients tended to be associated with poorer adherence to medication and proper diet (Barnes, Moss-Morris & Kaufusi, 2004).

Greenhalgh and colleagues (1998) in their studying of health beliefs and folk models of diabetes in British Bangladeshi reported that illness was generally attributed to events or agents outside the body rather than to primary failure of an organ. They also reported strong religious views in term of "God's will" in parallel with acceptance of individual responsibilities and potential of change (Greenhalgh, Helman & Chowdhury, 1998).

Beliefs on treatments are lying on the believed etiology. Hatcher & Whittemore (2007) identified in Hispanic adults beliefs about type2 diabetes that both biomedical and herbal treatments were accepted for their diabetes. Also they found that negative attitude toward insulin were common. Barnes and colleagues (2004) in New Zealand found that Tongan patients perceived less necessity for medication, and exhibited higher emotional distress related to their diabetes. Tongan patients saw less necessity for diabetes medication than did European patients. European living in the same area tended to view their illness as chronic. Because of spiritual etiology beliefs that characterized the Tongan patients, they tended to be associated with poorer adherence medication and proper diet (Barnes, Moss-Morris & Kaufusi, 2004).

2.3.1.4 Prevention

Type 2 diabetes is preceded by a period of intolerance to glucose on which lifestyle modifications and drugs may delay or prevent the onset of the disease.

Community-level strategies against diabetes attempt to screen for and prevent development of the disease among susceptible persons and the community in general. Prevention initiatives also try to help persons with diabetes to control hyperglycemia and limit the risk of macro-vascular and micro-vascular complications. Daniel and colleagues (2001) affirm that behavioral therapy is based on an understanding of relations between effective treatment and health beliefs associated with having diabetes. Belief system sustains the willingness to participate in the treatment of diabetes.

Nagasawa et al (1990) found that for persons with type 1 diabetes, treatment compliance is positively associated with perceived benefit, emotional stability and supportive structure, and negatively related to perceived barriers and negative social environment.

In type 2 diabetes, effective control of diabetes requires behavioral compliance with diabetic regimens, which is difficult to predict and challenging to influence. Motivational interviewing is "a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence". Exploiting the differences between clients' perceived pros and cons of changing behavior and enhancing ownership of the interventional program can assist in moving towards sustained adherence to healthy behavior such as physical activity and exercise (Schoo, 2008).

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Effective self-management of chronic illnesses such as diabetes requires not only technical skill to perform regimen behaviors but also problem-solving skills to manage daily barriers to regimen adherence and to make appropriate adjustment to self-care regimen (Hill-Briggs, 2003).

The Health Belief Model (HBM), initially developed to understand why people did not participate in disease detection programs, has since been used to explicate factors underlying patient compliance with treatment regimens for diseases, including diabetes (Polly, 1992).

Founded on the value-expectancy theories of social psychology, the HBM posits that individuals will be more likely to take healthful behavioral action if they desire to stay healthy and believe such action will effectively protect their health. The HBM posits further that positive behavioral action depends on convictions about the severity of the disease threat and the belief that barriers to the execution of therapeutic behavior can be surmounted.

Becker and colleagues (1974) discussed the utility of the HBM in accounting for health behavior. They affirmed that HBM has been examined ranging from acceptance of preventive health recommendations, to adherence to treatments for acute and chronic illness. While positive health beliefs are linked to patient compliance for chronic diseases, including diabetes, barrier perceptions are most strongly, and severity perceptions most weakly related to positive health behavior. A meta-analysis of the HBM's consistency of

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validation found the evidence to be lacking, however, in its overall utility for predicting behavioral change. Harrison, Mullen & Green (1992) concluded that some behavioral research upheld a simplistic cognitive emphasis on changing attitudes or beliefs in isolation from the contexts in which they occur, it can also be challenging to assess behaviors with sufficient sensitivity to link them to specific health beliefs, especially in ethnically distinct and disadvantaged populations.

Studies applying the HBM to diabetes have relied largely on self-reported data in focusing on relationships between health beliefs and behavioral compliance with prescribed treatment regimens. Early research on diabetes tended to target beliefs in relation to behavior alone, but a growing pool of studies has targeted relationships between health beliefs and behavior as well as glycemic control in the same individuals. Such studies are important in assessing the utility of the HBM in relating health beliefs to indicators of glycemic control, yet the evidence would suggest the model explains behavioral compliance better than glycemic control. Few studies, however, have examined the capacity of the HBM in longitudinal prediction of glycemic control while allowing for the potential influence of behavior on such relations.

 A Canadian study (Daniel & Messer, 2002) undertook such an analysis in a sample of Aboriginal Canadians from a population at high risk for diabetes and its complications. Indeed, Daniel and Messer (2002) found that there was relation between blood glucose and belief.

Researches on health beliefs and diabetes in sub-Saharan African people are not many. Awah and Phillimore (2008) in Cameroon found that it is axiomatic for people, from their perspective, that illness and disease can be cured. So that concerning diabetes they think that treatment is a path to recovery, not a life sentence of disease management. If the clinic or hospital cannot cure diabetes, it highlights not merely the limitations of biomedicine, with its practitioners regarded as reluctant to admit, but also the vital importance of alternative knowledge and treatment procedures which can make good that deficiency and deliver the desired curative outcome.

2.3.2 Continental View

2.3.2.1 Importance

Data for diabetes in Africans is scanty as the subject has received little attention in the past, global estimates of number of people with diabetes in Africa was approximately 3 million in 1994 and will go through a 2-3 fold increase by this year 2010 (Sidibe, 1998). The numbers of diabetes sufferers are different in towns compared to rural zones. According to Sobngwi, in African traditional rural communities still have very low prevalence at most 1-2%, except in same specific high-risk groups where 13% or more adults have diabetes (Sobngwi et al, 2001).

The epidemiological studies show a great change in the evolution of diabetes in Africa. Indeed, Cook in 1901 considered diabetes mellitus as a rare medical condition in Africa (Cook, 1901). Epidemiological studies carried out in the last decade of the twentieth century have provided evidence that there is a global trend towards an increased

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incidence and prevalence of diabetes in the African population (Sobngwi et al, 2001).

This burden of diabetes in Africa is due to the rapid demographic and epidemiological transition (Mosley et al, 1993). The WHO links this situation to ageing with older age structures in populations, increasing urbanisation and the associated risk factors such as obesity and physical inactivity. Evidence suggests that no communicable diseases currently contribute substantially to the burden of mortality and morbidity in African adults. Aspray concluded that Age-specific levels of diabetes and hypertension in many urban areas of sub-Saharan Africa become as high as, or higher than, those in most Western European countries (Aspray et al, 2000). Kitanga and colleagues (1996) in a demographic surveillance system in Tanzania found that diabetes mellitus type 2 accounted for between one in six and one in three adult deaths, with age-specific death rates from non-specific, no communicable diseases being as high as or higher than that in developed countries (Unwin et al. 1999).

The prevalence of diabetes in Africa was approximately 3 million in 1994; but the region is due to experience a two-to-threefold increase by the year 2010 (Amos, McCarty & Zimmet, 1997). The highest prevalence is found in populations of Indian origin, followed by black populations and Caucasians (Sobngwi et al, 2001). Among the population of Indian origin in South Africa and Tanzania, the prevalence is between 12 and 13 percent (Ramaiya et al, 1991).

The prevalence in blacks follows a Westernization gradient, with that of rural Africa

generally below 1 percent but that of urban Africa between 1 and 6 percent (Sobngwi et al, 2001).

In general the prevalence of type 2 diabetes is low in both rural and urban communities of West Africa except in urban Ghana, where Amoah, Owusu & Adjei (2002) found a high rate of 6.3 percent recently.

Moderate rates have been reported from South Africa: 4.8 percent in a semi-urban community in the Orange Free State, 6.0 percent in an urban community of the Orange Free State, 5.5 percent in Durban (mostly occupied by the Zulu tribe), and 8 percent in Cape Town (mostly occupied by the Xhosa tribe). Also, moderate rates have been reported in studies from Tanzania (World Diabetes Federation, 2002).

2.3.3 Sub-Saharan view

2.3.3.1 Importance of diabetes mellitus

In D R Congo epidemiological data on diabetes are still unknown. However, The WHO diabetes program estimated the prevalence of diabetes to be approximately 29100 in 2000 and the projected increase to 910 000 in 2030 (IDF, 2006). The prevalence and incidence of diabetes are increasing with ageing and the adoption of the Western lifestyle.

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The identified risk factors are not different from those reported in other populations: genetic, obesity and a sedentary lifestyle. There are modifiable and non-modifiable factors to diabetes. Age and ethnicity are the main non-modifiable determinants of diabetes. Hence the prevalence in Africa as confirmed by the increasing prevalence with age and the difference between Indians, blacks and Caucasian (Sobngwi et al, 2001). Omar and colleagues (1993) reported that Indians have the highest predisposition and are followed by blacks and Caucasians. Among modifiable risk factors, we usually keep count of lifestyle. Maire and colleagues (2002) found that the economic development in many countries in sub-Saharan Africa has led to increased risk factor levels for type 2 diabetes by improving the life expectancy and poor lifestyle modifications (e.g. consumption of sugar in diet). Residence seems to be a major determinant of diabetes in sub-Saharan Africa, since urban residents have 1.5 to 4.0 time's higher prevalence of diabetes than their rural counterparts (Sobngwi et al, 2001). Mennen and colleagues (2000) attributed this to life changes associated with urbanization and westernization characterized by consumption of refined sugars and saturated fat and reduction in fiber intake. Sonbgwi et al (2002) linked an increase in fasting plasma glucose in those whose lives have been spent in an urban environment, suggesting that both lifetime exposure to and recent migration to or current residence in an urban environment are potential risk factors for obesity and diabetes mellitus. The population of Africa is predominantly rural but the rapid urban growth of 4.3 percent compared to the 0.5 in Europe lead the United Nations Population Fund (UNFPA) in 2000 to conclude that 70 percent of population of Africa will be urban residents by 2025 (UNFPA, 2000). Urbanization of the population leads to increase of non-communicable diseases following westernization.

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2.3.3.2 Profile of patients

Few studies show a complete profile of African- patients with type 2 diabetes including demographics characteristics and health belief. Sobngwi and colleagues (2002) confirmed that there is a strong positive family history of type 2 diabetes approaching 100% in some studies. This prevalence of family history of diabetes is very high in some cohorts, but this is less often reported in adults than in children.

2.3.3.2.1 Age

The mean age found at diagnosis varies from 35 to 46 years of age (Mbanya & Ramiaya, 2006).

2.3.3.2.2 Gender

There is a male predominance, with the M: F sex ratio varying from 1:1 to 3:1 (Sobngwi et al, 2002).

2.3.3.2.3 BMI

Describing the BMI in Africans in their review, Sobngwi and colleagues (2002) did not specify the type of Diabetes. In the same article, they reported that the mean BMI at diagnosis was 26, 28-30, and 37 in the Paris, New York, and Atlanta cohorts respectively (Sobngwi et al, 2002)

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2.3.3.2.4 Diabetic patients' knowledge and beliefs

Few studies on health beliefs among diabetic patients in sub-Saharan African people have been conducted. In terms of belief, Awah and Phillimore (2008) found the continuing importance of indigenous healing practices, and explanations for diabetes in terms of ancestral intervention or witchcraft in Cameroon.

Even though worldwide the recognition of the role of patient knowledge and its promotion have become unfashionable (people with good knowledge could have a suboptimal glycaemic control); we found an interesting study on the knowledge of patients with type 2 diabetes about their condition in Sousse, Tunisia. The Authors found the two main areas where knowledge was lacking were the definition of diabetes and its pathophysiology (Ben Abdlaziz et al, 2007).

Discussing the diabetic patient's education in sub-Saharan Africa, Azevedo and Alla found that the health belief system of patient leads them to rely on traditional medicine. The concern is about traditional healers who rarely transfer patients to public health facilities because of their limited understanding of the diabetes (Azevedo & Alla, 2008).

Discussing names of diabetes in local language, Awah, Unwin and Phillimore (2009) found that people in Cameroon were faithful to traditional cultural values about the causes and treatments. According to this diabetes occur where one's blood is believed to transform into water and one develops swollen feet and a swollen stomach (Awah, Unwin & Phillimore, 2009).

A qualitative study made in Uganda concluded that men and women beliefs about health and diabetes were limited (Hjelm and Nambozi 2008). Authors indicated that irrespective of gender beliefs about the body and diabetes were limited but similarities and dissimilarities were found between men and women beliefs about self-care practice and

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healthcare seeking.

2.3.3.3 Prevention

As the identified risk factors of type 2 diabetes are not different from those reported in other populations and are classified as non-modifiable and modifiable, interventions to prevent type 2 diabetes are the same as those worldwide.

2.3.4 Summary of Findings.

Diabetes mellitus is an increasing major health problem worldwide. Rates of diabetes are more elevated in some groups with recognized risk factors   including genetic, behavioral and lifestyle factors. Diabetes leads to the increase in demand and cost of medical care.

For the profile of type 2 diabetes patients,

1. The increased prevalence of childhood obesity leads to marked increase in type 2 diabetes among juveniles. Thus the patients with type 2 diabetes can be found among adolescents.

2. Diabetes mellitus has a male predominance with the M/ F sex ratio varying from 1.5 to 3

3. The mean age for type 2 diabetes is 51.1 years.

4. The BMI ranges of patients with type 2 diabetes vary according to individual studies conducted, but data suggest that the lowest risk of type 2 diabetes occurs in individuals who have a BMI <21, with increasing prevalence seen as obesity levels increase.

5. The growing interest in attitudes and health beliefs highlight the importance of patients' personal beliefs about their illness and treatment in their self-management of a range of chronic illnesses.

6. African Indigenous healing practices and explanations for diabetes in terms of ancestral intervention or witchcraft can interfere with the compliance of patients to treatment.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the researcher presents the methods used in this study with reference to the relevant literature.

3.2 Methods

3.2.1 Design

This study was a cross–sectional survey. A health belief questionnaire was administered to registered type 2 diabetic outpatients at Vanga Hospital, Bandundu Province, DR Congo. The health belief questionnaire contained 29 opinion statements about the belief of patients with diabetes mellitus (Appendices 1 & 2). Patients had to respond to a four-point Likert scale questionnaire.

The fasting blood glucose test was performed to measure glycemic control. Clinical variables were height, weight and BMI. We also collected the following socio-demographic characteristics: age, sex, education level, residence, marital status, composition of the household, source of income, lifestyle (consumption of alcohol, tobacco, illicit drugs and dietary habits). These socio-demographic characteristics were recorded on a file (Appendices 3 & 4).

Bowling (2002) states that a cross-sectional survey is a defined random cross section of the population at a point in time. This cross-sectional methodology was chosen because it is cost-effective in terms of time and resources. The health belief questionnaire is a structured questionnaire which enables the researcher to collect unambiguous answers for analysis. In the purpose of this study, the researcher adapted the health belief questionnaire of Pillay (Pillay, 1996).

3.2.2 Study setting

The Vanga Hospital is a 450-bedded mission hospital. The hospital has a diabetic outpatient department (OPD) that is managed by two nurses with the assistance of a full-time doctor. The majority of the patients are of type 2 diabetes. About one thousand patients are registered to the diabetic clinic of Vanga Hospital and 647 patients are regular with their follow-up appointments in the first trimester of 2010. Patients come from Vanga health zone and other health zones around. They are referred by the normal consultation to OPD. Two days per weeks (Thursday and Friday) diabetic patients are invited to have education and get drugs. The diabetic OPD receives about one hundred patients per day. Emergencies or uncontrolled patients are sending in the emergency room or in internal medicine for management.

3.2.3 Study population

The study population comprised of all the diabetic outpatients attending the diabetic clinic of Vanga Hospital, (about 647 patients).

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3.2.4 Participants

3.2.4.1   Inclusion criteria

1. Patients with a confirmed diagnosis of type 2 diabetes mellitus who had been registered at the diabetic clinic for at least six months prior to the beginning of the study.

2. A patient must have been a resident of the Vanga Health Zone.

3. A patient must have signed the written informed consent for the study (Appendices 5 & 6).

3.2.4.2   Exclusion criteria

1. Patients diagnosed with type1 diabetes mellitus.

2. Patients diagnosed with type 2 diabetes mellitus, but registered less than six months prior to the beginning of the study at the diabetic clinic

3. Patients who became hospitalized during the study period

4. Non-residents of the Vanga Health Zone

5. Patients who would not give consent for the study.

3.2.5 Sampling

The recorded total number of patients attending the diabetic clinic at Vanga Hospital from 12 December 2008 to 20 April 2009 was 647. Using the Sample Size Calculator Software (Creative Research Systems, 1985), a representative sample size was chosen at 95% confidence level with the 5% confidence interval being 241 patients. In anticipation of a possible low survey response, the research team decided to increase the sample size by

up to 40 respondents. This resulted in the recruited sample size of 281 respondents.

Randomization was used to ensure that each individual had an equal chance of selection (Bowling, 2002). The diabetic clinic is operating on two days of the week: Thursdays and Wednesdays. The statistician used the patient register to generate the list for patient randomization: for a given day, the first sampled patient was the third one on the register, followed by every third patient until the required number was obtained. At each day of the diabetic clinic, the hospital manager brought the list to invite all patients identified in the randomization list to participate in the study. The list was kept by the hospital manager.

From the 281 patients selected to participate, 40 were excluded because they did not return the questionnaire or withdrew their consent. This left the research team with a total of 241 participants as was required by the Sample Size Calculator.

3.2.6 Data collection

A final year medical student, the researcher and a nurse (not involved in the diabetic clinic) trained to understand the questionnaire previously collected data on socio-demographic and clinical characteristics.

The Health beliefs about diabetes were assessed using 'The health belief questionnaire' from Pillay (Pillay, 1999) translated in Kituba, the local language. The questionnaire was self-administered by the participants. The four-point scale Likert scale health belief questionnaire was used.

The health belief questionnaire is a structured questionnaire with advantage to allow

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collection of unambiguous and easy to count answers for analysis (Bowling, 2002). The belief expressed by participants categorized into nine factors as follows: Evil/ancestral-cultural etiology, self blame, physical weakness or body malfunction, medical treatment, self care prevention, prayer treatment and holistic treatment. The questionnaire was adjusted to formulate the questions with regard to diabetes.

3.2.6.1 Measurements

The descriptive variables obtained from the health belief questionnaire and data collection sheets were sociodemographic, clinical and disease -related. Sociodemographic variables included age, sex, education level, residence, marital status, composition of the household, source of income. Clinical variables included fasting glucose to measure glycemic control, height, weight and Body mass Index (BMI).

Health beliefs

The four-point scale consisted of the following: 1 for "agree", 2 for "sometimes agree", 3 for "disagree" and 4 for "not sure" with the proposed item. The health belief questionnaire used contained 29 items about health beliefs of patients (Appendix 1) while the original questionnaire had 31 (Pillay, 1999). The calculations of the factors were done as follows: By External evil/ ancestral influence (cultural etiology) was calculated by the sum of the responses to items number 5, 6, 25, 27, 28, 30 and 31 divided by 7. Self blame (aetiology) was the sum of the responses to items number 1, 3 and 17 divided by 3. Physical weakness or body malfunction (aetiology) factor was the sum of the responses to items 7, 23, 26 and 29 divided by 4. Medical treatment was the sum of the items 9, 10 and 11 divided by 3. Self care (prevention) was calculated by the sum of the responses to items

number 18 and 15 divided by 2. Holistic belief (treatment) factor is equal to the response to item number 19. The Use of prayer (treatment) was equal to the response to item 22. Self (treatment) was the sum of items number 20, 24, 21 and 16 divided by 4. Medical reasons (aetiology) factor was the sum of items number 2, 12, 14 divided by 3.

Clinical variables

Patients have been classified according to their BMI as underweight if BMI < 18,5kg/m^2, normal if ranged from 18,5-24,9 kg /m^2, overweight if BMI ranged from 25-29 ,9kg/m^2 and obese if BMI > 30 kg / m^2.

Fasting glucose was classified as hypoglycemia if < 60 mg/dl (3.3 mmol/l), optimal if ranged from 72 to 108 mg/dl (4-6 mmol/l), acceptable if ranged from 109 to144 mg/dl (6-8 mmol/l and elevated if > 144 mg/dl (8 mmol/l). Level of fasting glucose was taken with the spectrophotometer Robert Rielekg Berlin PM 650 using ptoluidin method. Weights were measured with Balance SECA, Model 7601017009 and heights were measured with a standard meter fixed on a wall of the diabetic clinic.

Disease –related variables included beliefs about diabetes etiology, prevention and treatment. Self- care activities included lifestyle (consumption of alcohol, tobacco, illicit drugs and dietary habits) and exercise. Because of difficulties to establish the exact amounts in the consumption of red meat, vegetables, fish and cassava bread, we only took in account the number of consumption opportunities per week for these types of foods.

The team had regular briefings with the researcher.

Data collection took place from 12 December 2008 to 20 April 2009.

3.2.7 Analysis

The completed socio-demographic questionnaire and the health belief questionnaire were checked for completeness and consistency by the researcher at the end of each data collection.

The information obtained from participants was then entered into the computer by two persons independently.

The analysis was conducted using SPSS software version 18. For each descriptive variable, the frequency, mean and standard deviation were calculated.

Contingency analyses (bivariate correlation) were conducted to identify the association between socio-demographics characteristic and the key variables. A significance level of p-value 0.05 was used in all analyses.

3.2.8 Bias

The types of bias that were identified in the study (and how they were minimized) are as follows:

3.2.8.1 Translation bias

As the questionnaire was translated from English to Kituba then the information gathered was translated from Kituba back into English distortions of information could have occurred. To minimize this bias, two independent translators were asked to translate the document and comparisons were made to ensure that the original meaning was maintained.

3.2.8.2 Sampling bias

Sampling bias which deals with how representative the sample is of the study population to enable generalizability could have been introduced by the fact that diabetic patients attending the Vanga Hospital might not have been representative of the diabetics in the whole population of the DR Congo, especially those who chose not to use Western methods of treatment. However, in keeping with the study title, the researcher could only confine himself to the hospital setting.

3.2.8.3 Selection bias
This could have been introduced if patients were allowed to choose to be included in the study or if the researcher purposefully chose the sample. However, there was randomization as outlined above, so as to minimize this bias. Minimizing this bias fed into the sampling bias and also helped to minimize it.

3.2.8.4 Social desirability bias

The study is carry out in a missionary hospital and care must be taken about

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generalization of its findings in public hospitals. The patients may tend to give the preferred image and answer questions accordingly (Bowling, 2002).

3.2.9 Reliability, validity and objectivity

3.2.9.1 Reliability

Reliability is the test of the stability of a measure over a period of time in which it is not expected to change when repeated administrations are made. The use of a slightly adapted standardized Pillay Health Belief Questionnaire enhanced the reliability of the study. According to the Cronbach's coefficient, a reliability coefficient of 0.7 or higher is considered acceptable in most social science research situations (Bland and Altman, 1997; Pillay, 1996). The Cronbach's coefficient of the Pillay Health Belief Questionnaire used in this study was 0.76 with regard to its reliability.

3.2.9.2 Validity

External validity refers to the generalisability of the research findings to the wider population of interest (Bowling, 2002). The use of the systematic sampling to achieve a representative sample enhanced the external validity of the study. Admittedly, 241 was a very low number for generalizability.

3.2.9.3 Objectivity

The objectivity of the study was enhanced by identifying and minimizing the biases affecting the study.

3.2.10 Limitations of the study

3.2.10.1 Setting of the study

The study was carried out in a missionary hospital in the Province of Bandundu, and it is possible that generalizations may not be made to other public hospitals or to other geographic areas of DR Congo. This missionary status of the hospital could lead the participants to give socially correct answers. Social desirability may also influence patients' responses as they may wish to appear more adherent to the researcher. Indeed, the team of researchers did, however, clearly state that the information given by the participants would be kept confidential and would not be shared with the diabetic clinic staff.

3.2.10.2 Definition of type 2 diabetic patients

It is possible that our study included patients of atypical forms of diabetes (tropical diabetes) wrongly labeled as type 2 diabetic patients. Atypical forms of diabetes mellitus are common in areas where cassava serves as a staple food (Sobngwi et al, 2001).

3.2.10.3 Design of the questionnaire

There exists a probable lack of rigor with regard to the precision of some data relative to lifestyle and certain sociodemographic characteristics. The component of physical activity involved in regular activities has not been taken into account. It is known that rural populations of DR Congo rely upon walking as a means of transportation and often have intense agricultural activities as their main occupation. Rural dwellers have a higher physical activity related to energy expenditure compared to urban subjects (Singh et al,

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1989). It is also the fact that some of the data was based on self report making them prone to recall bias or change their data to provide socially desirable responses. But Weinger and colleagues (2005) have shown, however, that self reported data on diabetes can be reliable.

3.3   Ethical considerations

The permission to conduct the study was sought from the Medunsa Research and Ethical Committee of the University of Limpopo (MREC) and from the Ethical committee of Vanga Hospital. The protocol of the study (Appendix 7) was approved by MREC with the certificate number MREC/M/210/2008: PG (Appendix 8). The Vanga Hospital authorities also provided a letter of approval (Appendix 9).

The participants were given oral/written information about the study and given sufficient time to reflect on their participation in the study. An informed consent was then obtained from the participants. The patients' records were recorded in anonymous questionnaires and files. Participants were assured that the data gathered in this study will be kept confidentially. And that the withdrawal from the study will not harm the care they are receiving in the diabetic clinic.

The illiterate patient was giving the consent assisted by a literate family member or escort who continues to assist him in filling out the questionnaire.

Each respondent filled in the questionnaire form privately (with a family member or an escort) in a room of the hospital. The other research team members assisted the participants who had queries during the completion of the questionnaire.

CHAPTER 4

RESULTS

4.1 Introduction

In this chapter, the researcher presents the results gathered from the participants in the study. It begins by giving socio demographic characteristics followed by the health beliefs of the participants about their illness. At the end, a number of correlations between variables that have been tested are presented.

4.2 Participation

The study lasted from 12 December 2008 to 20 April 2009. Two hundred and forty-one participants took part in the study. The response rate was of 85.8 %.

4.3 Sociodemographic characteristics

4.3.1 Age

The participants' ages ranged from 21 to 79 years; the mean age was 51 years. Figure 1 presents the distribution of age from the sample.

Figure 1. <u>Distribution of age</u>
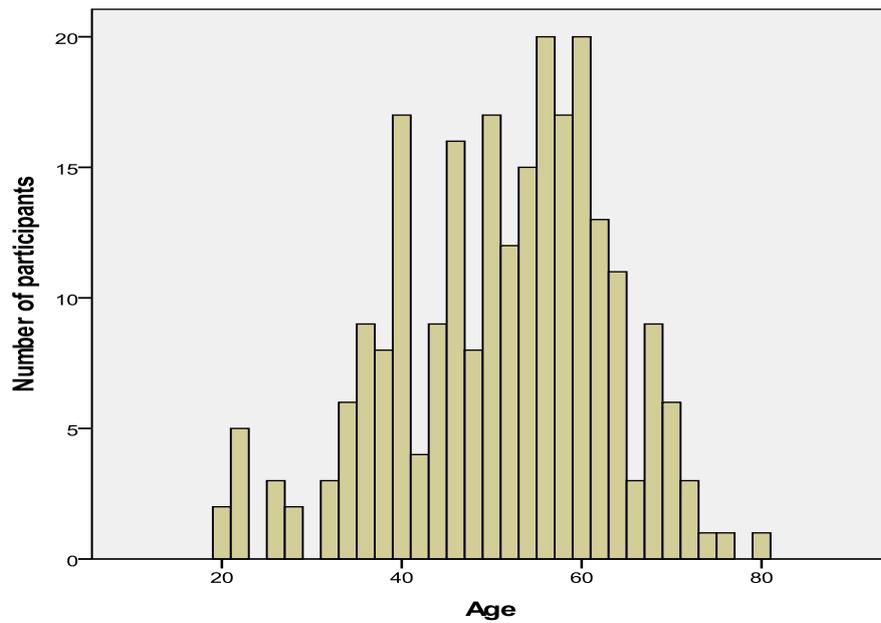
 The middle-aged adults (40 – 60 years) with a frequency of 130 participants (53.94 %) represent the biggest group age.

4.3.2 Gender

One hundred and sixty two men (67.2 %) participated in the study. Figure 2 gives the distribution of participants according to their gender.

Figure 2. <u>Distribution of the participants by gender</u>
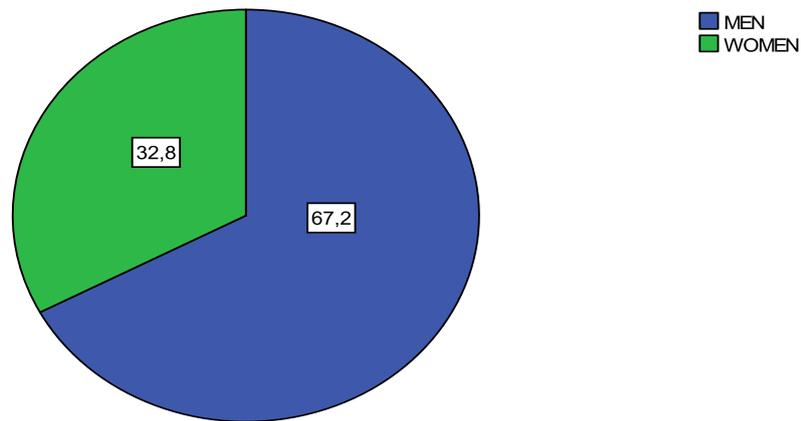
4.3.3 Academic level

One hundred and twelve participants (46.5 %) completed high school, sixty-five participants (27 %) had attended elementary school, fifty-one (21.1 %) participants were without any official schooling and only 13 participants (5.4 %) attended university. Figure 3 indicates participants' academic level.

Figure 3. <u>Distribution of participants' academic level</u>
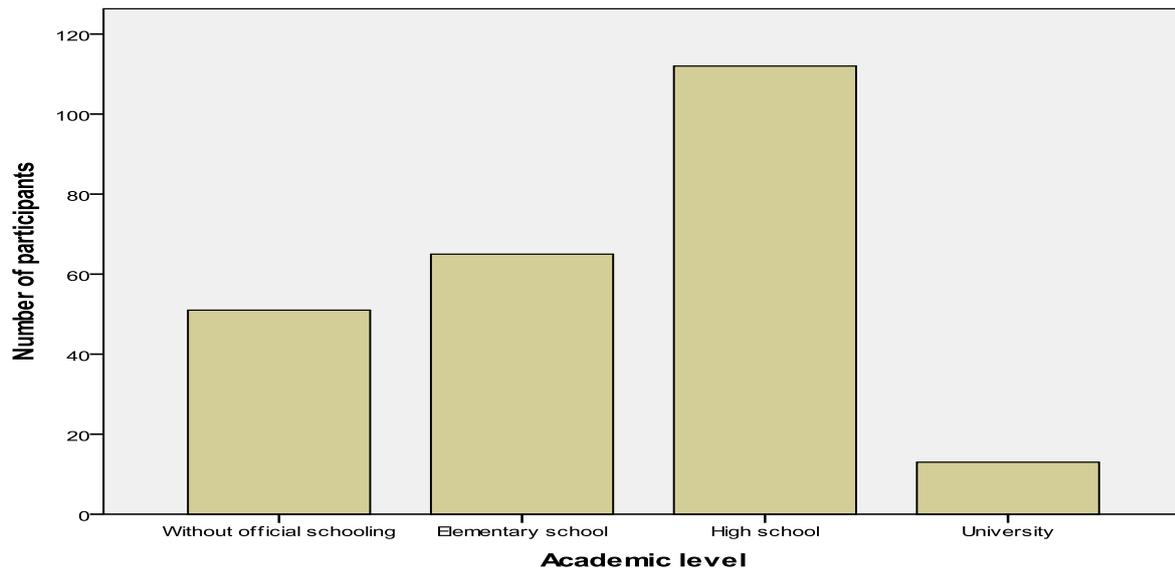
4.3.4 Marital status

One hundred and seventy seven participants (73.4%) were married while thirty four (14.11 %) were single, twenty five (10.37 %) were divorced and Five (2.07 %) were widowed. Figure 4 presents the marital status among the participants.

Figure 4. <u>Distribution of marital status among participants</u>
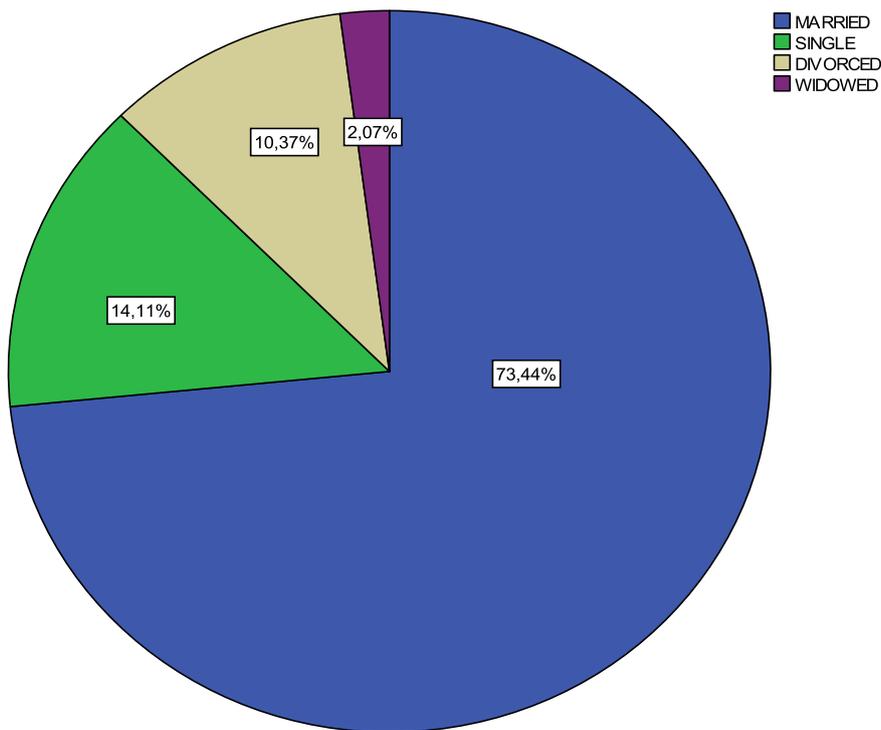
4.3.5 Number of dependent persons (people who are being cared financially by the patient)

The mean number of dependent person was 5 with a standard deviation of 4.

4.3.6 Individuals per household

The participants' households constituted 1 to 19 persons; the mean was calculated to 6 with a standard deviation of 3.

4.3.7 Source of income

One hundred and fifty-two participants (63.1%) were self employed and represented the major group in the sample; thirty six participants (14.9 %) had a regular income; thirty participants (14.2 %) had a sporadic income. Only 23 (9.5 %) participants had a contract employment limited in time.

Figure 5 indicates the source of income among participants.

Figure 5. <u>Source of income among participants</u>
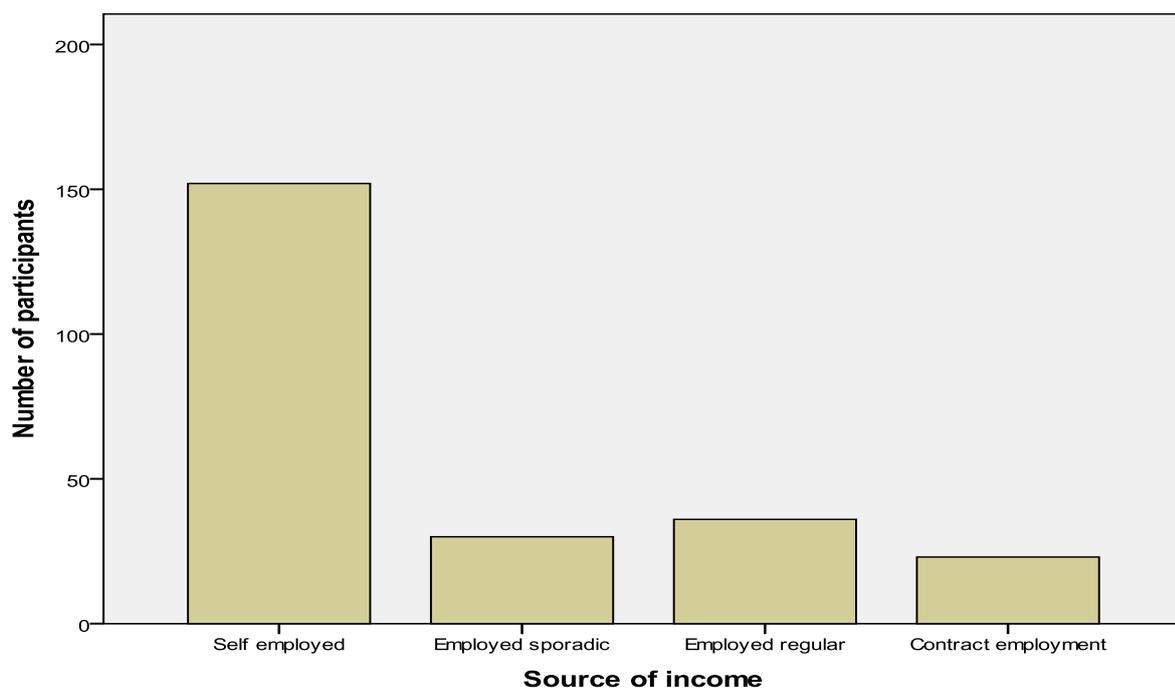
4.3.8 Lifestyle

4.3.8.1 Number of exercising times per week

Results showed that 188 participants (78 %) exercised fewer than 3 times per week. Only 53 participants (22 %) exercised more than three times per week. Figure 6 shows the results.

The mean of exercising times per week was calculated to 1.34 with a standard deviation of

1.8.

Fig 6 <u>Number of exercising times per week among the participants</u>
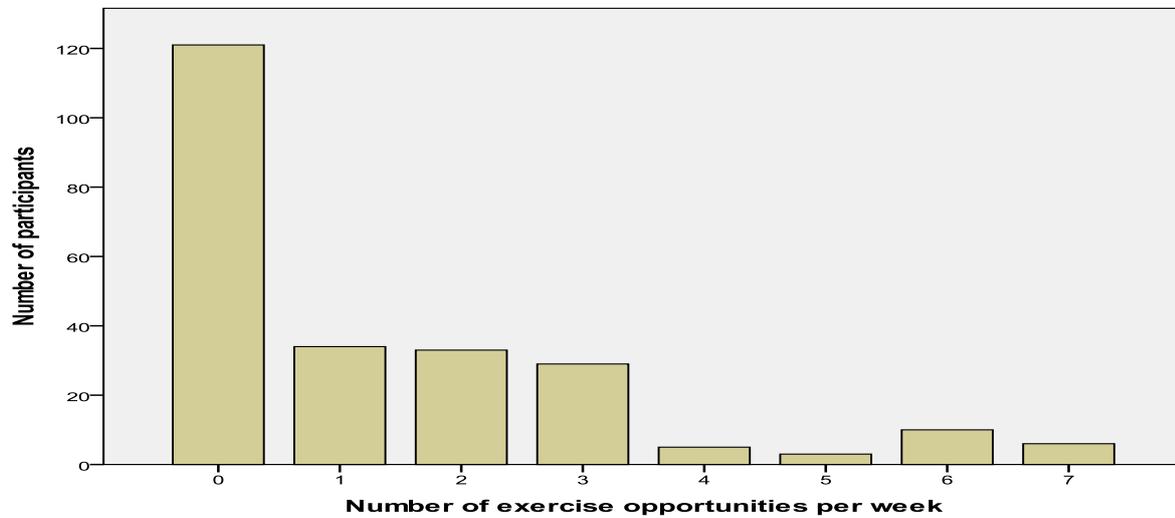
4.3.8.2 Consumption of alcohol

Twenty three participants (9.5 %) reported using alcohol.

 The majority of participants (90.5%) did not report drinking alcohol. The amount of

standard drinks (1 standard drink equal 10 grams of alcohol) per week among participants

is described in Figure 7

Figure 7 <u>Amount of alcohol consumption per week among participants</u>
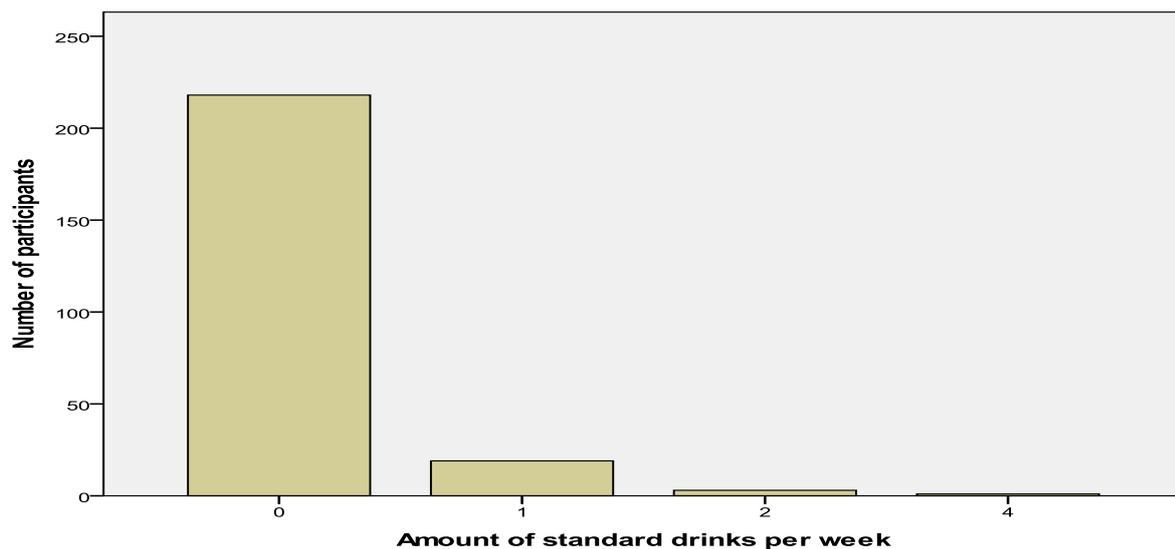
4.3.8.3 Use of cigarettes

Twenty six participants (10.79 %) reported smoking cigarette. Two hundred and fifteen participants (89.21%) reported not using tobacco. Participants only report the smoking opportunities rather than the amount of cigarettes used per week. According to this, the mean smoking opportunities per week was 0.43 with a standard deviation of 1.468.

4.3.8.4 Consumption of marijuana

Only one participant (0.41%) reported using marijuana. The rest of the patients did not report its use.

4.3.8.5 Consumption of other substances

Fourteen participants (0.06 %) reported consuming other substances (kola nuts …) than marijuana and cigarettes. The rest of participants did not report it.

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4.3.8.6 Diet

The participants were asked to report the number of times they are consuming different foods in a week rather than the real quantities.

Table 1 presents the mean use of different food types (these being the main food items consumed in the DR Congo population) per week by the participants.

The mean use per week of fresh fruits is 4.1 time per week followed by fish (2.5), cassava bread, the main carbohydrate (2.2), red meat (0.8) and fresh vegetables (0.6).

Table 1 <u>Mean use of different foods per week</u>

Type of food	Number of times food types consumed per week	
	Mean	Standard deviation
Cassava bread (carbohydrate)	2.2	1.6
Fresh fruits	4.3	1.8
Fresh vegetables	0.6	0.8
Fish	2.5	1.6
Red meat	0.8	1.1

4.4 Clinical findings

4.4.1 Body mass index (BMI)

The mean BMI of the participants was 22 with a standard deviation of 4.

Fifty participants (20.7%) were underweight; one hundred and forty-two (58.9 %) had a normal BMI; forty four participants (18.3 %) overweight and five (2.1 %) were obese. Figure 8 presents these findings.

Figure 8. <u>Distribution of patients according to category of BMI</u>
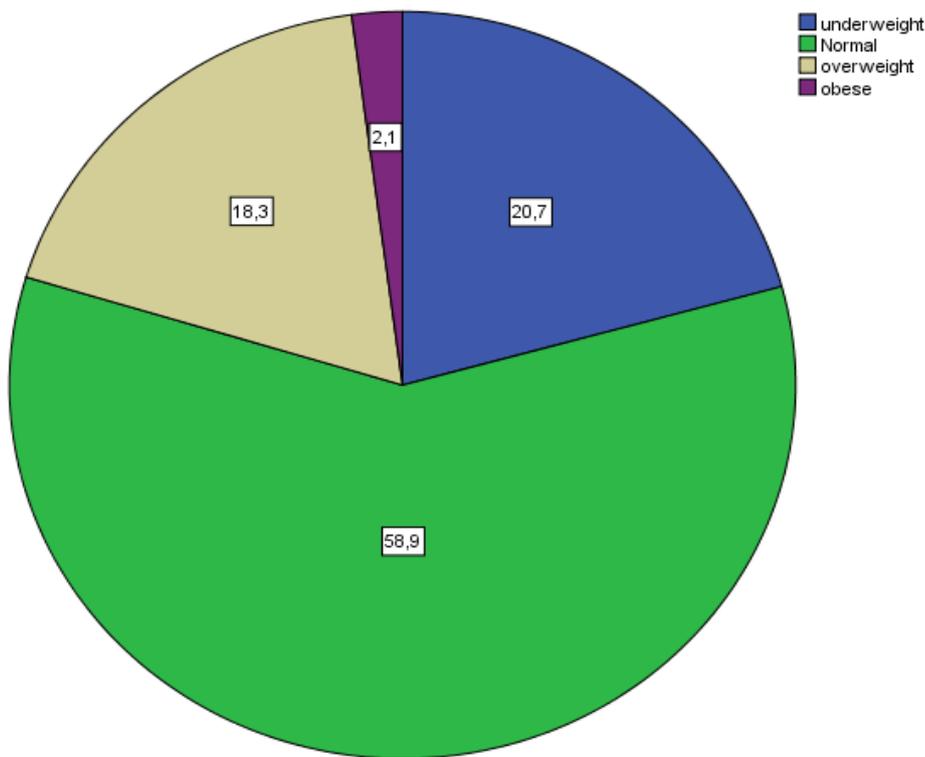
4.4.2 Fasting blood glucose

The mean fasting blood glucose is 195.41mg/dl (10.9 mmol/l) with a standard deviation of 108.647 (6). Thirty-eight participants (15.8 %) had an optimal level of glycemia (72-108 mg/dl or 4-6 mmol/l; forty-one participants (17 %) had an acceptable level of glycaemic (108-144 mg/dl or 6-8 mmol/l); one hundred fifty-eight participants (65.6 %) had a glycemia suggesting additional action (>144 mg/dl or > 8 mmol/l).

 One may note that 4 participants (1.6 %) presented with hypoglycemia (< 60 mg/dl or < 3.3 mmol/l). Figure 9 presents the distribution of participants when taking in account the targets for glycaemic control.

Figure 9. <u>Distribution of participants' glycemia control</u>
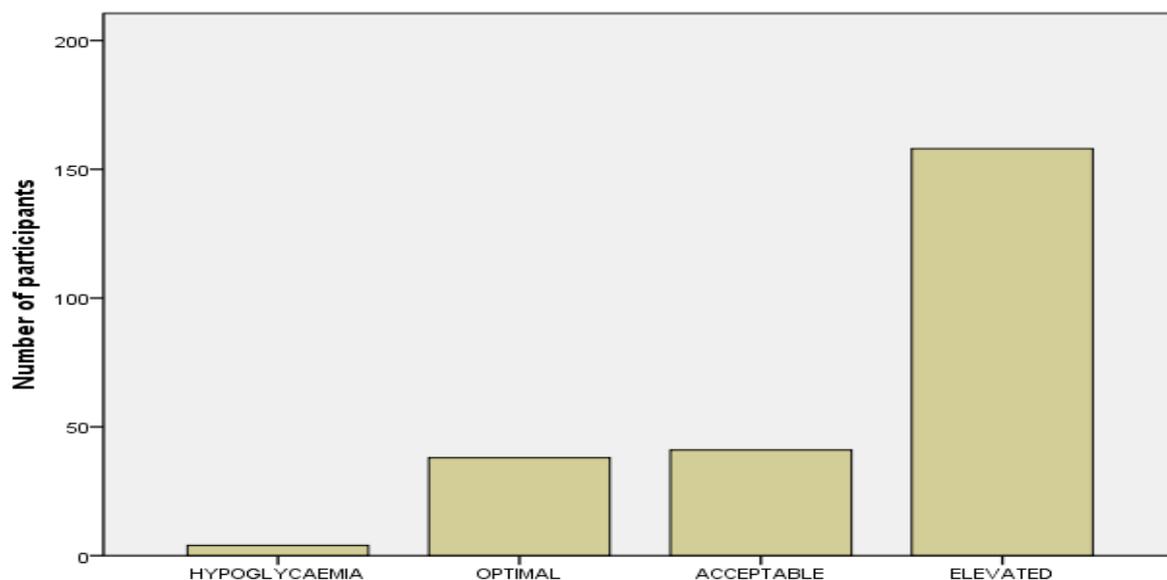
4.5 Beliefs about the illness

Beliefs expressed by the participants have been classified using nine factors as follows: evil/ ancestral or cultural etiology, self blame etiology, medical etiology, physical weakness etiology, self care prevention, self medication treatment, medical treatment, prayer treatment and holistic belief treatment.

1. Evil/ ancestral-cultural etiology summarized all answers expressing bad spirit possession, demon and evil causes, punishment or desertion by ancestors, not doing rituals or prayers required by priest or ancestor and crossing over a path where some ritual was performed.

2. Self blame meant either the belief of not being strong or having been deserted by God or getting sick due to their own fault.

3. Medical aetiology meant that the patients believe in a scientific cause to his/ her disease and the doctor could found after medical analysis.

4. Physical weakness etiology expressed idea of infection causing diabetes, lack of regular exercise, idea of being invade by something foreign or belief of being lazy.

5. The Self care prevention factor was the belief expressed the fact that regular checkups can prevent a person from getting sick and also taking good care of oneself will prevent sick.

6. Self medication treatment meant the fact that the patient took medication without any medical prescriptions.

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7. Medical treatment contained the belief of going to doctors only when seriously ill, considering doctors as the only ones who can treat ill people and the belief of there being nothing people can do to prevent themselves from getting ill.

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8. Prayer treatment is the belief that God deserted the person who suffered from diabetes and thus the expectation that prayer will rectify the disease. This is also considered as an external locus of control which explains the lack of self care.

9. Holistic treatment factor is the belief that treatment addressed the whole person including mind, body and spirit. This integrates conventional and complementary therapy to promote optimal health.

The four first factors (evil/ ancestral or cultural etiology, self blame etiology, medical etiology, physical weakness etiology) relate to the aetiology while the five remaining (self care prevention, self medication treatment, medical treatment, prayer treatment and holistic belief treatment) assess the beliefs towards the treatment.

4.5.1 Beliefs about the etiology of diabetes

Table 2 presents the scored reached by the participants on the factors related to the aetiology of their disease.

Table 2. Participants' scores related to the etiology of diabetes

Factor	Agree	Sometimes agree	Disagree	Not sure
Evil / ancestral cultural belief etiology	13 (5.5 %)	90 (37.3 %)	129 (53.5 %)	9 (3.7 %)
Self blame etiology	4 (1.7 %)	145 (60.2 %)	88 (36.5 %)	4 (1.7%)
Medical etiology	5 (2.1 %)	96 (39.8 %)	138 (57.3%)	2 (0.8%)
Physical weakness etiology	1 (0.4 %)	58 (24.1 %)	176 (73.0%)	6 (2.5%)

It appears in this table that 53.5 % of the participants do not think that their diabetes is due to the fact that they crossed over a path where some ritual was performed(evil/ ancestral or cultural etiology); 60.2 % of the participants may accept that their disease come as they are not strong; only 2.1 % of the participants believe in a scientific cause to their disease while 57.3 % of the participants disagree with this; 73 % of the participants disagree with the idea that diabetes come because of lack of regular exercise(physical weakness etiology).

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4.5.2 Beliefs about the treatment of diabetes

Table 3 presents the beliefs of the participants about the treatment of their illness.

Table 3 <u>Participants' scores about the treatment of diabetes</u>

Factor	Agree	Sometimes agree	Disagree	Not sure
Self care prevention	13 (5.4%)	186 (77.2%)	37 (15.4%)	5 (2.1%)
Self Medication treatment	4 (1.7 %)	71 (29.5 %)	153 (63.5 %)	13 (5.4%)
Medical treatment	202 (83.8%)	38 (15.8 %)	1 (0.4 %)	0 (0 %)
Prayer treatment	215 (89.2%)	8 (3.3%)	10 (4.1%)	8 (3.3%)
Holistic treatment	230 (95.4%)	7 (2.9%)	2 (0.8%)	2 (0.8%)

The majority of the participants (77.2 %) may accept that regular checkups can prevent a person from getting sick and also taking good care of oneself will prevent sick; the majority of the participants (63.5 %) expressed that they do not take medication without any medical prescription; 83.8 % of the participants believe that only doctors can treat diabetic patients; 89.2 % of the participants believe that God deserted the person who suffered from diabetes and thus the expectation that prayer will rectify the disease; the majority of the participants (95.4 %) believe that the better treatment must address the whole person including mind, body and spirit.

4.6 Relation between variables

Interactions between variables have tested the relation between fasting blood glucose level with all the variables in the study (BMI, socio-demographic and health beliefs). It appears that fasting blood glucose level is not in significant association with any other variable in the study.

Also, interrelations have tested health belief's items as independent variable with some identified risk factors of type2 diabetes (BMI and socio-demographic) and show no meaningful significant associations between health beliefs factors and these variables (BMI and sociodemographic variables).

4.7 Summary of results

One hundred and sixty-two men (67.2%) and 79 women (32.8%) participated in the study with a mean age of 51 years. One hundred and forty two participants (58.9%) had a normal BMI while forty four participants (18.3 %) were overweight and only five participants (2.1 %) were obese; the mean BMI of the participants was 22 kg/m^2.

46.5 % of participants completed high school while only 5.4 % attended university. The majority of the participants were married (73.4 %) and self employed (63.1 %). The mean number of dependent persons was 5 and the mean number of individuals in the household was 6.

The mean fasting glucose level was 195,41mg/dl (10.9 mmol/l); One hundred and fifty-eight participants (65.6 %) had an elevated glucose suggesting additional action (>144 mg/dl or > 8 mmol/l).

Fifty eight percent of the participants exercised fewer than three times weekly; 90,5 % of the participants were not drinking alcohol; 89,2 % reported not using cigarette and a few of them reported using marijuana and other addictive drugs.

The mean consumption of fresh fruits is 4.1 times per week followed by fish (2.5), cassava

bread (2.2), red meat (0.8) and fresh vegetables (0.6).

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Related to the health beliefs, only 2.1 % of the participants believe in a scientific cause for diabetes while the majority of them (60.2 %) may accept that their disease come as they are not strong; 77.2 % of the participants may accept that regular checkups can prevent a person from getting sick and also taking good care of oneself will prevent sick and, 83.8 % of the participants believe that only doctors can treat diabetic patients; 89.2 % of the participants believe that God deserted the person who suffered from diabetes and thus the expectation that prayer will rectify the disease; the majority of the participants (95.4 %) believe that the better treatment must address the whole person including mind, body and spirit. Added to this is that self medication (1.7%) is not frequent among the participants.

Correlation analysis has shown that glycemia level was not significantly associated with sociodemographic characteristics or health belief factors.

CHAPTER 5

DISCUSSION

5.1 Introduction

In this chapter the author discusses the methodology used in the study and thereafter the findings in the light of other studies. The chapter ends by a discussion of the limitations of the study.

5.2 Methodology

Cross-sectional design

A cross-sectional study was designed as it is a relatively economical method in relation to time and resources (Bowling, 2002; Cohen, Manion and Morrison, 2007). The benefits of cross-sectional studies are to generate a hypothesis or screening for causal links as the researcher in this study was looking for a relation between health beliefs and control of diabetes (Bowling, 2002; Cohen, Manion and Morrison, 2007). Nevertheless, one may note that cross-sectional surveys are prone to bias; a number of biases have been identified in this study as there is still always a possibility that the sample was not representative of the general population (Bowling , 2002).

5.3 Socio-demographic characteristics

5.3.1 Age

The study participants' age ranged from 21 to 79 years of age with the mean of 51 years. The middle-aged adults with a frequency of 130 participants (53.94 %) represented the biggest group age. The distribution of age in our participants shows that diabetes seems to occur more commonly in adults aged 40 years or older as highlighted by Votey and Peters (2010).

5.3.2 Gender

Men represented 67.2 % of the participants. This finding is similar to that of Sobngwi and colleagues (2002) in a study in sub-Saharan Africa with a sex ratio of 1.5 to 3 in favour of men.

One may discuss the inequality to health services access for women compared to men (Health Systems Trust, 2000). Women's inferior social and cultural status excludes them from many activities. Many women are illiterate and tend to avoid intellectual activities such as study. Also, in many families, women represent the main breadwinner and did not like to take much time in the hospital. Indeed, men tend to lead all activities to show their superiority. In fact women are marginalized from public activity so that they did not consent to participate in the study.

Contrary to our study, Ben Abdelaziz and colleagues (2007) found a female predominance in one study on diabetes at Tunisia.

5.3.3 Marital status

One hundred and seventy seven participants (73.4%) were married while thirty four (14.11 %) were single. Awah, Unwin and Phillimore (2009) found also that they had many more married patients in their focus groups.

5.3.4 Educational level

Less than half of our participants (46.5 %) completed high school while 21.1 % participants were without any official schooling. In South Africa, Erasmus et al (1999) also reported that the majority of the black type 2 diabetic patients who attended clinic were of low educational status and that it had no significant relationship with their glycaemic control. Nevertheless, poor education and illiteracy combined with low socioeconomic status, and lack of access to health care have been recognized as an obstacle to good understanding of diabetes in sub-Saharan Africa (Azevedo and Alla, 2008). They claim also that among other major threats, prevalent in sub-Saharan Africa, is the health belief system of many patients, which leads them to rely on traditional medicine.

The level of education could be explained by poverty in the study setting. Indeed, the educational system of DR Congo is passing through a crisis because parents are obliged to pay school fees when they are jobless. Even if the western part of the country was not in the war, it suffered from the general effects of the war in this country with few resources directed to education. In increased poverty, parents need their children to earn money and therefore many are taken out of school to work.

5.3.5 Number of dependent persons (people who are being care financially by the patient)

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The mean number of dependent persons found in this study was five with a standard deviation of four. This number can be a source of stress for the patient in a context of poverty. In DRC, healthcare insurance systems do not exist for the large majority of people; patients have to bear the cost of the healthcare by themselves. Health is therefore in competition with other priorities in the context of limited resources.

5.3.6 Individuals per household

Individuals who live together and buy and prepare meals together are included in one household. The size of a household is generally taken into account to measure quality of life in general and implications on health. This study showed that the participants' households were made up of one to nineteen persons. The calculated mean was six with a standard deviation of three.

A large household is a characteristic of western Congo. The culture encourages many persons in a household because this brings more hands for agriculture. Usually, housing is insufficient and when the number of individuals per household increases, there are long term effects on health (the state of total well-being). Also, overpopulation can lead to material shortage or other frustrations among individuals in a household. The large size of a household has the potential to interfere with the management of diabetes. A family with fewer children would find it easier to accommodate the challenges caused by the management of diabetes.

5.3.7 Source of income

The majority of participants (63.1 %) were self employed while only 14.9 % had a regular income; 14.2% had a sporadic income and 9.5 % of participants had an employment contract. These results show that the majority of the participants did not have a secure income in the context of DR Congo where the general population has a low income.

In the United States some studies showed that the prevalence of diabetes was high among minorities with low income (Texas Department of Health, 2001). In Europe also, Roper and colleagues (2001) showed that morbidity and mortality were statistically linked to low income among diabetic patients. Awah, Unwin and Phillimore (2009) in a study in Cameroon, found that many of their diabetics patients were farmers or artisans. The impact of source of income suggests that low income must be considered as a limiting factor to optimal control among diabetic patients. There is evidence that poverty is bad for health: poor farming families are particularly vulnerable (Health System Trust, 2000). The poor are disadvantaged in the DR Congo: unable to pay hospital fees or for prescribed medication. Also, the affordability of appropriate food is a challenge in an area with subsistence type agriculture and lack of markets. In 2005 the WHO constituted the Commission on Social Determinants of Health to address the social factors leading to ill-health and health inequities. This indicated a clear international focus on factors such as poverty. Poor but healthy families can break out of poverty quicker than unhealthy families.

5.3.8 Lifestyle

5.3.8.1 Frequency of exercise per week

The results of the study suggested that only 53 participants (22 %) exercised more than three times per week, while 188 participants (78 %) exercised fewer than 3 times per week. The mean of practicing exercise per week was calculated to 1.34 with a standard deviation of 1.8. It would appear that few patients engaged in physical exercise. This could be explained by the notion that patients regard physical exercise as structured exercise in a gymnasium.

The rural population of Vanga relies on walking for transport, with agriculture as their main occupation. These activities afford them the opportunity for physical exercise. Therefore they do not lead a sedentary lifestyle characterized by obesity leading to insulin resistance and the onset of diabetes mellitus. The nature of occupation of rural dwellers puts them at an advantage in terms of physical exercise compared to their urban dweller counterparts (Singh et al, 1989).

5.3.8.2 Consumption of alcohol

 The majority of participants (90.5%) did not report drinking alcohol. Only 9.5 % of participants reported alcohol drinking.

The consumption of alcohol is common in many cultures, and is not harmful when used in moderation. However, prolonged excess drinking leads to serious consequences. In diabetic patients, excess alcohol consumption leads to a confused clinical picture. For

example it becomes difficult to determine whether polyneuropathy is due to the alcohol effect or diabetes complications. Alcohol can also interact with oral drugs prescribed to type 2 diabetic patients. It is generally recommended that metformin and alcohol should not be used simultaneously, since it can lead to a life-threatening condition like lactic acidosis (Powers, 2008). One factor that can explain the low use of alcohol among our patients is religious belief in the community which tends to bring about restraint or the fact that they would offer a positive image of them through the responses. Indeed, the Protestant church in the DRC forbids alcohol drinking for Christians. Our results indicated a 9.5% prevalence alcohol consumption. Analysis showed that in fact patients habitually use palm wine–which contains 4.5 % of alcohol after five days of fermentation– this is the local alcohol containing beverage (Eluwa et al, 2009).

5.3.8.3 Use of Cigarette

Twenty six participants (10.79 %) reported smoking cigarettes, versus 215 (89.21%) who did not. Participants only reported that they smoked rather than the amount of cigarettes used per week. According to this, the mean use of cigarettes was 0.43 times per week with a standard deviation of 1.468. The result showed that campaigns to enable people to stop smoking had an effect in a region where tobacco was an important export crop. In the study setting, these campaigns were driven by the Protestant Church while the government attitude against tobacco is weak. Nevertheless, legislation states that in each box of cigarettes a statement that cigarette smoking is dangerous must appear.

5.3.8.4 Consumption of marijuana

Only one participant (0.41%) reported using marijuana. The problem with marijuana is that, like alcohol it eliminates inhibition and impairs judgment, making it hard for a patient with diabetes mellitus to follow a proper diet. Sometimes patients mix marijuana with other drugs making it difficult for the attending clinician to predict the patient's response. Marijuana is known to be a mind-altering drug, but there is paucity of information on the exact mechanism involved (Murtagh, 1999; Parry et al, 2004).

5.3.8.5 Consumption of other substances

Fourteen participants (0.06 %) reported consuming other substances (kola nuts …) than marijuana and cigarettes. The results showed that other drugs except marijuana are not a major problem in the Vanga area among diabetic patients. Illicit drug use is a world-wide problem, including Africa. Not only is the problem with dependence (especially opiates), but they can also lead to psychotic symptoms, complicating the non-pharmacological management of diabetes mellitus (Murtagh, 1999; Parry et al, 2004).

5.3.8.6 Dietary assessment

The participants were asked to report the opportunities of consumption of different foods rather than the real quantities. The research results showed that the mean consumption opportunities per week were as follows: fresh fruits 4.1 times per week, fish (2.5), cassava bread (2.2), red meat (0.8) and fresh vegetables (0.6). The fresh fruits were the diet with the highest consumption rate per week followed by fish, cassava, red meat and fresh vegetables. The results showed that the mean consumption of fresh vegetables and

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cassava bread per week was low. Surprisingly, in the study setting, fresh vegetables are easily affordable. One may argue that these findings are due to underreporting. Underreporting in nutritional research has been reported and is said to be particularly common among the obese in South Africa (Kruger et al, 2002).

It is accepted that the traditional African diet - rich in staple foods consisting of cereals (rice, cornmeal, sorghum and millet) accompanying meat, fish and vegetables is ideal for diabetic patients (Parry et al, 2004). So we did not explicitly discuss the composition of diet. A guiding principle for prescribing diabetic diets should be the recognition that individual food preferences must be respected whenever possible. The dietician should obtain history of the patient's preferred diet and try to advise on a diet around these patient preferences. The research results showed only the current foods consumed in Western DR Congo. It should be noted that, apart from alcohol consumption for which the quantity consumed per week was determined, for the other foods only the frequency of consumption per week was assessed.

5.4 Clinical findings

5.4.1 Body Mass Index (BMI)

The mean BMI found was about 22 kg/m^2. The large majority of the participants had a normal BMI while 19.09 % were overweight and 2.49 % were obese. Similar results have been found in Gambia's rural population where the cases of overweight and obesity were less in rural (16%) compared to urban milieus (Siervo, Grey Nyan and Prentice, 2006).

 Higher BMI is independently related to the chances of developing diabetes (Bennett et al,

1992). Higher BMI is linked to resistance to insulin which is the starting point of type 2 diabetes. Data from the Nurse' health study has concluded that the lowest risk of diabetes among the general population occurs in individuals who have a BMI <21 with increasing prevalence seen as obesity levels increase (Carey et al, 1997).

One may argue the fact that patients involved in agriculture are not sedentary (Alemu & Lindtjorn, 1995). Another argument could be the atypical presentation of diabetes in Africa and difficulties in classification (Sobngwi et al, 2001).

While one of the main ways of managing diabetes is through weight control, which usually means weight loss to increase insulin sensitivity, weight loss as an intervention is very challenging as there are other factors that make it difficult to achieve. Advice to lose weight is something that most diabetes patients in sub-Saharan Africa find instinctively difficult to follow, because of the fear of being suspected of having AIDS (Awah, Unwin and Phillimore, 2008). Furthermore, being overweight is still perceived by the general population of the DR Congo as a sign of good health, wealth, and vitality.

5.4.2 Glycaemic level

One hundred and fifty eight participants (65.6 %) had an elevated fasting glucose (> 8 mmol/l or > 144 mg/dL) suggesting poor glycaemic control and need for additional action to achieve better control. Poor glycaemic control among patients with type 2 diabetes is reported by other studies in different countries (Vinik, 2007; Khattab et al, 2010).

In our study, glycaemic levels were not associated with sociodemographic characteristics or health beliefs of the participants. This result appears very important as it means that in our context health beliefs are not a determinant of glycaemic control. Goudswaard and

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colleagues (2004) in an article review concluded that prediction of poor control from patient characteristics in diabetic patients in general is hardly possible.

Evidence has demonstrated a close link between long-term increased blood glucose and the occurrence of specific diabetic complications, particularly in patients with co-morbid hypertension. In Europe, the United Kingdom Prospective Diabetes Study (UKPDS) reported a follow up of type 2 diabetic patient (who also had hypertension) in which the benefits of tight hypertension control were clearly demonstrated (UKPDS, 1998). This study demonstrated the need for optimal hypertension control in type 2 diabetic patients. In resource- poor areas such as Vanga in DR Congo, however, it has to be accepted that this will be difficult and hypoglycemic risk may be a significant problem. Difficulty to obtain optimal blood glycaemic control is linked to the patient and the skills of the health care team.

It is clear that diabetes is complex and difficult to manage successfully even with adequate numbers of trained staff, and full provision of medicines and equipment. In most cases such facilities are rarely available for patients and the health care team. This results in poor glycaemic control of the diabetic patients. All should be taken into account to improve glycaemic control so patient education, taking into account the health belief system can be introduced to improve the situation.

5.5. Health Beliefs

The health belief model was used to assess acceptance of preventive health recommendations, adherence to treatment for acute and chronic diseases (Becker, Drachman and Kirscht, 1974).While positive health beliefs are linked to patient adherence

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for chronic diseases such as diabetes, barrier perceptions– like perceived cause of disease or perceived effects of the disease– are most strongly linked to poor compliance. It is accepted that compliance to health recommendations and to the treatment of type 2 diabetes lead to good glycaemic control (Powers, 2008).

5.5.1 Beliefs about the aetiology of diabetes

5.5.1.1 Evil/ ancestral or cultural etiology

The majority (53.5%) of our participants did not believe that evil force or angry ancestors caused their diabetes. Ninety participants (13.5 %) sometimes agreed with evil/ancestral etiology of their diabetes while only 13 participants (5.5 %) agreed and 9 participants (3.7 %) were not sure. One may argue that many participants, because of the missionary status of the hospital where they attend for diabetes care did not reveal their true beliefs and gave the responses they thought were acceptable. This is supported by the fact that in African societies, chronic diseases are understood as consequences of demon or evil (Awah, Unwin, Philimore, 2008).

5.5.1.2 Self blame etiology

Self blame aetiology means the belief of not being strong or the perception that one has been deserted by God. The majority of patients in the study (60.2 %) sometimes blamed themselves for being diabetic or perceived that God deserted them. Eighty eight participants (36.5 %) disagreed with that belief while 4 participants (1.7 %) agreed and 4 (1.7 %) were not sure. The setting of the study being an area with a high percentage of Christians, one may argue these beliefs emerged from sermons the participants were

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hearing at churches in which God was presented as being in control of all and that health and sickness were perceived to be determined by God.

5.5.1.3 Medical etiology

Only a few participants (2.1 %) agreed with the medical etiology factor; this corroborates the fact that in our society like in many others in sub-Saharan Africa, people believe in non-scientific causes of diabetes (Awah, Unwin and Phillimore, 2009). As previously discussed, poor education and illiteracy combined with low socioeconomic status, and lack of access to health care have been recognized as obstacles to a good understanding of diabetes in sub-Saharan Africa (Azevedo and Alla, 2008).

5.5.1.4 Physical weakness etiology

One hundred and seventy six participants (73 %) stated that they did not agree with physical weakness etiology to their diabetes, which meant that they did not think that a physical weakness caused diabetes. Good glycaemic control is difficult when the person does not consider physical wellbeing as an important role-player in health.

5.5.2 Beliefs about the treatment of diabetes

5.5.2.1 Self care prevention

The majority of our patients (77.2 %) stated that they sometimes agreed with self care prevention. This indicates that most diabetics are not empowered in their management yet. This also links with their perception that diabetes does not have a medical or physical

aetiology and thus self care cannot change it. This can explain why many patients had an elevated glycaemia or even late presentation at health care facilities (with amputation, blindness, kidney damage etc.).

5.5.2.2 Self medication treatment

The results showed that 63.5% of the participants did not use medication they thought would help (self medication). Nevertheless, it is known that because of poverty and lack of health insurance systems, many Congolese take medications without any prescriptions. In DR Congo, there is a real anarchy in the delivering of drugs as there is no effective regulation of the pharmacies and anyone can sell and buy any kind of drugs. Our findings could be the result of the participants' fear to be sanctioned by the health care centre if they disclosed self-medication. The other possibility is that our sample at a health care facility caused a bias as the participants, despite the trend in DR Congo, did not do self medication as they had access to health care centres or was more informed on the dangers of self medication. Self medication must also be analysed with caution as patients may understand medication or treatment differently from the traditional concoctions they are used to.

5.5.2.3 Medical treatment

The majority of participants (83.8 %) agreed with medical treatment. The management of type 2 diabetes relies not only on drugs but most patients expect to receive medications when they consult the diabetic clinic. One may argue that these findings are true for the patients who attend health facilities and that the situation may not be the same with those who have no access to health care.

5.5.2.4 Prayer treatment

The study has shown that the majority of patients (89.2 %) agreed with prayer as a treatment of their type 2 diabetes. This can be understood as the belief that God deserted the person who suffered from diabetes and thus the expectation that prayer will rectify the disease. This is also considered as an external locus of control which explains the lack of self care. The study was done in a missionary hospital and one would assume that the patients or participants in the study would practice their Christian faith which includes prayer.

5.5.2.5 Holistic belief treatment.

Holistic treatment is the practice of healing that addresses care of whole person –body, mind and spirit. The holistic treatment integrates conventional and complementary therapy to promote optimal health and treat disease by addressing contributive factors. Patients are seen as a unique individual rather than an example of partial disease.

Almost all patients (95.4 %) strongly agreed with holistic treatment. Traditional Congolese culture accepts that there is a cure for every illness and that both healers and doctors can affect cures. According to many patients a holistic approach allows more balanced life.

5.6 Correlations between variables

No statistically significant associations have been found between fasting blood glucose and all the variables of the study (health beliefs and sociodemographic variables).

Also, health beliefs items did not show meaningful significant associations with other

variables (BMI, sociodemographic variables). These findings challenge our working hypothesis that as the patient thought that their diabetes is due to witchcraft, that idea can interfere with the management and prevention of diabetes. Nevertheless, the participants showed a poor glycaemic control that need to be assessed.

5.7 Limitations and bias

5.7.1 Setting of the study

The study was carried out in a missionary hospital in the Province of Bandundu, and it is possible that generalizations may not be made to other public hospitals or to other geographic areas of DR Congo. This missionary status of the hospital could lead the participants to give socially correct answers. Social desirability may also influence patients' responses as they may wish to appear more adherent to the researcher. Indeed, this cannot be excluded, even though the team of researchers stated clearly that the information given by the participants would be kept confidential.

5.7.2 Definition of type 2 diabetic patients

It is possible that our study included patients of atypical forms of diabetes (tropical diabetes) wrongly labeled as type 2 diabetic patients. Atypical forms of diabetes mellitus are common in areas where cassava serves as a staple food (Sobngwi et al, 2001).

5.7.3 Design of the questionnaire

There exists a probable lack of rigor with regard to the precision of some data relative to lifestyle and certain sociodemographic characteristics. The component of physical activity involved in regular activities has not been taken into account. It is known that rural populations of DR Congo rely upon walking as a means of transportation and often have intense agricultural activities as their main occupation. Rural dwellers have a higher physical activity related to energy expenditure compared to urban subjects (Singh et al, 1989). It is also the fact that some of the data was based on self report making them prone to recall bias or change their data to provide socially desirable responses. But Weinger and colleagues (2005) have shown, however, that self reported data on diabetes can be reliable.

5.8 Conclusion and recommendations

The study confirmed that the majority of patients at the Vanga diabetic clinic had a greater need for management strategies to improve their glycaemic control. It could be argued that diabetes is difficult to treat in rural Africa because of lack of understanding of the condition and resources. Inexpensive means such as patient education and lifestyle modifications can prevent occurrence of diabetes or improve the glycaemic control.

Based on its findings, the following recommendations have been formulated to improve care of type 2 diabetic patients in our setting:

1. Diabetic clinic authorities (hospital):

- To assess, for each patient, not only the clinical state but also the knowledge and beliefs about diabetes,

- To consider patients' beliefs and individual attitudes in prescribing the treatment and,

- To improve the population's knowledge on some of the signs and symptoms of chronic disease by health education through local mass media.

2. The community:

- To develop a scientific and socially oriented theoretical model for health care problems,

- To promote early referral of patients from traditional healers to health care unit and,

- For the church, to develop an approach to diseases that does not interfere with the well-being of the patients

3. The Government:

- To encourage the disease control unit of the Ministry of Health to develop educational materials on the pathophysiology, effects and treatment of diabetes in order to assist and empower people affected with diabetes at primary health care level,

- To update courses or trainings countrywide for medical practitioners, nurses educators/clinicians on the concepts of the holistic management which are culturally and economically acceptable to the general population,

- To promote the development of diabetes clinics for the correct management of diabetes and,

- To better finance the health care system to grant optimal health care to the poor.

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Ndonga ya mbefu: _____

Kisika:_____

Kilumbu _____

Diboko: _____

Tula mvutu na nge kukonda mboma samu na ba zina.
Tula kidimbu na mvutu

Kitini A: kisika ya munganga

Q1	Sukadi na menga	
Q2	Kilo (kg)	
Q3	Nda (cm)	
Q4	Mingi ya nitu (BMI)	

Kitini B: Kisika ya mbefu

Tula Mvutu ya masonga kukonda zina.
Cocher dans la case appropriée

Q1	Muntu	Bakala 1
		Nketo 2

Q2	Mvula	

Q3	Mingi ya kulonguka	

Q4	Buala	

Q 5	Mingi ya bantu ya nge ke sadisaka	

Q 6	Mingi ya bantu kele na ntuala ya nzo	

UNIVERSITY OF LIMPOPO (Medunsa Campus) CONSENT FORM

Statement concerning participation in a study.

Name of study

THE PROFILE OF PATIENTS DIAGNOSED WITH TYPE 2 DIABETES MELLITUS AT VANGA HOSPITAL, DR CONGO

I have read the information on and heard the aims and objectives of the proposed study and was provided the opportunity to ask questions and given adequate time to rethink the issue. The aim and objectives of the study are sufficiently clear to me. I have not been pressurized to participate in any way.

I understand that participation in this study is completely voluntary and that I may withdraw from it at any time and without supplying reasons. This will have no influence in the care I receive from my regular doctor.

I know that this study has been approved by the Medunsa & Ethics Committee of Faculty of Health Sciences, School of Medicine, University of Limpopo (Medunsa Campus) / Vanga Hospital. I am fully aware that the results of this Study will be used for scientific purposes and may be published. I agree to this, provided my privacy is guaranteed.

I hereby give consent to participate in this study

....
Name of volunteer   **Signature of volunteer**

....
Place.   Date.   Witness

Statement by the Researcher

I provided verbal and written information regarding this study
I agree to answer any future questions concerning the study as best as I am able.
I will adhere to the approved protocol.

....
Name of Researcher   Signature   Date   Place

Kundima kukota na kulongoka

Ntu ya mambu

KUMONANA YA BAMBEFO YA KIMBEFO YA SUKADI YA MUTINDU YA ZOLE NA LOPITALO YA VANGA, BUALA YA CONGO.

[THE PROFILE OF PATIENTS DIAGNOSED WITH TYPE 2 DIABETES MELLITUS AT VANGA HOSPITAL, D.R.CONGO.]

Mu me tanga kikuma ya kulongoka yayi mpi bo mene pesa munu ntangu ya kuyula ba kiuvu mpi kuyindula sambu na kusalama na yo. Munu me bakisa mbote mbote kikuma ya kulongoka yayi. Mono me ndima yo ve na kingologolo ya bantu ya nkaka.

Mono me bakisa ti kukota na kulongoka yayi kele na luzolo mpi mono lunga buya yo na konso ntangu mpi na kukonda kupesa samu na inki munu mene kubasika. Kubuya kukota na kulongoka yayi ta vanda ve na kima mosi na mutindu munganga ke sansaka mono bilumbu nionso.

Mono me zaba nde ba mfumu ya Medunsa Campus Research & Ethics (MCREC), University ya Limpopo)/ mpi ya lopitalo ya Vanga mene ndima kusalama ya kulongoka yayi, Mono me ndima nde yina ata monana na kulongoka yayi lenda sadisa na kuyika mayele mpi nde bo lenda ku songa yo na bantu. Mono mene ndima, na kuzaba nde kinsueki na mono kele ya kukeba

Na yina nionso, mono mene ndima na kukota na kulongoka yayi.

....
Zina ya mundimi   Diboko ya mundimi

....
Kisika   Kilumbu   temoin

Kitini ya munganga

Mono mene tendula mambu yina mene tadila kulongoka yayi.
Mono mene ndima na kuvutula ndinga, kana mono ata kuka, na ba kiuvu yina mene tadila kulongoka.

Mono ata landa yina mene sonama na mukanda yayi.

....……   ………………
Zina ya munganga   Diboko   kilumbu   kisika

RESEARCH PROTOCOL

TITLE: THE PROFILE OF PATIENTS DIAGNOSED WITH TYPE 2 DIABETES MELLITUS AT VANGA HOSPITAL, DRC

Researcher : BANZA KALENGA, M.D.

VANGA HOSPITAL,

PROVINCE OF BANDUNDU

D.R.CONGO

B.P. 4728 KINSHASA II

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Supervisor: Dr L.H. Mabuza, B Th (Unisa), MBChB, M Fam Med (Medunsa)

E-mail: honey@nst.dorea.co.za

Co-Supervisor: Mrs D. Pretorius, Hons BA (Psych)

UNIVERSITY OF LIMPOPO
Medunsa Campus
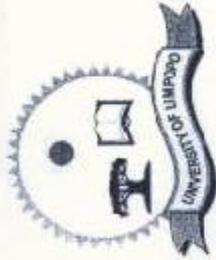
MEDUNSA RESEARCH & ETHICS COMMITTEE

CLEARANCE CERTIFICATE

P O Medunsa
Medunsa
0204
SOUTH AFRICA

Tel: 012 - 521 4000
Fax: 012 - 590 0086

MEETING: 08/2008

PROJECT NUMBER: MREC/M/210/2008: PG.

PROJECT :

Title: The profile of patients diagnosed with type 2 diabetes mellitus at Vanga Hospital, DR Congo.

Researcher: Dr P Bahza Kalonga
Supervisor: Dr LH Mabuza (Family Medicine & PHC)
Co-Supervisor: Mrs D Pretorius & Dr Fira Lubaki (Family Medicine)
Hospital Superintendent: Dr A Mpoo Mooto (Vanga Hospital, DR Congo)
Department: Family Medicine and Primary Health Care
School: Medicine
Degree: M MED (Family Medicine)

DECISION OF THE COMMITTEE:

MREC approved the project.

DATE: 07 October 2008

PROF N EBRAHIM
DEPUTY CHAIRPERSON MREC

Note:
i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.
ii) The budget for the research will be considered separately from the protocol.
PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

DEMOCRATIC REPUBLIC OF CONGO

BAPTIST COMMUNITY OF CONGO

EVANGELIC HOSPITAL OF VANGA

P.O. BOX 4728 KINSHASA II

STATEMENT CONCERNING APPROVAL OF STUDY

Name of study

THE PROFILE OF PATIENTS DIAGNOSED WITH TYPE 2 DIABETES MELLITUS AT VANGA HOSPITAL, DRC.

After that we have got all information on proposed study and were provided opportunity to ask and had adequate time to rethink the issue, the aim and the objectives are sufficiently clear to us

We know that this study will be held after approval by the Research Ethics and Publication Committee of Faculty of Medicine, University of Limpopo (Medunsa campus)

We give the approval for this study to be conducted in at Evangelic Hospital of Vanga.

Mpar. DR. TR. ALFRED 06/03/2008

Name of superintendent   Signature   Date

Patient number: _____

Place:_____

Date:_____

Signature:_____

HEALTH BELIEF QUESTIONAIRE (HBC)

below are some beliefs about health and illness. Read each ~~ent~~ and indicate whether you agree, disagree or are not sure ~~rking~~ the appropriate response.	Agree	Someti mes agree	Disagree	Not sure
I got diabetes because I am a not strong.	1	2	3	4
I got diabetes because I do not eat proper foods.	1	2	3	4
My diabetes is due to desertion by God (I become ill because God has deserted me).	1	2	3	4
My diabetes is caused by witchcraft or sorcery.	1	2	3	4
I got my diabetes because someone has cursed or done something evil towards me.	1	2	3	4
I got my diabetes because I do not exercise regularly.	1	2	3	4
I go to doctor only when I am seriously ill.	1	2	3	4
Doctors are the only ones who can treat diabetic patients	1	2	3	4
There is nothing people can do to prevent themselves from getting diabetes.	2	2	3	4
I got my diabetes because I did not keep myself clean.	1	2	3	4
Doctors cannot treat my diabetes.	1	2	3	4
I inherit my diabetes from my parents.	1	2	3	4
If I would taken good care of myself I will not get diabetes	1	2	3	4
People are able to cure their diabetes themselves when they are sick.	1	2	3	4
If a person gets diabetes it is his own fault.	1	3	3	4
Visiting a doctor for regular check-ups can prevent a person from getting diabetes.	1	2	3	4
Doctors can make my diabetes better but they cannot treat the cause.	1	2	3	4
My diabetes can be treated at home.	1	2	3	4
Older people know a lot about diabetes and can advise me what to do.	1	2	3	4
I should pray to God to cure my diabetes.	1	2	3	4
I got my diabetes because I was lazy and did not work hard enough.	1	2	3	4
If I get the treatment given by elders or older people my diabetes can be cured (It is really helpful).	1	2	3	4
My diabetes mellitus is a form of punishment for the wrong or bad things I have done.	1	2	3	4
I got my diabetes when something foreign invaded my body.	1	2	3	4
My diabetes occurs because I did not do the rituals or prayer	1	2	3	4

Ndonga ya Mbefo: _____

Kisika: _____

Kilumbu: _____

Diboko: _____

KIUFU SAMBU NA MAVIMPI

mbote nkonso kiufu na ntuala ya kutula MVUTU indimbu na mvutu na nge.	Inga	Mbala ya nkaka	Ve e ve	Kusa mba ve
Mono bakaka kimbefo ya sukadi sambu mono kele ngolo ve	1	2	3	4
Kimbefo ya sukadi ku kotaka na nitu sambu kudia kele mbote ve	1	2	3	4
Kimbefo ya sukadi na mono kele diswekamu ya Nzambi	1	2	3	4
Kimbefo ya sukadi na mono mene katuka na bandoki	1	2	3	4
Kimbefu ya sukadi na mono kele sambu na bandoki ye kindoki ke nataka yo	1	2	3	4
Mono kele mbefu sambu na kukonda ngalasisi	1	2	3	4
Mono ke kwenda na munganga kaka na tangu ya kimbefo ya ngolo	1	2	3	4
Kaka dokotolo lunga sadisa mono na maladie ya sukadi	1	2	3	4
Muntu kukaka kulunga kimbefo ya sukadi ve	1	2	3	4
Mono bakaka kimbefu ya sukadi sambu mono kele vindu	1	2	3	4
Munganga takunka kumbelula mono ve	2	2	3	4
Kimbefu ya sukadi na mono kukatukaka na bibuti.	1	2	3	4
Mono lunga tina kimbefu ya sukadi na ngangu	1	2	3	4
Mono lungu kudisadisa mono mosi kana kimbefu	1	2	3	4
Mono kele mbefu na ku nkonda mayele	1	2	3	4
Munganga lunga tinisa kimbefu ya sukadi na ntuala	1	2	3	4
Munganga lunga sadisa kimbefu ya sukadi	1	3	3	4
Mono ta kuka kusadisa kimbefu ya sukadi na nzo	1	2	3	4
Bambuta kuzamba kudikeba na kimbefu ya sukadi	1	2	3	4
Nzambi lunga belula mono na kimbefu ya sukadi	1	2	3	4
Mono bakaka kimbefu ya sukadi sambu monokele molo.	1	2	3	4
Kinsi ya nsiku ya bambuta lunga belula kimbefu ya sukadi.	1	2	3	4
Kimbefu ya sukadi na mono kele ndola sambu na mambi na mono	1	2	3	4
Mono bakaka Kimbefu ya sukadi sambu na kima kinzenza na nitu	1	2	3	4
Mono kele mbefu sambu na ntu ngolo ya ba nsiku.	1	2	3	4
Mono kele mbefu sambu na bankisi ya bantu ya nkaka	1	2	3	4
Mono kele mbefu sambu nitu me beba	1	2	3	4
Kimbefu ya sikadi na mono sambu na ba demon	1	2	3	4
Kimbefu ya sukadi na mono kukatukaka na bambuta	1	2	3	4

Patient number: _____

Place:_____

Date:_____

Signature:_____

SECTION A: Clinical data to be completed by the Health care Professional

Q1	Serum glucose	
Q2	Weight (kg)	
Q3	Height (cm)	
Q4	BMI	

SECTION B: To be completed by the patient.

Please complete this questionnaire anonymously and honestly.
Please tick the appropriate box

Q1	Sex	Male 1
		Female 2

Q2	Age	

Q3	Highest level of education	

Q4	Residential area	

Q 5	Number of dependents	