

***HEALTH BELIEFS, ATTITUDES, PSYCHOLOGICAL FACTORS AND
SELF-MANAGEMENT PRACTICES OF OUT-PATIENTS WITH
CHRONIC NON-INSULIN DEPENDENT DIABETES IN THE
NORTHERN PROVINCE OF SOUTH AFRICA***

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DECLARATION

I BOPAPE MANTWA WELHEMINA declare that the dissertation hereby submitted to the University of the North for the of Masters of Arts in Psychology has not been submitted by me for a degree at this or any other university, that it is my own work in design and in execution, and that all material contained therein has been duly acknowledged.

Signature

A handwritten signature in black ink, appearing to read 'Bopape M. Welhemina', written over a horizontal line.

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ABSTRACT

The purpose of this study was to explore the beliefs, attitudes, psychological factors and self-management practices of patients with diabetes, which may provide insight into important features of diabetes management and help health care providers discover ways to enhance diabetic patients' compliance. Participants of this study were 60 non-insulin dependent diabetes mellitus outpatients. Availability or accidental sampling method was used to choose participants. Data were collected using structured interview administered questionnaires and semi-structured interview schedules. Two types of analyses have been performed, thematic content analysis for the open ended questions on the semi-structured interviews and the SPSS (frequencies, descriptive statistics (means and standard deviations) and the t-test for between group comparisons for the closed questions on the questionnaires). Patients in this study had negative attitudes towards diabetes, where they perceived diabetes as fatalistic disease and believed it to have a detrimental effect on one's life. They believed it to have a strong social and health impact on one's life. They had negative thinking about the disease which increased pain perception that in turn led to cognitive distress and ultimately non-compliance. A believe that the prescribed diet helped in keeping the disease under control was prevalent. Difficulties in adhering to the treatment regimen regarding diet and exercise were reported. A core belief that diabetes-related health outcomes were not under personal control was prevalent. Most patients shifted their responsibility of controlling the disease to health care providers, which might be a significant barrier to achieving self-management. When patients were talking about their nutritional practices, the role of family in the management of diabetes became apparent. The influence of the family on the self-management of diabetes and the impact of changing family interactions on adherence need to be investigated and health care providers need to consider using different counselling strategies to motivate patients to comply with the treatment regimen and use the self-perception of compliance held by patients to consolidate progress being made by patients, enhance self-esteem and further improve overall patient functioning.

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CHAPTER 1

This chapter is giving the general introduction about the study. It is focussed on the background, the problem statement, objectives, the rationale, significance of the study and definition of key terms.

1.1 BACKGROUND OF THE STUDY

The high incidence of diabetes and diabetes related complications continue to be of much concern among health care providers (Zaldivar & Smolowitz, 1994). Managed care organizations are focussing on how health care providers manage their patients with diabetes (Lawler & Viviani, 1997). Adherence to the treatment regimen for patients with diabetes is of major concern to health providers and of importance for diabetic patients (Schwab, Meyer & Merrell, 1994).

In most prevalence studies the type of diabetes, both known and newly discovered, have been Non-Insulin Dependent Diabetes Mellitus. The range of prevalence estimates may be explained partly by the lack of standardization of diagnostic criteria and methodology (Connell, 1991). Most studies also report a large numerical difference between the number of known and newly discovered diabetic patients, the majority of the latter having no symptoms.

Male predominance is recognised in a number of other diseases in the tropical Africa and it is possible that this could be due, in part, to sociological factors. In South Africa, on the other hand, a number of studies have shown a female excess. However, this observation may also be explained partly by socioeconomic factors such as the urban migration of males (McLartey et al., 1990).

Although it is possible that the incidence of diabetes in Sub-Saharan Africa is increasing, this has yet to be convincingly demonstrated. No difference has been convincingly shown between rural and urban dwellers in the prevalence of diabetes, except in North Africa. The prevalence of diabetes was found to be three times greater among urban residents in South Africa than in rural residents in Lesotho. Seven people were found

among 3000 outpatients in a rural hospital in Lesotho, and 18 among 3121 outpatients at an urban hospital in Johannesburg. This was observed in 1990, obviously the statistics have increased (McLarty et al., 1990). It has been found that the prevalence of diabetes in Dikgale area in the Northern Province of South Africa, among the adult population above the age of 30 is 5-7% (Dr Alberts pers. Com. 11-05- 2000).

The incidence of diabetes has been shown to increase in all South African populations. Juvenile onset diabetes was found to occur less frequently among black South Africans than among whites, although the incidence of Type II diabetes was found to be increasing among urban blacks (Shires, Maier & Lustig, 1983). According to Robertson (1986), the incidence of diabetes in children is more common in whites and blacks followed by Coloureds and Indians. Presently, the prevalence of diabetes among Africans is less than that reported in most industrialized countries even when the rates are adjusted. Nevertheless, it can be estimated that there are at least one million people with diabetes in South Africa (Gillet et al., 1997) and its prevalence has been found to increase with advancing age as in other regions of the world (Connell, 1991). It is estimated that about 40% of people in South Africa, in the economically active age group (25-64) die because of chronic diseases like diabetes (McLarty, Pollit & Swai, 1990).

Interest in monitoring and improving patients' knowledge is essential for patients with chronic diseases like diabetes. Knowledge about different aspects of diabetes management needs to be related to relevant outcomes. The importance of health and perceived control in determining treatment choice and efficacy must be considered when dealing with diabetic patients (Bradley, 1995). Many factors contribute to patients' self-management success. The main ones are the attitudes, beliefs or perception of the patients rather than demographic characteristics (Day, 1995).

Successful management of diabetes requires attention not just of observable behaviours, but to the underlying attitudes and belief systems which drive that behaviour (Greenhalgh, Helman & Chowdhury, 1998). This successful management can be improved by being more patient centred, it is important to consider the patient's goals, values and self-image, i.e, the cognitive contents (beliefs) are expected to be related to compliance (Nurymberg, Kreitler & Weissler, 1996). Research findings indicate that there is a

relationship between diabetes and locus of control, i.e, strong beliefs that the patient's behaviour is responsible for the course of the disease (Ulf, Anders, & Per-Olof, 1998).

Psychological patterns in diabetic patients may manifest themselves in specific ways: patients resist regimens because they want control over their daily activities and living patterns (Lutfey & Wishner, 1999). Two variations in patients' interpretations of diabetes have been found: the extent to which patients primarily oriented themselves toward symptom control or prevention of complications, and their perception of the seriousness of the condition. From the few studies conducted, it has been found that diabetic patients believe diabetes to be a serious condition which could cause complications (Murphy & Kinmonth, 1995). The psycho-social aspects of diabetes, including the patient's perspective, and attempt to raise awareness about some of the flaws in diabetes need to be considered when dealing with diabetic patients (Laura & Paula, 1998).

According to Dietrich (1996), the reaction and attitudes' physicians or health care providers display at the point of diagnosis is of crucial importance in influencing patients attitudes toward perceived seriousness of the disease and consequently compliance. Physicians' interactional styles had more influence on compliance with medications than on other aspects of medical self-care. It has been found that among the health beliefs examined, only perceived effectiveness of treatment had consistent effects on compliance (Liska, May, & David, 1997). Patients have different understanding of their diabetes management based on socio-cultural differences between themselves and their practitioners. The patient's health beliefs about the long-term benefits of diabetes control are particularly salient for understanding compliance (Lutfey & Wishner, 1999).

1.2 STATEMENT OF THE PROBLEM

The non-compliance by diabetic patients is a major problem faced by physicians and health care providers. As many as 50% of patients seeking treatments, drop out of care within a year. Only 7% adhere to all of the recommendations considered necessary for proper control of diabetes (Cerkoney & Hart, 1980). Non-compliance and adherence result in serious difficulties to treatment. Non-compliance can be understood in terms of reactance

theory (Lutfey & Wishner, 1999): in response to perceived threats to their freedom, and acceptance of chronic disease, patients become motivated to recapture lost freedom by not following medical advices.

Research findings indicate that diabetic patients are less likely to follow medical recommendations especially, regarding diet and exercise (Liska et al., 1997). It has been found that in Zimbabwe, diabetic patients had not complied with follow-up appointments since more than 60% lacked comprehension of their disease and the use of medicine prescribed to them. Despite this, there have been few studies on the actual behaviours, beliefs and attitudes of diabetic patients.

The beliefs and attitudes of diabetic patients seem to be barriers to compliance (Weller et al., 1999). For example, some patients were found to believe that they had the disease because it is God's will, as a result there is no need to adhere with treatment, others reported using herbs to treat their diabetes (Zaldivar & Smolowitz, 1994). This indicates that the individual's belief has great influence on treatment and compliance. These issues of religion and spirituality also seem to be the cause of the non-compliance and they need to be addressed when dealing with diabetic issues.

1.3 OBJECTIVES OF THE STUDY

1. To explore the beliefs and attitudes of patients with diabetes.
2. To provide insight into important features of diabetes management.
3. To help discover ways that physicians or health care providers might enhance diabetic patients' compliance.

1.4 RATIONALE OF THE STUDY

Assessing the attitudes and beliefs of diabetic patients is vital for planning effective and realistic strategies to enhance compliance and intervention, since previous research indicates that to provide diabetic patients with information is mostly insufficient for compliance.

1.5 SIGNIFICANCE OF THE STUDY

This study is significant for successful management of diabetes. A better understanding of patients' beliefs and attitudes may help physicians and health care providers to increase motivation, understanding and compliance, as behaviors are influenced by beliefs regarding the nature of the disease.

1.6 DEFINITION OF KEY TERMS

1.6.1 Diabetes Mellitus

Diabetes mellitus is a disease in which the body's cells cannot use glucose (sugar) properly for lack of or resistance to the hormone insulin, produced by the pancreas. In severe untreated diabetes, the body's cells are starved of the "fuel" needed for energy and the tissues may "melt away" in a state resembling severe malnutrition. Normally, insulin keeps blood levels of glucose within safe limits, ranging from 4-7mm. But in people with diabetes who have little or no insulin, blood glucose may reach dangerously high levels and if left untreated it can lead to dehydration, coma and possible brain damage. The most immediate danger in diabetes is hyperglycemia (high blood sugar) which can lead to ketoacidosis, with a build up in ketone bodies in the blood and possible diabetes coma and even death. Persistently raised levels of blood sugar may lead to long term complications such as blindness, kidney failure, nerve degeneration, stroke and heart disease (Engel, 1996; Montaque, 1983).

1.6.2 Insulin Dependent Diabetes Mellitus

With Insulin Dependent Diabetes Mellitus (IDDM) the pancreas ceases production of insulin and the patient is dependent on exogenous insulin (Engel, 1996; LeRoith et al., 1996; Montaque, 1983).

1.6.3 Non-Insulin Dependent Diabetes Mellitus

Non-Insulin Dependent Diabetes Mellitus is a state where the pancreas may produce some but not enough insulin. The insulin insufficiency may reflect problems in areas of glucose metabolism other than subnormal insulin. It is aggravated by obesity and ameliorated by weight loss and nutrition management (Bonnici et al., 1997; Engel, 1996; LeRoith et al., 1996; Montaque, 1983).

1.6.4 Non-compliance

Non-compliance is wilful disregard of provider prescriptions (Johnson, 1992; Lutfey & Wisner, 1999; Kurtz, 1992).

1.6.5 Belief

A belief is something one accepts as the truth, regardless of whether or not it is actually true in objective terms. Whether a particular belief happens to be valid or not in the eyes of others has little to do with its effect on the holder's behaviour. Far more important are the expectations that a particular belief evokes about a certain behaviour and how important these expectations, in terms of consequences or benefits to the individual (Day, 1995).

CHAPTER 2

This chapter is focussed on the review of literature to give the understanding of the medical aspects of diabetes.

2.1 UNDERSTANDING DIABETES

2.1.1 Different Types of Diabetes

There are at least three distinct types of diabetes types: Type I (Insulin Dependent Diabetes Mellitus-IDDM), Type II (Non-Insulin Dependent Diabetes Mellitus-NIDDM) and gestational diabetes (which arises in pregnancy), each with different causes and mechanisms requiring different therapy (Alberti, 1997 & Engel, 1996).

2.1.1.1 Type I (Insulin Dependent Diabetes Mellitus-IDDM)

The Type I diabetes formerly called the “Juvenile” affects 10 percent of South Africans. Type I diabetes is now viewed as the progressive autoimmune disorder in which antibodies form and attack the body’s own insulin producing beta cells, resulting in insulin deficiency. At diagnosis, 70-90 percent of those with IDDM has identified anti-insulin and anti-islet antibodies (Engel, 1996).

The triggers that lead to the autoimmune destruction are not fully understood but may include genetic and environmental factors. Researchers have identified the genetic markers (HLA-Human Leucocyte Antigens) that occur more frequently than usual in people with Type I diabetes (Montaque, 1983).

Studies of identical twins have shown that if one has Type I diabetes, there is a 50 percent chance that the other twin will also develop the disease. But the unpredictability suggests that although the susceptibility to IDDM is inherited, unknown triggers possibly a virus, toxin or some dietary ingredient “trip” the autoimmune process into action. It has been found that most cases of IDDM occur without a family history of diabetes (Engel, 1996).

The symptoms of Type I diabetes include frequent urination, blurred vision, unusual thirst, extreme hunger, easy tiring, irritability and nausea may come on suddenly. Deprived of their own natural insulin, Type I diabetics rely on lifelong insulin replacement by injection. The more consistent and regular the timing of insulin injections, the better the control and the easier it is to balance the insulin action to activity and diet (Montaque, 1983).

Studies confirm that intensive therapy to keep blood sugar levels as low as possible markedly, lower the risk of diabetic complications such as eye problems and kidney problems (Alberti, 1997).

Insulin requirements increase at time of stress, illness or extra activity and during pregnancy. The injection site should be rotated and experts caution about the need to watch, to avoid problems while asleep. It has been found that low blood sugar levels (hypoglycemia) can occur during sleep and go unrecognized, as a result it is wise to check nighttime blood sugar from time to time (Engel, 1996).

Prevalence

Major geographic and ethnic differences exist in the prevalence of Insulin Dependent Diabetes Mellitus. It is rare in certain groups and highest in others, comparisons should be made with caution because of the different age groups studied and the various methods of case assessment used (American Diabetes Association, 1992).

Incidence

The majority of population studies have demonstrated age peaks in the clinical presentation of IDDM. There is some year by year variation in the incidence with limited data suggesting raising trends in some countries. There is little systematic data about IDDM diagnosed for the first time before the age of 20 years (American Diabetes Association, 1992).

Risk Factors

Factors that precipitate IDDM in genetically susceptible individuals still need elucidation, but viral infections are thought to play a leading role. Further studies are needed to assess the significance of secular trends, age, seasonal incidence peaks, the protective effect of breast-feeding, ingestion of smoked mutton on fetal beta-cell development and the possible effects of other substances (American Diabetes Association, 1992).

2.1.1.2 Type II (Non Insulin Dependent Diabetes Mellitus-NIDDM)

The NIDDM was once called the “maturity” or “adult onset” diabetes. In Type II diabetes (NIDDM) the pancreas may produce some but not enough insulin. The insulin insufficiency may reflect problems in areas of a glucose metabolism other than subnormal insulin therapy. A high reading of a fasting blood sugar test confirms the diagnosis. In women, elevated circulating glucose often leads to recurrent vaginal yeast infections (Bonnici et al., 1997; Engel, 1996).

Oral medications for Type II diabetics include the sulphonylureas (such as Glycomin and Cliniben), which stimulate the pancreas to make more insulin and the biguanides (such as Metformin) which increase insulin sensitivity and induce the body’s cells to take up glucose faster. The medication prescribed depends on the person’s body sugar levels, weight and exercise habits (Montaque, 1983).

Some people with NIDDM suffer devastating complications similar to those with IDDM. Increased risks of heart attack, stroke, peripheral vascular disease and amputation are prevalent.

Prevalence

The prevalence of NIDDM increases with age. In some developing countries the prevalence is lower in men than in women, but in others the sex ratio is reversed (American Diabetes Association, 1992; Bonnici et al., 1997).

Incidence

Incidence rates are difficult to interpret and can only be considered valid if they are based on serial systematic diagnostic studies. So large is the potential pool of undiagnosed NIDDM in many populations that incidence rates may be as much an index of awareness and methods of assessments as of the frequency of diabetes. In most societies the incidence of NIDDM reported by physicians rises throughout adult life and is usually highest in old age. It is widely believed that the incidence is higher in women than men, but this lacks documentation (American Diabetes Association, 1992).

Risk Factors

No specific genetic marker has been found for NIDDM. While the search continues, the important role of genetic factors in NIDDM is underlined by the high rates of concordance in monozygotic twins (American Diabetes Association, 1992).

The strongest factor predisposing people to NIDDM are a family history of the diabetes and obesity, the risk being almost directly proportional to body weight. About a third of those with Type II diabetes control the disease by weight loss and diet alone, but others need medication (American Diabetes Association, 1992).

The changing age structure of developing populations, with people living longer as a result of improved nutrition and control of infectious diseases, is an important factor that contribute to the increasing prevalence of diabetes. However, this alone does not explain the emergence of NIDDM as a major health problem (American Diabetes Association, 1992).

Obesity has long been accepted as the risk factor for NIDDM and the risk is related to both the duration and the degree of obesity. Susceptibility of diabetes appears to be unmasked by a number of environmental factors such as lifestyle, dietary factors, stress, urbanization and acculturation. High and low rates of diabetes have been linked to a number of social factors including occupation, marital status, religion, economic status and level of education (American Diabetes Association, 1992).

2.1.1.3 Gestational Diabetes Mellitus

Gestational diabetes affects 2 - 5 percent of pregnant women. In some women it develops for the first time during pregnancy and seems to differ from Type I and Type II diabetes. In pregnancy two things may trigger diabetes. Firstly, weight gain and the production of certain hormones (such as cortisol and placental lactogen) in quantities that alter the way insulin works, making blood sugar rise and perhaps tipping some predisposed women into a transient diabetes state (Alberti et al., 1997; Engel, 1996).

Gestational diabetes demands close attention to diet, foetal surveillance, careful monitoring of blood glucose and if all fails, insulin therapy. The disease may vanish after delivery but recur in subsequent pregnancies. Statistics show that after giving birth, about 30 percent of women with gestational diabetes later develop Type II diabetes (Alberti et al., 1997; Engel, 1996).

2.1.2 Aetiology of Diabetes

Since hyperglycemia and the chronic complications of diabetes are observed in both Types I and II diabetes, it was for a long time thought that they represent a single disease entity. However information from a number of studies on the aetiology and the pathogenesis of diabetes suggest that it is not a single disease entity but rather a syndrome composed of a number of diseases (Montaque, 1983; Sragg et al., 1990).

2.1.2.1 Genetic studies

It has been known for a considerable time that diabetes tends to run into families (Backkeskov & Hansen, 1990). However, since family members usually share the same diet and environment, a familial association of the disease does not prove that genetic factors are involved. Studies on the prevalence of diabetes in twins have given some insight into the importance of genetic factors in the development of diabetes. These studies have revealed a 45-96 percent concordance (both twins developing diabetes) in monozygotic (identical twins) and only 30-37 percent concordance in dizygotic twins (Montaque, 1983).

While it is clear that the genetic factors are important in the development of diabetes, considerable controversy has surrounded explanations of the mode of genetic transmission, and diabetes has been described as “a geneticist’s nightmare” (Engel, 1996).

It is clear that none of the postulated mechanisms satisfactorily explain the pattern of inheritance in all cases of diabetes. There are a number of reasons for this confusion, chief among which is the lack of knowledge concerning the basic defects underlying the diabetic phenotype and patients with diabetes can only be identified retrospectively. Thus, cross-sectional family studies for genetic analysis cannot as yet, possibly identify those who will become diabetic in time. Furthermore, it is impossible to control environmental variables such as diet and obesity which may affect the expression of the diabetic genotype (Montaque, 1983).

2.1.2.2 Psychological Factors Related to the Development of Diabetes

Heredity factors are assumed to be involved in the onset of diabetes, but some studies suggested that psychological problems also precipitate the disease. Psychological factors have been regarded as the determinants and a significant consequence of diabetes, determining the immediate and long-term adjustment of the individual. Low positive correlations between some modified life stress events schedule and the courses of diabetes have been reported (Dunn & Turtle, 1981). Stress, particularly as a result of object loss, may precede diabetes onset.

Diabetes and stress may influence each either directly or indirectly. For example, stress may interfere with regimen adherence and thereby undermine metabolic control. Alternatively, poor control might interfere with general functioning, exacerbating the effects of various stressors to the diabetes regimen (Littlefield et al., 1990).

An accumulation of life crisis units alters the course of diabetes, not just acute stress. A positive relationship between undesirable life events and diabetes course have been reported (Gavard et al., 1993). An increase in urine ketones and urine volume and fluctuations in blood and urine glucose levels in response to stressful conversation topics was found to be produced by diabetes. Other stressful stimuli, including hypnosis and electric shock, have also been found to be produced by diabetes (Connell, 1994; Fisher &

Delamater, 1982). Denial has been noted along with guilt concerning an exaggerated sense of responsibility for the disease onset or course (Dupis, 1980; Connell, 1991).

2.1.2.3 The Role of Glucagon in Diabetes

Studies in vitro have shown that glucagon has the property of increasing the mobilization of glucose, free fatty acids and ketone bodies, metabolites which are found in excessive concentrations in the blood of diabetic patients, while other studies have shown that exogenous glucagon administration to insulin-deficient diabetic patients causes a significant rise in plasma, free fatty acids and ketone bodies, aggravating the metabolic abnormalities of diabetes (Montaque, 1983).

The elevated plasma glucagon levels seen in diabetes arise as a consequence of an abnormal secretory response of the A-cell which becomes relatively insensitive to glucose. The ability of glucose to inhibit glucagon secretion normally depends on the presence of insulin since the A-cell appears to require insulin for glucose entry and the subsequent inhibition of glucagon release (Montaque, 1983).

In Type I diabetes insulin therapy usually reduces the basal glucagon levels and in these patients it is possible that glucagon excess may result in part from lack of insulin. However, in Type II diabetes, abnormalities in glucagon secretion exist, despite the persistent of insulin (Montaque, 1983).

2.1.2.4 Autoimmunity and Diabetes

Under certain circumstances the individual's immune system can react with its own tissue proteins and cause tissue damage, a phenomenon known as the autoimmunity. It has been found that patients with autoimmune disease tend to develop other diseases and that diabetes has a higher than expected incidences of autoimmune disease. It has been suggested that diabetes is one of the family of autoimmune diseases. Lymphocytes from Type I diabetics often demonstrate cytotoxicity against B-cells compared to lymphocytes from non diabetics, suggesting a cell mediated autoimmunity may be an important component of the pathological process. The demonstration of both cells and hormonal mediated immune

response to islet tissue in diabetes leaves little room for doubt about the presence of the autoimmune component in the pathogenesis of Type I diabetes (Montaque, 1983).

2.1.2.5 Viruses and Diabetes

The possibility that viral infection may play an important part in the development of diabetes has received considerable attention. The hypothesis that viral infection is one of the causes of diabetes is supported by its abrupt onset, the presence of the inflammatory cells in the islets and the destruction of the B-cells. Some case reports have shown a relationship between the onset of viral infection such as mumps, rubella (German measles) and Coxsackie virus B4 and the subsequent development of diabetes (Montaque, 1983).

2.1.2.6 Histocompatibility Antigens in Diabetes

The histocompatibility antigens are the specific marker glycoprotein found on the surface of the nucleated cells of the body which give the cells of each individual their own chemical identity. They are part of the immunological defence system, but that is attacked when it becomes infected with viruses or becomes neoplastic (Shires et al., 1983).

It is possible that the high risk alleles associated with the HLA complex might code for a deficient immune response to agents that preferentially attack B-cells, thereby allowing B-cell damage and diabetes to result (Montaque, 1983).

2.1.3 Diagnosis of Diabetes

The diagnosis for diabetes is usually straightforward when there are obvious symptoms such as polyuria, polydipsia, ketonuria and rapid weight loss together with unequivocal elevation of the plasma glucose concentration. In the absence of signs and symptoms, however, the diagnosis depends on the measurement of plasma glucose concentration under standardized conditions. The fasting plasma glucose concentration is normally increased in diabetes and a value of above 8mm on more than one occasion is considered diagnostic of diabetes (Montaque, 1983).

There are many variables such as diet, emotional state and time of the day that can affect the results of the test, as a result, it is necessary to standardize the conditions. The test is normally performed on a fasted person, in the morning after at least three days of normal diet and physical activity. A venous or capillary blood sample is taken for the determination of the fasting plasma glucose concentration. The person is then given a drink that contains 75g glucose and plasma glucose concentration are determined on blood samples taken at 30 minute intervals in the two-hour period following the glucose drink. Diabetes is indicated if both the two hour sample and the one other sample prior to two hours has a glucose concentration equal to or exceeding 11.0mm (Montaque, 1983).

The oral glucose tolerance test is most frequently used in people who are free of the clinical symptoms of diabetes in the hope that early diagnosis and subsequent treatment will slow or prevent the development of the long term sequelae of the disease (Montaque, 1983).

2.1.4 Pathogenesis of Diabetes

The results of studies on the aetiology of diabetes have shown that diabetes arises as a result of a complex interaction between the individual and the environment and that some individuals may be genetically predisposed towards the disease. It is likely that the basis of the genetic predisposition and the nature of the environmental factors involved differ in the different types of diabetes (Backkeskov & Hansen, 1990).

In Type I diabetes the environmental factors so far suggested, include viruses and toxic chemicals. These agents appear to interact specifically with the B-cells of certain individuals. As a result of this interaction the B-cell is irreparably either damaged or altered sufficiently for the body's immune defence system to attack and destroy the cell (Montaque, 1983).

In Type II diabetes the environmental factors may be dietary and involve an intake of calories in excess of the body's requirements since it is often associated with obesity. The intake of a calorie together with peripheral resistance to insulin that occurs in obesity requires an adaptive increase in the secretory capacity of the pancreatic B-cell (Alberti et al., 1997).

2.1.5 The Possible Complications of Diabetes

The main risks of diabetes lies in the long term complications such as retinopathy (eye damage), joint alterations, growth failure in children, kidney damage, hypertension (Mollentze et al., 1993), elevated cholesterol levels, heart disease and peripheral vascular disease (blood vessels) problems, especially in the feet.

2.1.5.1 The Arterial Blood Vessel

The arterial blood vessels are changes that commonly accompany diabetes. They occur for unknown reasons, possibly because high levels of circulating glucose damage the walls of large blood vessels, which develop weak spots that balloon out or built atherosclerotic plaque (Bonnici et al., 1997; Montaque, 1983).

2.1.5.2 Nephropathy (Kidney Disease)

Nephropathy is another complication of poorly controlled diabetes, resulting in leakage of proteins into the urine, buildup waste products in blood and blood vessel problems. Signs of kidney problems may include protein in the urine and the swelling of hands and feet (Bonnici et al., 1997; Montaque, 1983).

2.1.5.3 Neuropathy

It is also a possible complication, perhaps signalled by shooting pains in the legs or feet or by tingling (numbness) in the limbs and the diminished ability to feel pain, especially in the feet necessitating meticulous foot care (Seedat, 1985).

CHAPTER 3

In this chapter literature related to the study is reviewed to familiarize the researcher with the latest developments in the area of research to allow easier comparison of results and the theoretical framework of the research.

3.1 BELIEFS AND ATTITUDES OF DIABETICS

Little has been written about diabetic patients' perspectives of their disease. Much of the existing literature has focussed on the psycho-social factors related to diabetes (McCord & Bradenburg, 1995).

3.1.1 Factors Influencing Attitudes of Diabetics

3.1.1.1 Physicians' reaction at diagnosis

Diagnosis has an influence on the patient's attitudes towards the disease. The beliefs of the physician or other members of diabetes care teams are as important as those of the patients. Failure of those caring for the patient to provide consistency causes confusion and often rejection by the patient (Day, 1995). If physicians react in a caring and supporting manner, patients are likely to control their disease firmly from the beginning (Dietrich, 1996). However, studies reveal that motivation and reinforcement required by health care providers to maintain original change in behaviour is lacking (Day, 1995).

3.1.1.2 Physician-Patient Relationship

The physician-patient relationship also influences the patient's attitudes towards diabetes. Findings from the study conducted by Dietrich (1996) reveal that patients are unsatisfied with the way they are treated, stating that physicians don't have enough time to listen to their feelings. It has been found that staff-patient communication barriers hamper treatment related aspects. The barriers found include logistic or organisational aspects (e.g. lack of

time), patient related aspects (e.g. poor educational level) as well as those of staff (e.g. language problems) (Goodman et al., 1997).

3.1.1.3 Perceived Seriousness of Diabetes

It has been found that if feelings of shock, fear, panic and mad to resignation are expressed by the patient at the time of diagnosis, patients are likely to have a negative image of the disease and feel threatened. Research evidence reveals that most diabetic patients are afraid of the disease, especially fear of loss of health, complications and death and ultimately affect their attitudes towards the disease (Dietrich, 1996).

3.1.2 Attitudes and Educational Programmes About Diabetes

Formal educational programmes are associated with changes in attitudes and these attitudes are precursors to behavioural change. Education strategies based on achieving improved patient attitudes and motives rather than just comprehensive knowledge has been found to be an effective way of improving patient diabetic control (Greene et al., 1994; Rubin et al., 1991).

Attitudes are powerful influences of human behaviour and they can be learned. Therefore diabetic educators have the opportunity to provide traditional diabetes education in a format that is conducive to improve the learner's attitude. Attitudes were found to influence learning in one or more of the following directions: toward the instructor, toward the subject and the learning situation, toward themselves as learners and toward their expectancies for success in the learning activity (Glasgow, 1995). If any attitudinal direction becomes seriously negative motivation for learning can be impaired (Greene et al., 1994).

The attitude-behaviour theory of Fishbein & Ajzen was used to understand and describe the diabetes related attitudes and their potential relationship to the behaviour of patients. The theory states that a patient's orientation to behave in a certain way has two major determinants. The first one is the subjective norm, i.e., whether other people whom the patient views as important feel positively or negatively about trying to achieve tight glucose control. The last determinant is the patient's attitude toward the behaviour, i.e., how

positively or negatively the patient feels about trying to achieve tight glucose control. As a result the patient's attitude will be the summation of that patient's specific beliefs about the behaviour (Glasgow & Oosteen, 1992; Greene et al., 1994).

3.2 HEALTH BELIEFS AND KNOWLEDGE OF PATIENTS AND HEALTH CARE PROVIDERS

3.2.1 Knowledge Measures

It was originally expected that increased knowledge of diabetes would be associated with improved diabetes control. However, people with high levels of knowledge often had poor blood glucose control (Bradley, 1995). This gap between knowledge and behaviour was taken by some researchers to indicate that patient's knowledge is not as important as beliefs or motivation to apply knowledge (Bradley, 1995).

3.2.1.1 Patient's Knowledge, Understanding and Folk models of NIDD

Medical management of NIDD depends upon patients' adherence to advise in areas such as diet, exercise, alcohol consumption and smoking cessation. Patients do vary in these lifestyles changes and causes of such variations are likely to be complex and to include social, marital, cultural and intra-psyche factors (Murphy & Kinmonth, 1995).

Two variations in which patients interpret diabetes have been identified: the extent to which patients primarily oriented themselves towards symptom control or towards prevention of complications and their perceptions of the seriousness of the condition. It has been found that patients' orientations are focussed on symptoms and complications and that most believe diabetes to be a chronic, incurable condition that has a potential threat to life (Anderson et al., 1988). Fear of acute complications (collapse and dropping dead) were also mentioned (Greenhalg, Helman & Chowdhury 1998; Murphy & Kinmonth, 1995).

Although improved blood glucose is expected to follow the acquisition of knowledge about diabetes management, it is clear that when patients recognise that they have blood glucose that is too high, or when they develop problems such as foot ulcers, they are more

likely to learn about that specific problem and related aspects of diabetes management at that time, rather than at an earlier stage when all was well. Thus, impressive levels of knowledge can be found among people with poor blood glucose control and complications (Murphy & Kinmonth, 1995). There are many reasons why patients may be unable or unwilling to apply their knowledge about diabetes, and this is where beliefs are crucial (Bradley, 1995).

3.2.1.1.1 Origin and Nature of Diabetes

Findings from the study conducted by Greenhalg et al. (1998) on the health beliefs and folk models of blacks, indicated that illness is generally attributed to events or agents outside the body rather than to primary failure of an organ within it. It was found that patients tend to believe that the primary cause of diabetes and that of poor diabetes control was eating too much sugar, and to a lesser extent, other features of western diet. This feature strong folk models of other cultural groups.

3.2.1.2 Health Care Providers' Knowledge and Practices

Lack of foot care education and prevention (Maillet et al., 1996), lack of provider empathy concerning fear of diabetes, lack of knowledge about screening for complications and an unrealistic weight loss goal set by providers was found as barriers. It was found that doctors encouraged weight loss for improved control of diabetes, however, a method of weight loss or a realistic weight loss goal was not discussed (Greenhulg et al., 1998). In a study conducted in Cape Town, it has been found that health care providers in public sectors lack basic information such as classification of diabetes into IDDM and NIDDM, indicating a need for specific training of the pathophysiology of diabetes, as relevant to the care of patients. In contrast, basic knowledge of diabetes complications was found to be better (Greenhulg et al., 1998).

3.3 MEANING OF COMPLIANCE

Compliance is the extent to which a person's behaviour (in terms of medications, diet or life style changes) coincides with health or medical advice (Kurtz, 1992). The standard medical definition of compliance suggests that 100 percent compliance is expected by physicians and fails to address the patient definitions of compliance and implies that patients who do not follow medical advice are deviant, unreliable, irrational and uncooperative. In contrast few studies which sought the patient's perspective suggest that patients might define compliance in terms of a perceived "good health status" for example, a controlled blood glucose. Adherence has been difficult to study because of significant individual variations in regimen prescriptions (Roberson, 1992).

3.3.1 Determinants of Adherence

Circumstances under which non-adherence is both predictable and rational, including experiences where adherence does not lead to desired outcomes, where it has led to negative outcomes, and where the negative outcomes have outweighed the perceived benefits of adherence from patients' perspective have been described. For example, intensive therapies have been associated with a greater than twofold weight gain and a threefold increase in severe hypoglycemic episodes compared with a standard care group. A history of severe hypoglycemic episodes may even lead to phobic avoidance of glycemia. Thus, the "rational" basis for non-adherence becomes apparent (Kurtz, 1992).

From a behavioural perspective, naturally occurring aversive events such as weight gain and severe hypoglycemia, which happen long before the potential complications, create natural contingences that inhibit adherence rather than facilitate it. Similarly, the potential reinforcements, that is, not getting severe complications or not them as fast as they are so delayed that they do not effectively keep adherence at high rates (Kurtz, 1992).

3.3.2 Prevalence of Adherence

Evidence suggests that published prevalence rates may underestimate the extent of the problem, as some patients appear more compliant or in better metabolic control than actually is the case. Patients appear to adhere to some aspects of the diabetes regimen more than others (Omar & Asmal, 1984). Patients are more adherent in taking medications and less adherent about diet and exercise prescriptions (O'Connor, 1991). Although many patients may take their medications, they are less adherent with the timing of its administration (Johnson, 1992). Studies suggest that patients with diabetes find it easier to follow the “medically” related aspects of their regimen but less adherent to life style change recommendations. Thus, perceived difficulty in adherence to one aspect of disease management is not necessarily related to perceived difficulties in other aspects of self-care (Hanestad & Albreksten, 1991).

3.3.3 Developmental Issues and Adherent

Each stage in the human life span is associated with different cognitive and social capabilities as well as different biological changes, personal goals and social demands. Adherence is likely to be affected as the patient enters and moves through each stage of human development (Johnson, 1992).

3.3.4 Social Context of Adherence

Adherence to the medical regimen, like any other behaviour, occurs within a social context. Patients were found to attribute their adherence difficulties to environmental and economic factors, as well as their interpersonal problems with their peers, family and health care professionals counterparts. They attribute non-adherence to more intra-personal factors (Kurtz, 1992 & Wierenga, 1994).

3.3.4.1 Adherence as a Function of Family Interactions

The interaction between patients and their families can be expected to have a significant impact on adherence. Positive, supportive behaviour may enhance adherence, whereas negative, nagging or indifferent behaviour might be expected to hinder adherence. Adherence to most regimen behaviours in patients is predicted by the frequency of negative, hindering behaviours but not by the frequency of positive supportive behaviours (Kurtz, 1992).

It has been consistently demonstrated that disagreement among family members about the patient's diabetic self-care is to be expected, but that it must be in the context of mutual problem solving and negotiation rather than accusations and lack of resolution otherwise, adherence will suffer (Kurtz, 1992).

3.3.5 Inadvertent Non-compliance

Although non-compliance is thought to be wilful disregard of provider prescriptions, patients can be non-compliant inadvertently. Through patient-health care provider mis-communication, failure to recall information accurately or knowledge and skill deficits, a patient may believe he or she is compliant while not (Johnson, 1992).

Patient-provider mis-communication may be particularly common among children, whenever the health care provider fails to modify vocabulary and communication style depending on the cognitive capacity of the child. Research suggests that health care providers often are unable to discriminate between the conceptual abilities of children of different ages. Whenever this occurs (mis-communication between the patient and health care provider) an inadvertent patient non-compliance, is a likely result (Johnson, 1992).

3.3.6 Patients' Perspectives on Non-compliance

The primary perspectives in explaining compliance problems have centred on patients' health beliefs and patients' need for control or autonomy, which are all multivariate approaches. Compliance was defined in terms of the successful results of the self-

management practices as shown by the feelings “in good health”, by the physicians’ or health care providers’ comments on return visits such as “you are doing fine” or in some instances, by checking their own sugar levels. Although many patients are labelled as non-compliant by their health professionals, they see themselves as managing their disease and treatment regimes effectively (Roberson, 1992).

Consistent with previous research on Type I diabetes, adherence to dietary and physical activity components of a diabetes regimen is poor. Studies reveal that these are the regimen areas in which Type II patients had the greatest difficulty, and that are the most time consuming aspects of the daily regimen (Wooldrige et al., 1992) and also require the greatest alteration in life style (Ary et al., 1986).

For diet, eating out in restaurants and refusing offers of inappropriate foods from others was consistently reported as the most frequently problematic reasons for a non-compliance and that these situations require assertive responses. For coping with food offers, patients must learn assertive but socially appropriate refusal skills, as researches have shown that adherence to one aspect of the diabetes regimen was generally not strongly related to adherence to other diabetes self-care behaviours (Ary et al., 1986).

3.3.6.1 Conceptualization of Adherence Among Older Patients

Although the problem with defining and measuring adherence has been discussed at length in the diabetes literature, the potentially unique concerns for research involving older patients have not been addressed and several of the issues related to adherence may not be appropriate with older patients. Impaired cognitive functioning, illiteracy and declining reading ability may limit a complete understanding of a complex regimen for some older patients. Because of emphasis on preventive and behavioural approaches to health care, some of the older patients may be more resistant to the non medical aspects of their treatment regimen (i.e., diet and exercise) (Connell, 1991).

Comorbidity may result in the perception that diabetes and adherence to a diabetes regimen may be perceived by older patients as a low priority compared with the management of other illnesses (e.g., heart disease). Finally, the relationship between adherence and diabetes management may be unique for older patients, due in part to

physiological and perceptual processes of aging (Connell, 1991).

3.3.6.2 General Practitioners' Perspective for Non-compliance

Reasons for lack of compliance are postulated to include lack of believe in the value of the guidelines and possibly, poor recall of physician advice by patients (Lawler & Viviani, 1997).

3.3.6.2.1 Health Care Advise and Adherence

Health care professionals have been found to have a tendency to discuss components of everyday diabetes care with the patient, often using vague and nonspecific language. Patients may be told to “get some exercise” or “avoid high fat foods”. Such suggestions are too general to serve as a standard against which patients' behaviour can be compared (Johnson, 1992).

3.4 COGNITIVE FACTORS IN THE RELAPSE PROCESS OF DIABETIC PATIENTS

The cognitive factor such as self-efficacy, is described as important in the relapse episodes of diabetics (Marlatt & Gordon, 1987).

3.4.1 Self-Efficacy

Self-efficacy refers to the individual's perception of his or her ability to cope with prospective high risk situations. The concept of self-efficacy as an important cognitive mediator of behaviour has been elaborated by the social learning theorists. It is concerned with how well one can organize and execute courses of action required to deal with prospective situations that contain many ambiguous, unpredictable and often stressful events. It is defined as the cognitive process as it deals with perceived judgements or evaluations of patients' make about their competency to perform adequately in a specific task situation (Nurymberg et al., 1996).

Self-efficacy can have diverse effects on behaviour, think patterns and emotional arousal. In terms of behaviour, self-efficacy judgements influence choice of activities in that patients are likely to avoid situations that they believe exceed their capacities and to seek out those in which they feel competent. Thoughts and feelings are also affected by self-efficacy.

A patient with low self-efficacy perceives self-management as more difficult than it really is, thereby creating a disruptive state of increased arousal that impairs performance and compliance. Patients with a strong sense of efficacy, on the other hand, are able to exert their skills to the demands of the self-management regimen without undue doubts or negative self-appraisals (Nurymberg et al., 1996).

According to Bandura, self-efficacy judgements are based on four main sources of information: the patient's own accomplishments, vicarious observation of the performance of others, the influence of external persuasion, social influences and states of emotional arousal. Information from any of these sources is cognitively appraised by the patient, patient differences in the manner by which people selectively attend to certain information or arrive at inferences concerning their judgements of competency will influence their ratings of self-efficacy (Marlatt & Gordon, 1987).

The other source of information, social persuasion, is probably the least effective in enhancing self-efficacy with regard to diabetes control. Although patients may be motivated to comply with the regimen, this information will probably have little impact on efficacy judgements related to one's capacity to maintain that behaviour. The physiological arousal, exerts an important impact in that patients often rely on their physical arousal in judging their capacity to respond to the treatment regimen (Marlatt & Gordon, 1987).

3.4.2 Attributional Dimensions of Causality in Achieving Compliance

Four factors that patients may use to explain prior success or failure to comply with the treatment regimen are postulated: level of ability, the amount of effort expended, degree of task difficulty and the direction of experienced luck. Although other perceived causes of success and failure exist, it has been found that these are the most frequently perceived in achievement of compliance (Marlatt & Gordon, 1987).

It has been found that personal helplessness leads the patient to make internal attributions, where universal helplessness leads to external attributions. This distinction has important implications for understanding the conditions under which some patients “set up” the relapse situations in such a way as to avoid making internal attributions or accepting personal responsibility for their actions (Peyrot & Rubin, 1994).

There is evidence that suggests that attributions for failure may change over time. A patient who makes an internal attribution for failure that leads to feelings of guilt and shame may shift to an external attribution (e.g., blaming others or particular external events) over time, particularly if the shift is “face saving” in its effect. Attributions may differ depending on whether they are made by the patient or by an observer (Marlatt & Gordon, 1987; Peyrot & Rubin, 1994).

3.5 THEORETICAL FRAMEWORK

The Health Belief and The Personal Belief Models are used in this study as theoretical frameworks for understanding and enhancing patients’ compliance on the diabetes self-care regimen.

3.5.1 The Health Belief Model (HBM)

The health belief model suggests that there are four major belief factors which determine whether or not an individual will follow treatment recommended. These are beliefs about: the benefits of treatment, barriers to treatment, severity of the disease and the vulnerability to the disease (Pham et al., 1996).

The ways in which beliefs about severity and vulnerability may exert the influence are far less clear cut than the ways in which benefits and barriers can affect behaviour (Coates & Boore, 1998). As with knowledge of diabetes, so too with beliefs. Knowledge and beliefs can influence outcomes but outcomes cannot influence knowledge and beliefs (Bradley, 1995).

3.5.1.1 Dimensions of the Model

Perceived Susceptibility

This dimension refers to one's subjective perception of the risk of contracting a condition (Pham et al., 1996).

Perceived Severity

Feelings concerning the seriousness of an illness (or of leaving it untreated) vary from person to person. This dimension includes evaluation of both medical/clinical consequences (e.g. death, disabling complications) and possible social consequences (e.g. effects of diabetes on work, family life and social relations). Individual perceptions of personal susceptibility to the disease often vary from any realistic appraisal of their statistical probability. The nature and intensity of those perceptions may significantly affect their willingness to comply with the treatment regimen (Pham et al., 1996).

Perceived Benefits (Effectiveness of the Treatment)

While acceptance of personal susceptibility to a condition is believed to be serious was held to produce a force leading to behaviour, it did not define the particular course of action that was likely to be taken. This was hypothesized upon the beliefs regarding the effectiveness of the various actions available in reducing the disease threat. Thus, a "sufficiently threatened" individual would not be expected to accept the recommended health action, unless it was perceived as feasible and effective. Thus, individuals generally must believe that the recommended health action will actually do some good if they are to comply (Pham et al., 1996).

Perceived Barriers (Cost of Adopting the Precaution)

The potentially negative aspects of a particular health action may act as impediments to undertaking the recommended behaviour. A kind of cost-benefit analysis is thought to occur wherein the individual weighs the effectiveness of the action against perceptions that it may be expensive, dangerous, unpleasant and inconvenient. For example, diabetics regard the diabetic diet as restrictive, boring and expensive resulting in non-compliance (Pham et al., 1996).

3.5.2 The Personal Belief Model Related to Diabetes Self-Management

The theory of personal models of illness refers to patients' representations of their illness including disease related beliefs, emotions, knowledge and experiences. These representations guide the processing of incoming information and subsequent disease related behaviour such as self-management (Glasgow et al., 1997).

For chronic diseases such as diabetes, patients' perceptions of their condition and its management are generally believed to be important factors in determining successful adjustment to and self-care of the condition (Pham et al., 1996). Patients' perceptions have been conceptualized in several ways. For example, attitudes, health beliefs, threat appraisals and emotional responses have been proposed as important aspects of patients' perception of diabetes and adherence levels (Hampson et al., 1995).

The personal models have been assessed and four underlying dimensions or constructs have been identified: identity (disease labels and associated knowledge), time line (beliefs about the disease course), consequences (effects of the disease) and cause (e.g., the degree of responsibility). The personal models approach differs in at least three ways from other models that concern the role of patient's beliefs and attitudes in determining health behaviours. Firstly, the personal models are the extension of schema theory from cognitive and social psychology. Thus, unlike Health Belief Model, the personal models are grounded in a general theory of cognition that accounts for the merging of incoming information with the past experience. Secondly, the personal models differ from the health beliefs and attitudes by being patient generated as opposed to researchers' generated. Thus, the

personal models identify variables that patients themselves believe to be central to their experience of illness and its management. Lastly, personal models include the representation of emotional responses to disease and treatment, which is lacking in the Health Belief Model and yet is a significant aspect in the patient's experience of illness (Hampson et al., 1995).

The personal models of disease and its management are the only one of many factors that determine adherence to the complex diabetes regimen. In general, demographics, medical history variables and nonscientific measures of personality have not enhanced the prediction of adherence to diabetes regimens. To the extent that personal models uniquely contribute to the prediction of self-management, the assessment of individual patients of certain key personal model constructs should be helpful in determining the appropriateness of various treatment approaches and education programmes (Hampson et al., 1995).

Two important personal and interpersonal factors potentially related to diabetes self-management have been explored, specifically, personal-model conditions about diabetes and its treatment and social-environmental barriers to self-management. These factors are among the most important factors influencing diabetes care (Glasgow et al., 1997).

3.6 TREATMENT OF NON INSULIN DEPENDENT DIABETES

In all forms of diabetes the amount of insulin released from the B-cell is insufficient to meet the requirement of target tissues for the maintenance of nutrient homeostasis. This imbalance is responsible for the acute metabolic derangements of the disease which may themselves contribute to the chronic clinical complications of the disease. The major objective of all forms of treatment is the normalization of nutrient homeostasis. The attainment of this goal may prevent or delay the onset of the complications. Normalization of nutrient homeostasis requires the supply of and the demand for insulin to be balanced (Bonnici et al., 1997).

3.6.1 Diet Therapy

Dietary management forms the cornerstone of treatment NIDDM. There are two major objectives for diet therapy: the normalization of blood glucose and the achievement of ideal body weight. These aims are achieved by regulating calorie intake, avoiding carbohydrate-rich food and excess of fat and regularity of food intakes (Bonnici et al., 1997).

Regulation of calorie intakes is directed at the establishment of ideal body weight. For Type II diabetics in whom the incidence of obesity is high, this generally entails a reduction in calorie intakes. The importance of weight reduction in these patients is based on the fact that obesity is associated with insulin resistance. This extra demand for insulin disappears when body weight returns to normal (LeRoith et al., 1996).

There is no compelling evidence to suggest that the carbohydrate content of the diabetic diet should be disproportionately restricted and there is a tendency to recommend that 50 percent of the calories should be provided in the form of carbohydrate since there is evidence that high carbohydrate/low fat diets may increase the insulin sensitivity. The carbohydrate in the diet should be in the form of complex carbohydrates such as starches which are more slowly digested and therefore have less dramatic effect on the body glucose concentration (LeRoith et al., 1996).

3.6.2 Exercise

Physical exercise has long been considered beneficial in the treatment of NIDDM, since it can reduce the blood glucose concentration and may improve the tolerance to a carbohydrate load. However, in the insulin requiring diabetic, the metabolic response to exercise depends on the state of the patient's metabolic control and is to a large extent determined by the time interval between insulin administration and the onset of exercise (Bonnici et al., 1997; Engel, 1996).

3.6.2.1 Potential Benefits of Exercise

Exercise like calorie restriction has long been known to improve insulin sensitivity. Thus, diet and exercise are frequently recommended together as the initial approach to therapy. There are several benefits of exercise for NIDDM patients: glycemic control, cardiovascular benefits, weight loss, psychological benefits and disease prevention (Bonnici et al., 1997).

Glycemic Control

Single bouts of exercise frequently result in an acute decrease in plasma glucose metabolisms may persist for hours or days, possibly related to an increase in muscle and other tissues. Improved glycemic control over prolonged periods in patients participating in regular exercise may largely be due to the cumulative effects of the individual acute exercise bouts rather than to a change in fitness per se (American Diabetes Association, 1992).

Cardiovascular Benefits

Most excess morbidity and mortality in NIDDM patients are attributed to coronary artery disease, strokes and peripheral vascular disease resulting from accelerated atherosclerosis (Joshi, 1991; Stout, 1990). Epidemiological evidence suggests that regular exercise and physical fitness are associated with decreased coronary disease in the general population. Although any direct evidence is not available for patients with NIDDM, effects of regular exercise on known risk for coronary heart disease suggest a beneficial effect. Risk factors that may improve include lipoprotein levels, hyperinsulinemia, hyperglycemia, some blood coagulation parameters and blood pressure (American Diabetes Association, 1992).

Weight Loss

A diet-induced decrease in adiposity is frequently associated with improvement in insulin resistance, glycemic control and risk factors for coronary heart disease in patients with

NIDDM. Attempts to substitute exercise for diet therapy to produce weight loss have been less than successful, although beneficial effects are often underestimated because changes in body weight may not reflect improvements in body composition (Bonnici et al., 1997).

Psychological Benefits

Exercise training and improved cardiorespiratory fitness are associated with decreased anxiety, improved mood and self-esteem, increased sense of well being and an enhanced quality of life (Alberti, 1997).

Disease Prevention

Exercise training may be a means of delaying the onset of insulin resistance, cardiovascular disease in patients at high risk for developing these problems (Engel, 1996).

3.6.2.2 Risks of Exercise

The potential risks of exercise need to be considered in all patients with NDDM. The complications include: cardiac dysfunction and arrhythmia due to ischemic heart disease, cardiovascular-excessive increments in blood pressure during exercise, post exercise orthostatic hypotension (Stout, 1990). Macrovascular-retinal haemorrhage, increased proteinuria and acceleration of microvascular lesions, metabolic worsening of hyperglycemia and ketosis, hypoglycemia in patients on insulin or sulfonylurea therapy, musculoskeletal and traumatic foot ulcers, orthopaedic injury related to neuropathy, accelerated degenerative joint disease and eye injuries are postulated risks for exercise (American Diabetes Association, 1992).

The risk of these complications can be minimized if patients are screened before embarking on an exercise programme, is appropriately prescribed and the patient is carefully monitored. Before embarking on exercise, all patients must undergo a complete history and physical examination to identify potential complications (American Diabetes Association, 1992).

3.6.2.3 Compliance to Exercise

Several manoeuvres can improve compliance with an exercise programme: the exercise should be enjoyable, i.e. patients should choose activities which they like and vary the type of exercise and setting, a patient should exercise at a convenient time and location, regular exercise performed at a site near the individual's home or work place has been found to have a greater chance of being continued. The patient should be reinforced by his/her family and involved medical personnel, quantitative indices of progress to provide feedback must be utilized, e.g., measurement of the heart rate during submaximal exercise and measurement of body composition and unrealistically high performance goals should not be set (American Diabetes Association, 1992).

3.6.2.4 Attitudes and Beliefs About Exercise

Exercise is often recommended as part of the management regimen for patients with diabetes especially with non-insulin dependent diabetes mellitus (NIDDM). Common benefits for these individuals include decreased risk of cardiovascular disease, decreased blood pressure, decreased body fat and lower glucose levels. It is also associated with decreased blood anxiety, improved mood, improved self-esteem and enhanced quality of life (Swift et al., 1995)

Many factors may influence whether a person with NIDDM chooses to initiate and maintain an exercise routine (Loman & Galgani, 1995; Polley et al., 1997). Among persons with NIDDM, discomfort during exercise has been related to decreased exercise, whereas social support has been related to improved exercise behaviour. Patients with NIDDM were found to identify more barriers to exercise than do other aspects of the diabetes self-care regimen (Swift et al., 1995).

Health belief theorists have recommended using the Health Belief Model as a theoretical framework for understanding and enhancing patients' compliance on the diabetes self-care regimen. The HBM suggests that health behaviour is more likely to occur when a person perceives a threat and believes that the behaviour in question is instrumental in averting this threat.

The HBM has been adopted to assess factors influencing exercise behaviour. The adaptations focus on four major inclinations hypothesized to influence exercise: perceived control over exercise, a positive/negative attitude towards exercise, a favourable or unfavourable self concept and values related to exercise. This adaptation was labelled Exercise Behaviour Model (EBM) (Loman & Galgani, 1996). An Exercise Locus of Control (EXLOC) measure was developed and used as part of the EBM to assess perceived control over exercise behaviour. EXLOC differentiates individuals who expect that exercise is under their control (internally controlled) from those who expect that exercise is largely out of one's control and due to chance happenings, other influential individuals, or environmental factors (externally controlled), corresponding to the four sub-scales of Internal, Chance, Powerful others and Environment respectively. A positive correlations have been reported between these sub-scales. However, negative attitudes were related to exercise, and both exercisers and non-exercisers perceived barriers to exercise (Swift et al., 1995).

3.6.2.5 Exercise Habits and Relapse in NIDDM

Exercise is widely recognised as the crucial component in the management of INDDM. Most studies reveal that diabetics are not exercising regularly and it has been found that family and friends may play an important role in determining whether the diabetic patient exercise (Krug et al., 1990).

It appears that patients with diabetes more often attempt to exercise, but they fail and relapse. Without the skills needed to prevent relapses and to maintain exercise, the diabetic patient's attempts to exercise are met with a sense of failure and guilt and increased barriers to further attempts. It has been found that diabetic patients receive instructions to exercise without receiving strategies that may help maintain the exercise, resulting in failed attempts. Maintenance of exercise is a complex problem with no clear solution, but research to date suggest that behavioural strategies and social support can increase maintenance (Krug et al., 1990).

3.6.3 Psychological Problems and Management of Patients With Diabetes

In many ways, diabetes mellitus is the prototypical chronic illness. The patient enters the new world that involves increased visits to the medical personnel, alterations in life style, education in self care activities, as well as the potential for painful, debilitating and life threatening complications. In addition to the medical assault of the chronic illness, patients may experience social and vocational dilemmas, such as rejection by friends, bias in hiring and problems in getting insurance (Alberti et al., 1997).

The social and medical issues posed by diabetes often mean that the psychological management of the patient and the identification of emotional problems is an important aspect of successful treatment of diabetes (Alberti et al., 1997).

3.6.3.1 The Therapeutic Relationship

The therapeutic relationship between the patient and his or her health care provider is the centre of any successful treatment of chronic illness requiring the extent and type of behavioural changes demanded by either Type I or II diabetics. Discussions of the therapeutic relationship can be fostered by consideration of a concept derived from psychotherapy: the therapeutic alliance. The therapeutic alliance refers to the extent to which there is underlying level of agreement about the goals and approaches to treatment (Aberti et al., 1997).

In essence the issue falls in the background as the health care provider-patient team work on the task of care. Ironically, the strength and weakness of the alliance become apparent at times of disagreement, i.e. when the patient is not following the health care providers' advice. Thus, therapeutic impasses manifested as failures to adherence, missed appointments and forgotten blood glucose testing records can reflect previously unrecognized problems with the therapeutic alliance. These problems, even if they are extremely problematic and frustrating, do not mean that alliance is permanently impaired. The patient who is non-adherent in one aspect of care may follow through at other times around other treatment recommendations (Alberti et al., 1997).

The stress of the new therapeutic regimen poses a dilemma for the patient as to how he or she could discuss his or her differences with his or her health care provider. Since the patient had felt pressured to change, he or she was certain that the health care provider would respond negatively. They never face the direct confrontation so, the patient withdraws from treatment. This occurrence suggests an important principle of treatment: the therapeutic alliance must be addressed when problematic treatment issues present themselves (Alberti et al., 1997).

Since treatment of a chronic illness often shifts to more difficult problems, the therapeutic relationship will be inevitably challenged. For patients with Type II diabetes, the common transitions from diet to oral agents and from oral agents to insulin are likely to pose a quality of life dilemmas that may lead the patient to question his or her health care provider and possibly default from regular follow-up (Alberti et al., 1997).

To help patients face this moment of challenge, it is important to understand the sources of strength and weaknesses in the therapeutic relationship and how the therapeutic alliance can be strengthened as well as what may unwittingly weaken the alliance (Alberti et al., 1997).

3.6.3.2 Readiness for Change

Recent studies have led to the conceptualization of a model of behavioural change that may be usefully applied to the treatment of diabetes. This model draws together an evaluation of the patient's readiness to change specific behaviours with alternative intervention strategies that can be applied depending on the patient's readiness. Readiness to change has been divided into five levels or stages: the pre-contemplation stage, the contemplation stage, the preparation, action and the maintenance stage (Alberti, 1997).

The Pre-contemplation Stage

It is the stage at which patients exhibit no intention to change in the foreseeable future. Although such patients may express the desire to change, they are generally not concerned about their problems and may not recognize any faults or personal difficulties they may

have. Thus, patients in the pre-contemplation stage are in a sense denying their problems (Alberti, 1997).

The Contemplation Stage

The contemplation stage is the stage in which patients are aware that a problem exists, and they are seriously thinking about overcoming it. However, they have not yet made a commitment to take action. This stage may last for long periods during which patients recognize the problem, think that they should try to work on it but are not yet ready to take action (Alberti, 1997).

The Preparation Stage

This stage combines intentions as well as behavioural change. Patients in this stage intend to take action in the near future, have unsuccessfully taken action in the recent past and are likely to report small behavioural changes that represent preparation of the larger action (Alberti, 1997).

The Action Stage

This is the stage at which the patient modifies his or her behaviour, experiences and environment to overcome his or her problem. This stage involves the most direct and clear behavioural changes and requires considerable commitment of time and energy (Alberti, 1997).

The Maintenance Stage

This is the final stage where patients continue to work to prevent relapses and to consolidate gains. This stage is not described as a static period. Rather, it is a continual process of reworking previous changes in behaviour (Alberti, 1997).

Changes do not occur in a linear fashion but involve continual relapsing and to reintroduction of changes. Strategies for change include consciousness-raising, self-reevaluation, stimulus control, reinforcement management and uses of helping relationship. Strategies vary in their value depending on the stage of the patient. Thus, consciousness-raising may be a useful tool in beginning the process of change in the pre-contemplation and the contemplation stages, however, it may not be sufficient to induce action. Additional strategies such as reinforcement management are important in taking action based on awareness of the nature of the problem (Alberti et al., 1997).

The most direct implication of this model of stages and processes of change is the need to evaluate the patient's stages of readiness to change and tailor interventions accordingly. While developed for use with addictive behaviours, this model of change provided a basis for evaluating and treating the adherence problems faced by patients and health care providers who treat them. Evaluating the patient's stages provides a method for discriminating between patients when devising effective treatment strategies. It is likely that some of the most difficult problems in the clinical practice are posed by patients at the pre-contemplation stage. The health care provider should recognize that simply referring the patient for diet education or behavioural weight management will not be effective in a patient at the pre-contemplation stage (Alberti et al., 1997).

Repeated discussion of the nature of the problem is probably required to help the patient discard his or her denial of the problem. Patients in denial, test the strength of the therapeutic alliance and often require repeated review of hidden requests, concerns and goals (Alberti et al., 1997).

3.6.3.3 Defaulting from Regular Care: a Critical Outcome of a Failing Alliance

There is some evidence that substantial minority of patients may become so disinvested in treatment for their diabetes that they default from their regular follow-up. One study found that about 20 percent of an onset cohort of adolescents with Type I diabetes was no longer coming for treatment a few years after diagnosis. Furthermore, other research suggests that such defaulters from regular care may default at least in part, because they are not interested in discussing medical concerns with their health care provider (Alberti et al., 1997).

This is consistent with other studies indicating that fewer actively involved patients are less adherent to the health care provider' recommendations. It has been found that adolescence defaulters are likely to come from disrupted family backgrounds with higher rates of divorce and less family warmth. Also, case control studies indicate that defaulters have worse glycemic control and later in the course of the illness, higher rates of diabetes complications. This finding highlights the importance of engaging patients by using methods to strengthen their therapeutic alliance. Successful implementation of treatment strategies designed to strengthen the therapeutic alliance and sensitively addresses psychological problems should lead to a more engaged and involved patient (Alberti et al., 1997).

3.7 FACTORS THAT INFLUENCE THE SELF-MANAGEMENT OF DIABETICS

3.7.1 Psychological Factors

A variety of psychological models have been used to dissect out the factors which encourage or discourage patients to alter their behaviour. Implicit is the recognition of the need to learn new information about diabetes and its consequences. But it is often assumed that the acquisition of knowledge guarantees better self-management control. However many studies reveal little relationship between them (Day, 1995).

3.7.1.1 Locus of Control

It is the amount of personal control over the environment individuals believe that they possess. It relates to expectations of control regarding future events. It has been found that patients with an internal locus of control (events which occur to them are due to their own qualities or behaviour) are expected to have a greater sense of responsibility towards their treatment and management than those with an external locus of control (those who believe that events which occur to them are due to circumstances outside their control) (Coates & Boore, 1998).

The health belief model is complemented by greater understanding of a belief about who is responsible for controlling the illness (i.e., locus of control). The traditional medical model of care says that, given an illness, the individual seeks advice from the medical team who provide a treatment, that is, external locus of control. In contrast, diabetes care depends on patient responsibility. Those with high medical control indicate strong beliefs in doctors' responsibility and control over treatment outcomes, whereas, those who indicate high situational control indicate strong beliefs in chance factors and the role of other people and circumstances in determining treatment outcomes (Bradley, 1995).

Strong perceptions of medical control may be advantageous in combination with strong perceptions of personal control. However, attributions to the medical control are not constructive in the absence of attributions to personal control where diabetes is concerned and where self-management is central to the success of treatment (Bradley, 1995).

3.7.2 Psycho-Social Factors

3.7.2.1 Health Beliefs and Behaviour

The role of health beliefs have been extensively studied and a range of factors contributing to self-management in diabetes has been identified (Polly, 1992). Firstly, the patient must believe that there is a need to change. Studies reveal that despite blood or urine testing, the majority of people are unaware of the inadequacies of the standards that they are achieving. This can usually be explained by failure either to perform average tests of glycaemic control or, more commonly, for the systems of care to ensure that patients are made aware of their results. This may happen due to reluctance by the health care provider who may be unable to provide appropriate advice as to ways in which patients may change (Day, 1995).

Patients' own test may provide inadequate information, either due to infrequency or their performance. If patients are given accurate information about their average control, they may well be able to generate their own solutions. If patients are to alter behaviour, they need to recognise the threat to their health if they fail to do so (Day, 1995). Many patients, while able to acknowledge the severity of the potential consequences of diabetes (i.e., knowing about complications) do not acknowledge that these consequences are likely to

happen to them personally, that is, accept their specific vulnerability (Day, 1995).

According to Day (1995), denial is the common defence mechanism usually used by diabetics. In contrast, vulnerability to short-term consequences, for example hypoglycaemia, is well known, hence, the common behaviours against hypoglycaemia are by maintaining persistently high blood sugar levels

The equation between perceived benefits and barriers of treatment is critical. Many of the processes in diabetes self-care are difficult and unpleasant and if these barriers are perceived as outweighing benefits, successful change is unlikely. Weight reduction and self-monitoring are classical examples of this (Day, 1995).

Self-testing behaviour has been the subject of considerable study and “falsification” of test results (detected by the use of occult memory metres) is a common phenomenon. Such behaviour clearly indicates that failure of perception by those patients of the reasons for testing, perhaps frustration, or inappropriate desire to satisfy the health care provider. There is little to be gained from frequent testing if the users have no idea what response to make to the test (Day, 1995).

3.7.2.2 Life style

The perceived effects of diabetes on the individual life style may be the main component of their perceptions of cost-benefits and to this end, the therapeutic regimen advised must be matched to meet their life needs (Day, 1995).

Life style changes in diabetic patients require behavioural changes which include but not limited to weight loss and meal changes, which are extremely difficult, complex processes. The process of behavioural change has been identified as consisting of four stages: the pre-contemplation, the contemplation, action and maintenance which have been discussed earlier. Because of the complex nature of the change process, initial attempts to change behaviour may result in only partial goal attainment or relapse to an earlier stage of behaviour (Wierenga, 1994).

The full ranges of alternatives need to be made available to anybody with diabetes to allow them to select the most appropriate choices (Quackenbush et al., 1996). Furthermore, it must be remembered that life is not a constant; that new life events will be occurring,

some of which may be unexpected and a learning programme at some stage in time, in a patient's diabetic life, is likely to be inadequate to cope with new events as they occur (Day, 1995).

3.7.2.3 Social Norms

It is obvious that people with diabetes are operating on a day-to-day basis in an environment far removed from the outpatient clinic or hospital (Day, 1995). The influence of family members or peers may be extremely influential in determining the relative priority concern by the individual about their diabetes. Family or friends may have both positive or negative effects, and research evidence suggest that their nagging behaviour is on the whole detrimental. The presence of negative or non-supportive interactions with the family members was found to be related to lower levels of regimen adherence and poorer glycaemic control (Glasgow & Toopert, 1988).

The social environment especially the family, for example, in eating behaviour, may be much more powerful than the professional advice on the influence of self-management regarding diet (Glasgow & Toobert, 1988).

3.7.2.4 Target Situations

In terms of successful management of diabetes, the targets that are set must be achieved and the patient must know exactly what those targets are. The professional targets and the patient's targets have to be matched. When priorities set by newly diagnosed diabetics are compared with the doctors/healthcare professional, significant discrepancies may be there. For example, health care providers may rate change in diet as the first priority, patients select learning about hypoglycaemia as a second priority, whereas health care professionals rate it very lowly (Day, 1995).

3.7.2.5 General Emotional Adjustment

The general attitude to the presence of the chronic disease like diabetes is very important. The grieving response to the new diagnosis of diabetes is recognised in both insulin and non-insulin dependent diabetes, and is similar to those suffering bereavement. Many patients continue to harbour feelings of severe anxiety, guilt or embarrassment which significantly inhibit their ability to cope. Many patients are crippled by overwhelming anxiety or guilt. Embarrassment may seriously inhibit patients from obtaining appropriate support from their family or friends and consequently self-management. The response to educational programmes has shown to be clearly related to these emotions (Connell, 1991)

In older patients, diabetes was found not to have a strong emotional impact. This may be due to high levels of emotional support perceived to be available. Alternatively, individuals may perceive a limited need for emotional support related to their disease unless they experience symptoms or complications (Connell, 1991).

3.7.2.6 Psycho-social Contexts of Diabetes and Old Age

It has been found that older adults perceive fewer psycho-social impacts than do the middle-aged adults. Specifically, the older adults were found to report fewer symptoms of poor metabolic control, less emotional impact, fewer barriers to adherence and fewer complex regimens than do middle aged (Connell, 1991).

The diminished psycho-social impact of diabetes among older adults may be due to a variety of factors: most older adults live with several chronic illnesses, the perception that health limitations are an inevitable part of the aging process, fewer competing demands from work and family obligations and the perception that diabetes is not a serious chronic disease. The fact that diabetes is perceived to have a limited impact on lives may reflect a realistic adaptation to the illness, while for others may inhibit the effort to engage in self-care behaviours to manage the illness (Connell, 1991).

3.7.2.7 The Role of Social Support in the Self- Management of Diabetes

Previous research suggests that specific social support is a stronger determinant of self-care behaviour than general measures of overall perceived support (Mengel et al., 1990). This is consistent with the assumption that the availability of support will increase regimen adherence and have a positive impact on diabetes management (Herbert, 1996; Sherbourne & Hays, 1990).

Two types of specific social support were assessed: emotional and tangible support. Studies indicate that patients perceive high levels of emotional support related to the management of diabetes, such as encouragement, reassurance, and someone to listen. In terms of tangible support, the majority of patients were found not to want a lot of support from their families. Those who indicated a preference for help, it has been found that they received assistance with physical activities, foot care and glucose testing. Others reported receiving help with following a meal plan and taking medication. Providing help that is not required, even when offered with good intentions, may result in negative outcomes and may be perceived as nagging or interference. Thus, the potential unintended negative outcomes of an individual's support network on the management of diabetes should be anticipated (Connell, 1991).

As suggested in previous research, the characteristic of the relationship between potential support providers and recipients may determine whether support is perceived as helpful or not (Connell, 1991).

CHAPTER 4

This chapter is focussed mainly on the methods used in the study. This involves the research design, sample, measures and procedures of how data was collected and analysed.

4.1 RESEARCH DESIGN

This was both a qualitative and quantitative study. It was qualitative using interviews, as it has been found that there have been few qualitative studies to explore the beliefs and attitudes of diabetics. The study was also quantitative using questionnaires that were used in most diabetes studies to give insight into important features of diabetes management. This multi-level approach helped in getting insight and better results thereof.

4.2 SAMPLE

Participants of this study were 60 Non-Insulin Dependent Diabetes Mellitus (NIDDM) outpatients who came on Thursdays at Mankweng Hospital for diabetes hypertension clinic. Availability sampling method was used, where all cases at hand were taken until the sample reached the desired size. Their ages ranged from 41-76 yrs, with an average age of 61. Of the 60 patients 33% were males and 67% were females. Thirty two (53%) of the participants were married, 2% single, 12% divorced and 23% were widowed. About 42% had secondary education, 40% primary education, 7% tertiary education and about 12% have never been to school. With regard to their occupational status, 43% were retirees, 40% unemployed and 9% employed.

Twenty nine (48%) of them (83% females and 17% males) were diagnosed with diabetes for more than 5 years, 33% (55% females and 45% males) for 3 to 5 years and 18% (55% males and 45% females) had been diagnosed for 1 to 3 years. Of the total number of participants, 38% were both diabetic and hypertensive.

4.3 PROCEDURES

Permission was obtained from the ethics committee, University of the North, the Department of Health and Welfare of the Northern Province, and the Superintendent of Mankweng Hospital. Informal informed consent was gained verbally from participants. It was informal because the questionnaire did not contain very sensitive information. All consecutive diabetic patients at least diagnosed for 1 year attending the diabetic-hypertension clinic were selected until a sample of 60 was reached, excluding those which had been diagnosed for less than a year. This was completed within 4 weeks. Participants were interviewed and tape recorded, while they were still waiting to be seen by the doctor.

The questionnaires were not back translated as the vocabulary used was easy to understand and translate, and this was tested on a pilot study and there were no problems encountered

4.4 MEASURES

Measures that were used in this study were interviews and questionnaires.

4.4.1 Interview Schedule

Two semi-structured interviews have been conducted: the one that determined the biographical data of participants and the exploratory illness schedule.

4.4.1.1 The biographical data indicating age, gender, marital status and occupational level were asked.

4.4.1.2 Interviews using a semi-structured schedule and the exploratory illness interview schedule (Blumhagen, 1982) were conducted to provide insight into important features of diabetes management and health beliefs. The questions in the questionnaire were adopted from Quatromoni et al., (1994), in their study to explore the nutrition practices and health beliefs among the Caribbean Latinos with diabetes. A set of five open-ended questions was

asked, followed by subsequent probing questions if certain questions were answered insufficiently. The questions were pertaining to the social impact of diabetes, health impact, nutrition practices, exercise habits and health beliefs.

4.4.2 Questionnaires

Several questionnaires have been used: the questionnaire on stress in patient with diabetes, the perception of diabetes mellitus questionnaire and the diabetes locus of control questionnaire.

4.4.2.1 The Questionnaire on Stress in Patients with Diabetes-Revised (QSP-R) modified and shortened by Herschblach et al., (1997) was used to determine if diabetes causes stress and the level of stress, which may lead to non-compliance. It consisted of 45 items describing situations that are sources of stress for many people with diabetes. The instructions were “Here is a list of situations that you might encounter and that might cause you stress. For each situation, please first decide whether the situation currently causes you any stress. If so, then please indicate how much of a problem it is for you by making an “X” on the five point scale “only a slight problem” to “a very big problem.” If not, then make an “X” under “does not apply to me.” The items covered the areas of leisure time, work, relationship with partner, doctor-patient relationship, problems with hypoglycemia, treatment regimen\diet, physical complications and depression\ fear of future. Cronbach alpha as well as split-half reliability coefficients for this scale were .93 and .88. The scores ranged from 0-5, with the lowest score meaning no stress and the highest, high stress levels.

4.4.2.2 The Perception of Diabetes Mellitus Questionnaire, developed by Davis et al., (1998) was used to determine the patients’ perceptions and perceived seriousness of the disease and its impact on the patient. The questionnaire was modified to make it more simple and easy for the participants to understand. It consisted of 35 items about the effect of diabetes mellitus on life, marriage and sexual function. The participants were to respond on a two point scale “1 = minimal effect” and “2 = great effect.” The instructions were “Please circle the number which represent how you feel about the question. Please answer

each item as best as you can. There are no right or wrong answers.” The scores ranged from 1-2, with 1 representing little and 2 great effect. Cronbach alpha as well as split half reliability coefficient for this scale were .93 and .95.

4.4.2.3 The Diabetes Locus of Control (DLC) Questionnaire, developed by Peyrot and Rubin (1994) was used to examine the structures and correlates of diabetes-specific locus of control among diabetics which may provide ways that health care providers might enhance compliance to a treatment regimen. It consisted of 18 items which covered areas of Internal locus of control-Autonomy (I-A), Internal locus of control-Blame (I-B), Chance locus of control (C), Health professions-powerful others locus of control (P-HP) and Powerful others locus of control-Non medical (P-NM). Cronbach alpha as well as split-half reliability for this scale were .82 and .72. The scores ranged from 1-6, with the lowest score representing low locus of control and the highest, high locus of control.

4.5 DATA ANALYSIS

Two types of analyses have been performed, thematic content analyses for the open-ended questions on the semi-structured interviews and the SPSS (frequencies, descriptive statistic (means and standard deviations) and the t-test) for the between groups comparisons for closed questions on the semi-structured interviews and questionnaires. The t-test was used to see if there were differences in attitudes towards diabetes by gender, marital status and the educational level.

CHAPTER 5

In this chapter, findings of the study are presented. Firstly the results from the quantitative analysis: the between-group comparisons by gender, marital status and educational level for “characteristics” of diabetic patients, the locus of control, the perception of diabetes and stress. Then, the thematic content analysis of the qualitative data will follow: the social impacts of diabetes, the health impact, nutrition practices, exercise habits and health beliefs of diabetics.

5.1 PRESENTATION OF RESULTS FROM QUANTITATIVE DATA ANALYSIS

5.1.1 Characteristics of Diabetic Patients

Table 5.1 below indicates the characteristics of diabetic patients by gender. Of the total participants, only 3% reported to have taken part in training sessions for diabetes. These 3% is constituted by females only. Of these 3%, one reported to have taken part in such sessions at Pietersburg Diabetes Centre, and one reported to have taken part in such sessions which was organized by their church.

Only 2% (female) reported that they measure their urinary glucose, 1-2 times a day, and about 98% of the population reported not to perform such an activity. None have reported to measure their blood glucose on daily basis, the reason perhaps being lack of equipments.

Only 3% reported to have experienced hypoglycemic reactions and about 8% (females) reported to have experienced serious ones. Most patients were found not to have experienced such reactions for an estimated period of a year.

Twenty seven (46%) of the participants reported to have diabetes related complications diagnosed in their organs, 61% have been diagnosed in eyes, 29% on feet, 6% in the urinary bladder or genital areas and 3% have been diagnosed in the nerves.

Thirty (14%) of the sample was found to have seen the doctor due to other illnesses for about 1-3 times within a period of 12 months, and 15% several times for a period of 12 months. Thirteen (22%) participants reported to have seen the doctor 1-3 times, and 13% several times due to diabetes.

Table 5.1 - Frequencies of Characteristics of Diabetic Patients

Characteristics		MALES (n = 20)		FEMALES (n = 40)		TOTALS (n = 60)	
		F	%	F	%	F	%
Training sessions	Yes	0	0	2	5	2	3
Measure urinary glucose	Never	20	100	39	97	59	98
	1 - 2	0	0	1	2	1	2
Measure blood glucose	Never	20	100	40	100	60	100
Serious hypoglycemia	Yes	0	0	5	12	5	8
Complications diagnosed	Feet	5	42	4	21	9	29
	Nerves	0	0	1	5	1	3
	Genitals	1	8	1	5	2	6
Seen doctor past year, due to diabetes	None	15	75	22	57	37	63
	1 - 3	2	10	11	28	13	22
	Several times	3	15	5	13	8	13

5.1.2 The Causative Concepts of Diabetic Patients

The causative concepts of diabetic patients are indicated in Table 5.2 below. It was found that most patients, 60%, didn't know why they had diabetes and what caused it. Twenty three percent mentioned that they thought it is caused by eating too much sugar, others mentioned eating too much fats, western diet, heredity and problems (excessive worry).

Table 5.2- Frequencies - Causative Concepts of Diabetics

Causative concepts		MALES		FEMALES		TOTALS	
		F	%	F	%	F	%
Causes for diabetes?	Eating sugar	6	30	8	20	14	23
	Heredity	1	5	5	12	6	10
	Problems	1	5	5	12	6	10
	Western diet	3	15	3	7	6	10
	Fats	5	25	5	12	10	17
	Don't know	4	20	14	35	18	30
Why started?	Eating sugar	4	20	4	10	8	13
	Heredity	0	0	4	10	4	8
	Problems	1	5	5	12	6	10
	Fats	1	5	5	12	6	10
	Don't know	14	70	22	55	36	60

5.1.3 The Nature and Problems Associated with Diabetes by Diabetic Patients

Table 5.3 below indicates the nature and problems associated with diabetes by diabetic patients. Most patients 63% were found to have a fatalistic view of the disease, this has also been found from the qualitative data. They mentioned that diabetes is a life long disease, and they are just patiently waiting for death. Others were found to have a strong religious believe, which they used perhaps, as the defence mechanism to deny the incurability of diabetes. Statements like “Only God knows when the disease will be cured and I have nothing to fear about it, everything is under the control of God.” were mentioned.

Twenty one participants (35%) reported that they fear blindness most 33% mentioned fearing it as it is incurable, and 20% mentioned fearing a stroke. Most patients (95%) were found to know when their disease was getting better or worse when their blood glucose was checked at the hospital and when they started to have complications in the body like, feeling dizzy, excessive sweating. If they were getting worse, they (68%) mentioned that they adhered strictly to the treatment, especially regarding diet and medication.

Table 5.3- Frequencies - Nature and Problems Associated with Diabetes

Nature and Problems Associated with Diabetes		MALES		FEMALES		TOTALS	
		F	%	F	%	F	%
How severe is your problem?	Better	7	35	20	50	27	45
	Stable	10	50	18	45	28	47
	Worse	3	15	2	5	5	8
How long will it last?	Lifelong	12	60	26	65	38	63
	God knows	3	15	7	17	10	17
	Don't know	5	25	7	17	12	20
What do you fear most?	Blindness	7	35	14	35	21	35
	Incurable	7	35	13	32	20	33
	Stroke	4	20	8	20	12	20
	Nothing	2	10	5	12	7	12
Know if better or worse	Yes	20	100	37	92	57	95
How do you know if it is worse?	Complications in the body	13	65	17	43	30	51
If it is worse, What do you do?	Stick to treatment	14	70	26	67	40	68
	Go to hospital	6	30	13	33	19	32

5.1.4 Management Modalities and Perceived Effectiveness of Diabetes Treatment

Table 5.4 below indicates the management modalities and perceived effectiveness of diabetes treatment by diabetics. A considerable number of patients 80%, were found to treat their diabetes with medication, which they get from the hospital. These 80% mentioned that the medications tried to control the disease, even if they didn't just cure it completely. They were also found to believe that none can try to control diabetes except for health care professionals. Twelve (20%) of the participants were found to use traditional medicines like "Moshunkwane" (chewed leaves of a tree) especially when they feeling dizzy and "African potato" (root boiled and drank while still hot). Home remedies like "Lavita (herbal tea

boiled and drank when cool), Yaroa (herbal tea boiled and the vapour inhaled) were found to be used. Patients mentioned that these home remedies were better than medications as they didn't make their mouth dry. For example, one patient said " I prefer home remedies, especially Lavita, it is an all purpose remedy, it is better than these medications, it does not keep my mouth dry and feeling thirsty often."

Table 5.4 - Frequencies - Management Modalities and Perceived Effectiveness of Diabetes Treatment

Management Modalities and Perceived Effectiveness of Treatment		MALES		FEMALES		TOTALS	
		F	%	F	%	F	%
Treatment?	Tablets	18	90	30	75	48	80
	Traditional medicine	2	10	10	25	12	20
Tablets effective?	Try	19	95	38	95	57	95
	Do well	0	0	2	5	2	3
	Not at all	1	5	0	0	1	2
Anything that can help in treating the problem?	Nothing	20	100	37	92	57	95
	Home remedies	0	0	2	5	2	3
	Traditional medicine	0	0	1	2	1	2
Anyone else who can help in treating the problem	None	17	85	36	90	53	88
	Spiritual healers	1	5	2	5	3	5

5.1.5 The Diabetes Locus of Control

Diabetes Locus of Control in Diabetic Patients by sub-scales is indicated in Table 5.5 below. The diabetes locus of control of diabetic patients is presented, the total means of the sub-scales, and between group comparisons by gender, marital status and educational level.

It was found that most patients with a mean of 23.7 had the external locus of control, chance locus of control (C) and the powerful others-health professionals (P-HP) as opposed to the internal locus of control. There were a few with the external locus of control powerful others non-medical.

Table 5.5 - Descriptive statics (means and standard deviations) of the Diabetes Locus of Control

LOCUS OF CONTROL SUB-SCALES	TOTALS (N= 60)	
	M	SD
1. Internal Locus of Control-Autonomy (I-A) (3 items)	14.4	1.9
2. Internal Locus of Control- Blame (I-B) (3 items)	13.6	3.2
3. Chance Locus of Control (C) (6 items)	23.7	4.3
4. Powerful Others- Health Professionals (P-HP) (4 items)	20.5	2.6
5. Powerful others-Non Medical (P-NM) (2 items)	8.6	2.2

Diabetes locus of control by gender is indicated in Table 5.6 below.

Table 5.6 - T-test - Locus of Control by Gender

SUB-SCALES	MALES		FEMALES		F	p
	M	SD	M	SD		
1. I-A (autonomy)	14.4	2.1	14.4	1.3	1.654	0.963
2. I-B (blame)	14.3	3.4	13.2	3.1	.021	0.224
3. C (chance)	24	5.3	23.5	3.8	2.277	0.645
4. P-HP (health professionals)	20.2	3.9	20.6	1.7	8.714	0.582
5. P-NM (non-medical)	8.4	2.4	8.6	2.1	.422	0.738

*** p < .001, **p < .01 and * p < .05.

There was no significant difference found between diabetes locus of control and gender.

Table 5.7 below indicates Diabetes locus of control by marital status.

Table 5.7 - T-test Locus of Control by Marital Status

SUB-SCALES	MARITAL STATUS				F	p
	Married		Single			
	M	SD	M	SD		
1. I-A (autonomy)	14.4	2.3	14.4	1.4	.284	0.93
2. I-B (blame)	14.3	3	12.7	3.2	.525	0.065
3. C (chance)	23.5	4.6	23.5	3.1	.063	0.761
4. P-HP (health professionals)	20.4	2.1	20.5	2.2	.532	0.851
5. P-NM (non-medical)	8.7	2	8.5	2.3	.727	0.693

*** < .001, ** p < .01 and * p < .05.

With marital status, the divorced, the widowed and the never married are grouped under one category, single, as research indicates that they all lack support (Littlefield et al., 1990).

There was no significant difference found between the marital status and any of the 5 sub-scales of the locus of control.

Diabetes locus of control by educational level is indicated in Table 5.8.

Table 5.8 - T-test - Locus of Control by Educational Level

SUB-SCALES	EDUCATIONAL LEVEL				F	p
	Primary		Secondary			
	M	SD	M	SD		
1. I-A (autonomy)	14.7	1.1	14.1	2.6	2.277	0.255
2. I-B (blame)	13.5	3.6	13.3	3.3	.266	0.9
3. C (chance)	23.9	4.8	23.5	4.4	.018	0.765
4. P-HP (health professionals)	20.9	1.7	20.2	3.6	3.429	0.378
5. P-NM (non-medical)	8.5	2.2	8.7	2	2.715	0.821

*** p < .001, ** p < .01 and * p < .05.

With the educational level, there was also no significant association found.

5.1.6 Perceptions of Diabetes

Perceptions of diabetic patients are presented. These are grouped into three different sub-scales life, marriage and sexual function. The item means and standard deviations, between group comparisons of the item means and standard deviations of the sub-scales by gender, marital status and the educational level are presented.

Perception of diabetes by diabetic patients is indicated in Table 5.9 below.

Table 5.9 - Descriptive statistics (means and standard deviations) of Perceptions of Diabetes

Perception of Diabetes Sub-scales	TOTAL ITEM M & SD OF THE SUB-SCALES (N = 60)	
	M	S D
1. Life (22 items)	34.2	5.4
2. Marriage (8 items)	12.4	3.7
3. Sexual function (5 items)	8.3	2.4

Most patients were found to perceive diabetes to have a great effect on one's life in general and on marriage as opposed to its effect on sexual functioning.

Perception of diabetes by gender is indicated in Table 5.10 below.

Table 5.10 - T-test - Perception of Diabetes by Gender

SUB-SCALES	ITEM M & SD OF THE SUB-SCALES				F	p
	MALES		FEMALES			
	M	SD	M	SD		
1. Life	35.4	5.3	33.6	5.4	.022	0.21
2. Marriage	14.4	2.7	11.4	3.8	11.437	.003*
3. Sexual Functioning	9.4	1.6	7.7	2.6	28.388	.003*

*** $p < .001$, ** $p < .01$ and * $p < .05$.

Males with a mean of 14.4, than females with a mean of 11.4, believed diabetes to have a great influence on marriage and a significant difference was found ($p < .05$). Males with a mean of 9.4 and females with a mean of 7.7, were found to believe that diabetes has an influence on sexual functioning, and a significant difference was found ($p < .05$). Males with a mean of 35.4 than females with a mean of 33.6, were found to believe that diabetes has a great influence on life in general and there was no significant difference found between them.

Table 5.11 indicates Perception of diabetes by marital status.

Table 5.11 - T-test - Perception of diabetes by marital status

SUB-SCALES	ITEM M & SD OF THE SUB-SCALES				F	p
	MARRIED		SINGLE			
	M	SD	M	SD		
1. Life	34.7	5.3	33.7	5.6	0.008	0.505
2. Marriage	12.1	3.6	11.9	3.9	2.891	0.257
3. Sexual functioning	8.8	2.4	7.7	2.4	2.705	0.097

*** $p < .001$, ** $p < 0.1$ and * $p < .05$

There was no significant difference found between patients' perceptions of diabetes and gender.

Perception of Diabetes by Educational Level is indicated in Table 5.12 below.

There was also no significant difference found between perceptions of diabetes and marital status.

Table 5.11 - T-test - Perceptions of Diabetes by Educational Level

SUB-SCALES	ITEM M & SD OF THE SUB-SCALES				F	p
	PRIMARY		SECONDARY			
	M	SD	M	SD		
1. Life	35.3	6.2	33.2	4.2	2.572	0.181
2. Marriage	13.4	4	11.8	3.4	1.706	0.125
3. Sexual functioning	8.4	2.6	7.1	2.4	.000	0.515

***p < .001, **p < .01 and *p < .05.

5.1.7 Stress in Diabetic Patients

Stress in diabetic patients is presented. The means, standard deviations of the level of stress in diabetic patients in different situations, between-group comparisons of the stress sub-scales by gender, marital status and the level of education are presented.

Complications in the body caused by diabetes were found to cause more stress in diabetic patient, followed by the hypoglycemic reactions such as getting thirsty often, excessive sweating and fear of the future, like the fear that the disease can be passed to their children.

Table 5.12 - Descriptive statistics (means and standard deviations) of Stress in Diabetic Patients

STRESS SUB-SCALES	TOTALS (N = 60)	
	M	S D
1. Leisure time (2 items)	4.3	4
2. Depression\feared of future (6 items)	13.9	9.2
3. Hypoglycemia (9 items)	14	13.2
4. Treatment \ diet (9 items)	13.2	9.8
5. Physical complications (7 items)	15	11.7
6. Work (4 items)	4	5.1
7. Partner (4 items)	6	6.5
8. Doctor-patient	6.3	5.6

Stress in diabetic patients by gender is indicated in Table 5.12 below.

Table 5.12 - T-test - Stress in Diabetic Patients by Gender

SUB-SCALES	MALES		FEMALES		F	p
	M	SD	M	SD		
1. Leisure time	7	3.5	2.9	3.6	.081	.001***
2. Depression	16.7	8.5	12.5	9.3	1.029	0.094
3. Hypoglycemia	13	13.9	14.5	13	.084	0.688
4. Treatment	14.1	10.3	12.8	9.6	.145	0.638
5. Physical complications	17.7	13.4	13.7	10.7	2.753	0.209
6. Work	5.5	4.8	3.8	5.1	2.753	0.216
7. Partner	10.4	6	3.8	5.6	1.422	.001***
8. Doctor-patient relationship	9.7	6.1	4.6	4.5	2.505	.003**

*** p <.001, ** p<.01 and * p <.05.

Males than females were found to be stressed by the fact that diabetes has made their relationship with their partner's worse and a significant difference was found ($p < .001$). The fact that doctors didn't have enough time to check them, was found to induce stress in males than females and a significant difference was found ($p < .05$). Males than females were found to be stressed by the fact that they couldn't spend their leisure time as they wish, due to diabetes, a significant difference was found ($p < .001$).

More males than females were found to be depressed because of diabetes, and there was no significant difference found. Almost an equal number of males and females were found to be stressed by the hypoglycemic reactions caused by diabetes. Males and females were stressed by the treatment regimen, especially regarding diet. More males than females were found to be stressed by the physical complications caused by diabetes. The limited job opportunities and difficulty in finding a job were found to cause stress in males than in females.

Diabetes and Stress by Marital Status are indicated in Table 5.13.

Table 5.13 - T-test - Diabetes and Stress by Marital Status

SUB-SCALES	MARITAL STATUS				F	p
	Married		Single			
	M	SD	M	SD		
1. Leisure time	5.5	4.1	2.1	3.7	.470	.015*
2. Depression	14.8	9.2	12.8	9.2	.010	0.407
3. Hypoglycemia	13.3	13.7	15.2	12.9	.001	0.535
4. Treatment	14	10.7	12.4	8.7	2.096	0.53
5. Physical complications	16.6	13.1	13.2	19.9	3.876	0.288
6. Work	5.4	5.3	3.3	4.6	1.441	0.111
7. Partner	8.7	5.9	2.9	5.9	.669	.001***
8. Doctor-patient relationship	6.8	5.6	5.7	6.6	.074	0.453

*** $p < .001$, ** $p < .01$ and * $p < .05$.

The fact that patients can't spend their leisure time as they wish, was found to cause stress in the married than the singles, and a significant difference was found ($p < .05$). The fact that diabetes has made their relationship with their partners worse, was found to cause more stress among the married than among the singles and a significant difference was found ($p < .001$). The married than the singles were found to be depressed. The hypoglycemic reactions were found to cause stress among the singles than among the married. The treatment regimen, regarding diet, was found to cause stress among the married than among the singles. The physical complications caused by diabetes were found to induce more stress among the married than among the singles. The married than the singles were found to be stressed by the fact that diabetes has limited their job opportunities. The doctor-patient relationship was found to cause more stress among the married than among the singles. The married than the singles were found to have more stress.

Stress in Diabetic Patients by Educational Level is indicated in Table 5.14

Table 5.14 - T-test - Stress in Diabetic Patients by Educational Level

SUB-SCALES	EDUCATIONAL LEVEL				F	p
	Primary		Secondary			
	M	SD	M	SD		
1. Leisure time	3.8	4.1	14.4	9.1	.000	0.807
2. Depression	14.4	9.1	12.4	8.5	.025	0.348
3. Hypoglycemia	14.9	12.4	8.7	9.2	2.790	0.05
4. Treatment	12.5	9.7	11.4	8.5	.390	0.673
5. Physical complications	15.4	11.9	12.3	10.7	1.023	0.336
6. Work	3.6	4.6	4.7	5.4	1.867	0.447
7. Partner	5.2	6.9	6	6.1	1.274	0.656
8. Doctor-patient relationship	6.4	5.4	5.8	4.8	1.050	0.697

*** $p < .001$, ** $p < .01$ and * $p < .05$.

There was no significant difference found between any of the stress sub-scales and the educational level.

5.2 PRESENTATION OF RESULTS FROM QUALITATIVE ANALYSIS

The results of the thematic content analysis is presented: the social impact of diabetes, the health impact, nutrition practices, exercise habits and health beliefs of diabetics.

5.2.1 Social Impact of Diabetes

Many patients believed that diabetes has a strong negative impact on one's social life. It was reported that diabetes makes it difficult for them to participate fully in daily activities varying from household chores to social gatherings. Reasons mentioned for no longer going to social gatherings were, fear of diabetes-related complications (in front of people), feeling dizzy, fatigue, pains on feet, getting hungry and thirsty often. Other reasons mentioned was short temperedness. This was most prevalent for those patients who were both diabetic and hypertensive. These patients (both diabetic and hypertension) mentioned that they couldn't get along with people as they take things very seriously and get crossed. It was found in this study that diabetics perceived themselves as different from others at social functions involving food. The other reason mentioned for no longer going to social gatherings was fear of stigmatization. It was mentioned that people had the tendency of stigmatizing and made fun of people with chronic diseases.

Activities requiring assistance (cooking food, reading labels on medications, be taken or accompanied to the hospital) contributed to feelings of dependence on others. It was found from this study that the needs of a person with diabetes, particularly dietary needs, were frequently subordinated for the sake of the family.

5.2.2 Health Impact of Diabetes

It was found in this study that patients complained about bodily complications that were a result of diabetes. Complications which most patients complained of were dizziness, fatigue, exhaustion, disrupted sleep, blurred vision and foot cramps. It was also found that most believed diabetes adversely affects other medical conditions, including high blood pressure. Most patients expressed fears of disabling complications of diabetes such as blindness and stroke.

5.2.3 Nutrition Practices

Most patients were aware and clear about the role of diet in the management of diabetes. Most believed that the diet helped in keeping the disease under control. Patients reported that they have been told to avoid salt, sugar starch and fats.

Other perceived diabetic diet as restrictive and boring as they didn't allow enough variety to enjoy oneself. Patients reported having to eat snacks between meals as they were not supposed to eat much and did not get very hungry.

The idea that it is impossible or difficult and tiresome to cook different food for a person with diabetes and the rest of the family was prevalent. This was the reason mentioned why they do sometimes ate food that they was not healthy for them as there may be no alternative meal to eat. Most patients believed that restaurants and processed food were unhealthy for them and rarely reported eating food prepared outside of the home.

5.2.4 Exercise Habits

It was found that most patients had no or little idea that exercise is important for a person with diabetes and that would greatly improve their prognosis. A few who reported to know that exercise is good to keep them healthy, reported doing work that required physical activity like gardening, doing the washing and cleaning the house as their form of exercise. They mentioned that they avoided exercise that required walking or that required feet activity as this might have resulted in foot pains and swelling.

5.2.5 Health Beliefs

Patients reported a strong sense of fatalism concerning the development of diabetes and its complications. Diabetes was considered inevitable whether it was in the family or not and as a problem that worsened the health. Self-monitoring of blood glucose levels was believed to be important in the management and avoiding diabetic complications yet, most patients shifted their responsibility to health care professionals.

Other patients believed that diabetes is a foreign disease that result from the western diets. They mentioned that long before westernization there was no disease like diabetes, as they were eating vegetables and home-made maize meal that was free of artificial ingredients.

Strong religious beliefs played a role in the health belief. It was believed that personal health was controlled by God in ways that were both positive “God will help us deal with this problem” and negative “Only God knows why we have this disease.”

The use of traditional and home remedies was prevalent. Patients were found to believe that no one beside health care professionals and nothing beside the medications from the health care centre could help to control this disease. Other patients reported to have been to traditional healers who gave them medicines and they did not get better instead the disease get worse. Others reported to have been to faith healers and spiritual healers, used home remedies such as the African potato, which failed.

Patients agreed that they did not tell their health care professionals about the use of these traditional and home remedies when they realized that their blood glucose was very high. This was detected when they were talking about their experiences and feelings. This became apparent.

CHAPTER 6

This chapter is based on the discussion of results.

6.1 SUMMARY OF MAIN FINDINGS

Patients in this study had negative attitudes towards diabetes, where they perceived diabetes as a fatalistic disease and believed it to have a detrimental effect on one's life. They believed it to have a strong social and health impact on one's life. They had negative thinking about the disease which increased pain perception that in turn led to cognitive distress and ultimately non-compliance. A belief that the prescribed diet helped in keeping the disease under control was prevalent. Patients in this study were not aware of the role of exercise in the management of diabetes. A core belief that diabetes-related health outcomes were not under personal control was prevalent. Most patients shifted their responsibility of controlling the disease to health care providers, which might be a significant barrier to achieving self-management.

6.2 DISCUSSION OF QUALITATIVE RESULTS

The qualitative interview resulted into five themes.

6.2.1 Social Impact of Diabetes

Many patients believed diabetes to have a strong negative social impact. It was reported that diabetes has a pervasive influence on lives. Difficulty in planning every aspect of their lives and the need to be very structured was the predominant theme noted by patients who felt that they had to plan out small details and could not participate spontaneously in life. This is consistent to the finding of the study by Quatromoni et al. (1994).

6.2.2 Health Impact of Diabetes

Most patients in the study believed diabetes to have a detrimental effect on ones' health. Diabetes was believed to be accompanied by other bodily complications like eye problems, foot problems, dizziness and others. However, there were those patients who were found to believe that diabetes does not have a health impact. It was realized that these were those patients who have been diagnosed with diabetes for a period of less than a year and the diabetes-related complications were not yet apparent. Fear of disabling complications of diabetes such as blindness and stroke was predominant. This is consistent with the finding of the study by Anderson et al. (1990); Connell (1991). There was little mentioned about the long-term complications of diabetes.

6.2.3 Nutrition Practices

Most patients were aware and clear about the role of diet in the management of diabetes. A belief that the prescribed diet helped in keeping the disease under control was prevalent, yet difficulties in controlling portion size were reported. Some patients perceived the diabetic diet as restrictive and boring, this is similar to the finding by Pichert et al. (1994), yet difficulties in controlling portion size were reported.

6.2.4 Exercise Habits

Most patients in this study were not aware of the role of exercise in the treatment of diabetes. This might perhaps indicate that patients might have not been sufficiently informed about the treatment regimen of diabetes especially the self-management part. Foot pains, swelling and old age were perceived barriers to exercise for those who knew about the importance of exercise in their treatment regimen. This is consistent with the finding of the study by Anderson et al. (1993).

6.2.5 Health Beliefs

Self monitoring of blood glucose levels was believed to be important in the management and avoiding diabetic complications, this is similar to the finding by Maillet et al. (1996) in their study to characterize the health beliefs and practices of black women with NIDDM using focus groups. However, most patients shifted their responsibility to health care professionals. This reflects a high external locus of control and may be a significant barrier to achieving and maintaining lifestyle behaviour changes. Differences in racial and ethnic beliefs reflecting cultural factors in attitudes of diabetes became apparent, were patients in this study believed diabetes to be a western disease. Religious beliefs were found to be the other factor contributing to non-compliance, as patients believed that personal health is controlled by God only, whether a person is complying with the treatment or not. This is consistent to the finding by Quatromoni et al. (1994) and contradictory to the finding by Maillet et al. (1996) where they found that patients in their study used religion to cope with diabetes and enhance compliance.

6.3 DISCUSSION OF QUANTITATIVE RESULTS

6.3.1 Perceived Control

As reflected by gender, marital status and educational level, patients were found to have the external locus of control-chance and powerful others, health professionals. This study has proven the paradox that the external locus of control is associated with the negative outcomes and ultimately, poor control and self-management. One of the clearest finding of this study was the pattern of associations between a high chance locus of control and a variety of negative outcomes, including frequent hyperglycemia, infrequent exercise, low levels of self-efficacy and poor emotional health, as reflected by low levels of self-esteem.

The other dimension of externality, powerful others locus of control (health professionals) is also associated with negative outcomes and poor self-management. This is reflected by the fact that, because the health care professionals prescribe medications and educate patients about other treatment regimen, like exercise habits and nutrition practices,

they should have stronger effects on the management and control of their illness.

There were also patients who reflected the internal locus of control. It has been found that attitudes reflecting internality are sometimes associated with positive and sometimes with negative outcomes. The internal locus of control was separated into autonomy and self-blame components. The autonomy component was generally associated with positive outcomes, and the self-blame component with the negative outcomes. This finding is consistent with the findings from the study by Peyrot & Rubin (1994). Autonomy and blame may be positively correlated because they reflect a core belief that diabetes-related health outcomes are under personal control. Thus, people who are responsible for their health, also tend to believe they are to blame when their blood glucose is out of control. Autonomy may also be associated with certain health outcomes, because of those autonomous individuals who actually take responsibility for their diabetes does well, but others who believe they can control their diabetes but do not, blame themselves for the poor outcome that tend to follow from this orientation. In other words, both adherent and non-adherent patients may believe in internality, but the concept has different behavioural reference for each type of person.

It is also likely that there are causal links between autonomy and health outcomes or self-management. Self-blame may be a consequence of poor self care and may discourage patients from taking an active approach to their own care. Conversely, autonomy may lead to positive emotional and diabetes-specific outcomes and successful self-care.

For some patients, reliance on others may be a relatively stable attribute of the individual and the potential value of relying on the assistance of others, might be more effective to design educational and therapeutic interventions compatible with and reinforcing of these beliefs, rather than change the individual's basic orientation.

6.2.10 Perception of Diabetes

It was found that most patients believed diabetes to have a great influence on life in general. This included social life, interests in life, moods and relying on others. Patients believed that diabetes had a detrimental effect on one's life. This is the finding found in most studies for example, see the study by Maillet et al. (1996); Polly, (1992); Quatromoni et al. (1994).

The surprising finding from this study was that, the married as compared to the singles on their perception of diabetes on marriage was not that much different. The singles were expected to perceive little or no effect on marriage. The reason perhaps, for them to have such a believe, is that, as they perceived diabetes to have a negative effect on life in general, they concluded that it might also have an impact on marriage.

Very few patients were found to believe diabetes to affect sexual functioning. It was found that this believe was held by those patients who were diagnosed with diabetes for a period of less than a year. As a result they have not yet experienced serious diabetes-related complications that may hamper their sexual function. This is consistent with the finding by Wikblad et al. (1990). Others reported that they did not have any idea as to whether diabetes did affect sexual function or not as they are no longer engaged in sexual activities due to old age. A few that reported it to affect sexual functioning, reported problems such as impotence in men and difficulty in reaching orgasm with females and decreased desire to have sexual intercourse, similar to the finding by Fisher & Delamater (1988).

6.2.11 Stress in Diabetics

Depression, anxiety, and anger were the most consequences of diabetics (Eimar & Freeman, 1998). Patients can become involved in a destructive cycle in which negative thinking and emotions increase pain perception that in turn, leads to greater emotional and cognitive distress ultimately non-compliance (Cooper, 1983).

Findings from this study indicate that diabetic patients are stressed by this disease especially, by the physical complications, treatment regimen, fear of future events and the hypoglycemic reactions.

Many patients were found to be stressed by the physical complications that are caused by diabetes. They reported diabetes to have limited their physical ability and made them feel like disabled. Males were found to be more stressed by this limited physical ability than were females. The reason perhaps, being that they felt like they have lost their masculinity and their roles as the bread winners.

The hypoglycemic reactions were also found to induce stress in diabetic patients, as patients believed and knew that when they had such reactions, it meant their disease was getting worse, coupled with the thought that diabetes is incurable and may result in disabling complications.

The treatment regimen especially, regarding diet, also induced stress in some other patients. Other patients mentioned that they sometimes have cravings for food they must avoid leading into poor self-management. They also mentioned that diabetic meal is restrictive, boring and expensive. It was also found that patients had problems at restaurants and parties to mention their diet which may result in them eating food that they should not, and afterwards started to feel guilty, resulting into stress and non-compliance.

The physical complications, hypoglycemic reactions and the treatment regimen resulted in depression and fear of the unknown future for some patients. Patients were worried if they could ever find assistance in future and that the disease might be passed to their children and grandchildren. The fear of what tomorrow brings them along with the issue of death was found to be overwhelming and ultimately influenced their perceptions and attitudes towards the disease.

The sense of self-efficacy in diabetic patients was diminished. Some develop a general cognitive set from which most life experiences are viewed as hopeless and futile (Gotlib & Hammen, 1996). Depression was found to be an obvious outcome of this negative cognitive set resulting in non-compliance. The relationship between depression and diabetes has been well documented in most studies (Dupis, 1980; Eimer & Freeman, 1990; Hanson & Geber, 1990; Littlefield et al., 1990).

CHAPTER 7

This chapter is based on the limitations of the study, recommendations, implications for further research and conclusion.

7.1 Limitations of The Study

This study comprised of a very small sample, generalization of the findings to all diabetic patients in the Northern Province can be misleading.

Generalization based on the sampling method used is risky as such samples might not be a representative of the diabetic population.

7.2 Recommendations

The importance of self-management regarding diet and exercise must be stressed, as it has been found that patients are not aware of its important role in the management of diabetes.

Patients must be made aware of their responsibility over the management of their illness as it has been found that patients placed their responsibility on external factors, especially health professionals.

Long waiting hours by patients (to be seen by the doctor) must be avoided to try to motivate patients to comply with their out-patient clinic.

The change in diet was seen as the largest difficulty. In order to help patients adjust to a different diet, it is important that they like a new meal. To reach this goal, a variety of activities could be considered, including support groups and cooking classes for diabetics and their families. This could be offered by the community or the local hospital. Cooking classes can have several functions where experiences can be shared. Exchanging and discussing new recipes might help them understand that they can still live a normal life and that it poses a challenge to find interesting, easy to prepare meals suitable for their diabetes.

Diabetic patients also require educational intervention at each stage of adjustment with the disease, and this intervention may be efficient if the current position of adjustment can be accurately determined.

Nurses specifically, should receive more theoretical and practical training to be able to respond appropriately to different emotions exhibited by patients. As mentioned in this study, nurses rarely have time to listen and inform patients about the disease.

Health care providers need to consider using different counselling strategies to motivate patients to comply with the treatment regimen and use the self-perception of compliance held by patients to consolidate progress being made by the patient, enhance self-esteem and further improve overall patient functioning.

As the majority of patients believed they were more active and felt better when they had good glucose control, health care providers might capitalize on this self-perceived progress by gradually recommending even greater lifestyle modifications for control of their diabetes.

A sense of frustration was expressed during the interview by patients. If health care providers can identify frustrated patients, then they can be able to decrease the frustration and possibly increase compliance.

7.3 Implications For Future Research

When patients were talking about their nutritional practices, the role of the family in the management of diabetes became apparent. The influence of the family on the self-management of diabetes and the impact of changing family interactions on adherence must be investigated.

There is a need for continuing research to further explore the implications of cultural beliefs and ethnical differences on diabetes management. Understanding and accepting the cultural beliefs and practices may open communication between health care providers and patients in the management of diabetes.

Further research is needed to increase long-term adherence to exercise and concerning the special needs and problems related to exercise in patients with NIDDM. As it is clear from this study and other studies that most diabetic patients do not exercise and even if they do it, they relapse.

Additional research, particularly longitudinal studies is needed to see how patients manage the continuing challenges of living with diabetes.

Both the insulin dependent and the newly diagnosed patients should be studied to help health care providers understand the experience of patients who must execute a detailed daily diabetes care plan. This understanding will allow health care providers to aid patients in

developing approaches to management that will work for them and help health care providers address issues that might impede management.

7.4 CONCLUSION

From this study it can be concluded that patients are having negative attitudes towards diabetes. Patients believed diabetes to have a fatalistic effect and to be a serious disease that has a detrimental effect on one's health. The use of traditional and non-medical remedies was valued. Most believed that self management can control their disease and reduce the likelihood of long term complications. Most patients were not aware of the role and importance of exercise in the management of diabetes. It has also been found that there is a relationship between diabetes and stress or depression.

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APPENDIX A

***BELIEFS AND ATTITUDES OF PATIENTS WITH DIABETES
QUESTIONNAIRE***

THIS QUESTIONNAIRE IS AIMED AT DETERMINING YOUR BELIEFS AND ATTITUDES TOWARDS DIABETES MELLITUS. PLEASE CIRCLE THE NUMBER ON THE SCALE WHICH REPRESENT HOW YOU FEEL ABOUT THE QUESTION. PLEASE ANSWER EACH QUESTION AS BEST AS YOU CAN. THERE ARE NO RIGHT OR WRONG ANSWERS.

GENDER: Male..... Female.....

AGE

MARITAL STATUS : Married.....
Single

Divorced

Widowed

EDUCATIONAL LEVEL: Primary education

Secondary education

Tertiary education

None

OCCUPATIONAL STATUS : Employed

Unemployed

Retiree

For this section, please give your answers on 6 point rating scale, with 1= Strongly disagree, 2 = Disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Agree, 6 = Strongly agree.

1. I can avoid complications.	1	2	3	4	5	6
2. When my sugar is high it's because of something I've done.	1	2	3	4	5	6
3. Good health is a matter of good fortune.	1	2	3	4	5	6
4. Regular doctor's visits avoid problems.	1	2	3	4	5	6
5. What I do is the main influence on my health.	1	2	3	4	5	6
6. If it is meant to be I will avoid complications.	1	2	3	4	5	6
7. I should call my doctor whenever I feel bad.	1	2	3	4	5	6
8. My blood sugars will be what they will be.	1	2	3	4	5	6
9. Blood sugars are controlled by accidents.	1	2	3	4	5	6
10. I can only do what my doctor tells me .	1	2	3	4	5	6
11. I never know why I'm out of control.	1	2	3	4	5	6
12. Health professionals keep me healthy.	1	2	3	4	5	6
13. My family is a big help in controlling my diabetes.	1	2	3	4	5	6
14. When my blood sugar is high it's because I've made a mistake.	1	2	3	4	5	6
15. Good control is a matter of luck.	1	2	3	4	5	6
16. Complications are the result of carelessness.	1	2	3	4	5	6
17. I'm responsible for my health.	1	2	3	4	5	6
18. Other people have a big responsibility for my diabetes.	1	2	3	4	5	6

APPENDIX B

THE PERCEPTION OF DIABETES QUESTIONNAIRE

For this section also, give your answers on 2 point rating scale, with 1 = Minimal effect, 2 = great effect.

What is the effect of diabetes on the following?

1. The effect of diabetes on your life in general.
What effect did you expect diabetes to have? 1 2
How would you rate the effect? 1 2
How important is this effect to you? 1 2
2. The effect of diabetes on your ability to be employed
outside the home now or prior to your retirement. 1 2
3. The effect of diabetes on your ability to carry out
your home responsibilities. 1 2
4. The effect of diabetes on your income/budget. 1 2
5. The effect of diabetes on your ability to care for your
children/grandchildren. 1 2
6. The effect of diabetes on your social life. 1 2
7. The effect of diabetes on your feelings of self-worth. 1 2
8. The effect of diabetes on your interest in life. 1 2
9. The effect of diabetes on your energy level. 1 2
10. The effect of diabetes on your ability to care for
yourself such as bathing, dressing, and grooming. 1 2
11. The effect of diabetes on your ability to care of
personal business such as attending school, banking,
or shopping. 1 2
12. The effect of diabetes on your need to rely on
others. 1 2
13. The effect of diabetes on your moods. 1 2
14. The effect of diabetes on your ability to get along
with people. 1 2
15. The effect of diabetes on your feelings as a man
or woman. 1 2

16. Your diabetic meal schedule on your life in general.	1	2
17. Your diabetic food selection on your life.	1	2
18. Urine testing on your life in general,	1	2
19. Injecting insulin or taking oral hypoglycemic agents on your life in general.	1	2
20. All treatments related to your diabetes on your life in general.	1	2
21. Symptoms you associate with high blood sugar on your life.	1	2
22. Symptoms you associate with low blood sugar on your life in general.	1	2

The following questions relate to the effect of diabetes on your marriage, relationship to sexual partner, and sexual activity.

23. The effect of diabetes on your marriage.	1	2
24. The effect of diabetes on your feelings of closeness and tenderness for your partner.	1	2
25. It's effect on your ability to care for partner.	1	2
26. The effect of injecting insulin or taking oral hypoglycemic agents on relationship with your partner.	1	2
27. Your diabetic diet on your relationship with your Partner.	1	2
28. All treatments related to your diabetes on your relationship with your partner.	1	2
29. Symptoms you associate with high blood sugar on your relationship.	1	2
30. Symptoms you associate with low blood sugar levels		

on your relationship.	1	2
31. The effect of diabetes on your interest in sex.	1	2
32. It's effect on your feelings of satisfaction after Sexual intercourse.	1	2
33. All treatments related to your diabetes on your sexual intercourse	1	2
34. Symptoms you associate with high blood sugar on your sexual intercourse.	1	2
35. Symptoms you associate with low blood sugar on your sexual intercourse.	1	2

APPENDIX C

STRESS IN DIABETIC PATIENTS QUESTIONNAIRE

QSD : ADDITIONAL QUESTIONS

NOT ASSESSED

1. What is your marital status?
 - unmarried
 - married/permanent partner
 - divorced
 - widowed

2. What is your occupational status?
 - full-time employment
 - part-time employment
 - unemployed
 - housewife/houseman
 - apprentice/student
 - retiree

3. Did you ever participate in a training session for diabetes?
 - ~~yes~~
 - no

4. How often per day do you measure your urinary glucose?
 - never/seldom
 - 1 - 2 times
 - 3 - 4 times
 - 5 times and more frequent

5. How often per day do you measure your blood glucose?
 - never/seldom
 - 1 - 2 times
 - 3 - 4 times
 - 5 times and more frequent

6. How often during the past 12 months did you experience hypoglycemic reactions?
 - never
 - less than once per month
 - once per month
 - once per week
 - several times per week
 - daily

7. Did you experience serious hypoglycemic reactions during the past 12 months (with help of others or unconsciousness)?
 - yes
 - no

8. Have any diabetes-related complications been diagnosed?
 - no
 - if yes, in which organs
 - eyes
 - kidneys
 - nerves
 - feet
 - gastrointestinal areas
 - urinary bladder/genital area
 - heart or circulatory system

9. How often in the past 6 months did you see your doctor?
 - because of diabetes _____ times
 - in all _____ times

APPENDIX D

THE EXPLORATORY ILLNESS INTERVIEW SCHEDULE

THE EXPLORATORY ILLNESS INTERVIEW SCHEDULE

UNIVERSITY OF THE NORTH

DEPARTMENT OF PSYCHOLOGY

1. Why did you come to the hospital today?
2. What is the name you usually use for this problem?
 - 2.1 Have you ever heard it called something else?
 - 2.2 If yes, what is the difference between these names?
3. When first did you know that you had this problem?
4. What do you think caused it?
5. Why do you think it started when it did?
6. What do you think your problem does to you?
 - 6.1 What is going on inside you?
7. How severe is your problem?
 - 7.1 How long do you think it will last?
 - 7.2 Do you think it will develop into something more serious?
 - 7.3 What are the main difficulties your problem has caused you?
 - 7.4 What do you fear most about it?
8. What is your most important health problem?
 - 8.1 Why is this more important than the problem you are being seen for?
9. Can you tell when your problem is doing better or worse?
 - 9.1 If yes, how do you know?
 - 9.2 What do you do when you know problem is worse?
10. How are you treating your problem?
 - 10.1 How does this treatment work?
 - 10.2 What are the most important results you hope to receive from these treatments?
 - 10.3 Do you get medications any where other than the pharmacy?
11. Do you think there is anything that would help your problem that you doctor or nurse hasn't told you about?
 - 11.1 How do these work?

12. Are there other people other than doctors and nurses who might be able to help this kind of problem?

12.1 If yes, who?

12.2 What do they do?

12.3 Do you know of anyone who has been to see one of them?

13. Do you know of anyone in your family who had this kind of problem?

14. Do you think this problem have a social impact?

15. Do you think this problem have a health impact?

16. What are the perceived needs for a person with this kind of problem?

17. What do think about the role of diet in the management of this problem?

18. What do you think about the role of exercise in the management of this problem?

19. Sources of information about this problem?

20. What can you suggest for future programs for people with this kind of problem?