



Living with diabetes: Managing treatment and the psycho-social aspects of the disease.

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DECLARATION

The researcher hereby declares that the content of this research project is the author's own unaided original work, except where specific indication is given to the contrary (by reference). This work has not been previously submitted to the Durban University of Technology (DUT) or any other University.

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DEDICATION

This thesis is dedicated to the loving memory of the late Ms Joy Kistnasamy.

“Here lies a woman with no regrets.”

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ABSTRACT

Diabetes mellitus (DM), frequently known as diabetes, is a metabolic disorder with multiple genetic and environmental factors that is characterized by hyperglycemia due to defects in carbohydrate, fat, and protein metabolism caused by insulin deficient action on target tissues caused by insulin insensitivity or lack of insulin or both. Diabetes is becoming more prevalent around the world and in South Africa. Diabetes treatment requires lifelong therapy to prevent acute and chronic complications. However psychosocial factors have been shown to play a significant role in both aetiology and management of the disease.

This study aimed to explore diabetics' experiences of living with the disease, the emotional and social factors associated with living with the disease and managing its treatment. A qualitative research approach was used to guide this study. A non-probability sampling method was used to recruit 16 participants across three racial groupings (African, White and Indian), who were recruited through the Diabetic Association. Data was collected using a semi-structured interview guide. The interview sessions were recorded verbatim, and the data was then analysed using thematic analysis to extract relevant themes and sub-themes.

Two factors, namely, level of education and type of healthcare treatment received, was found contributed to the participants awareness and knowledge of diabetes. The stress associated with diabetes management was found to affect the participants psychologically which reflects that the disease not only has physical effects but other emotional and social ramifications as well. Moreover, the study documented the salience of strong family support and diabetes management. Cultural practices were also identified as a factor that influenced the management of diabetes. Some participants also identified their religious faith, particularly prayer as being a significant support system, which brought peace and calm to their lives and enabled them to cope with their condition.

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LIST OF ABBREVIATIONS

DM: Diabetes Mellitus
T1DM: Type 1 Diabetes Mellitus
T2DM: Type 2 Diabetes Mellitus
COVID-19: Corona Virus, disease caused by SARS-CoV2 virus
CVD: Cardiovascular Disease
CDC: Centre for Disease Control and Prevention
IDF: International Diabetes Federation
US: United States
TM: Traditional Medicine
HIV: Human Immunodeficiency Virus
AIDS: Acquired Immunodeficiency Syndrome
TB: Tuberculosis

CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

Approximately 415 million people worldwide, mostly in low- and middle-income nations, have diabetes mellitus (DM) (Jaacks *et al.* 2016: 331). A metabolic disorder known as diabetes mellitus (DM) is characterized by chronic hyperglycaemia brought on by disturbances in the metabolism of carbohydrates, fats, and proteins as a result of defects in insulin secretion, insulin action, or both (Bosun-arjie *et al.* 2019: 2). According to Balasubramaniam *et al.* (2019: 2585), the burden of diabetes on health systems around the world is alarming, and its prevalence is rising steadily. Due to the escalation in its incidence, diabetes is now one of the world's leading causes of death and disability, with annual healthcare costs of US\$827 billion (Abdoli *et al.* 2019: 32). This illness has a significant impact on healthcare systems around the world and patients who experience too much financial, social, and emotional strain (Sami *et al.* 2017:67).

1.2 BACKGROUND OF THE STUDY

Diabetes is expected to rise from 1.9 million to 41.5 million in Sub-Saharan Africa by 2035. (Bailey *et al.* 2016: 2). Diabetes is the second leading cause of death in South Africa, affecting approximately 2.3 million people, making it the second most common cause of death (Macaulay *et al.* 2018: 279). Diabetes management can be difficult for health-care systems because patients' beliefs, knowledge, and language abilities can all affect diabetes management (Nam *et al.* 2011: 1 and Bailey *et al.* 2016: 2). Over the last few decades, there has been a surge in research interest in the psychological aspects of diabetes management (Ritholz, Beverly and Weinger 2011: 496). There has been greater opportunities for qualitative research related to the psychosocial aspects of diabetes, due to the growing patient-centeredness emphasis. Qualitative studies in diabetes research can aid in the understanding of experiences, beliefs, attitudes, and behaviors that influence clinical procedures and results by healthcare professionals and researchers (Gupta *et al.* 2016: 1; Ritholz, Beverly, and Weinger 2011: 496). The aim of this study was to examine diabetics' experiences of managing treatment and psychosocial factors related to the disease among patients 50 years of age and older, due to the dearth of information about diabetes amongst patients aged 50 years or older living on the African continent (Werfalli *et al.* 2016: 72) and due to the aforementioned risks.

1.3. CONTEXT OF THE STUDY

The prevalence of diabetes is increasing exponentially around the world (Gupta *et al.* 2016: 1). According to the American Diabetes Association (2017: 11), type 1 and type 2 diabetes are heterogeneous diseases with widely varying clinical presentations and course of development. This puts a heavy burden on health systems around the world (Burridge *et al.* 2014: 75). The prevalence of type 2 diabetes, which was once a rare condition in Africa, is predicted to rise by 110% over the next 20 years, from 19.8 million people in 2013 to 41,5 million in 2035 (Motta *et al.* 2017: 250). To stop the growing diabetes epidemic in South Africa, immediate action is needed. Numerous studies have examined the viability of population-level interventions, particularly those that focus on prevention (Pheiffer *et al.* 2018: 2). According to estimates, 2.28 million people in South Africa have diabetes, making it the second leading cause of mortality and morbidity (Adedokun *et al.* 2019: 2). Diabetes is a chronic condition that worsens over time and has no known cure. To prevent both immediate and long-term life-threatening complications, diabetes requires constant and rigorous self-management (Brundisini *et al.* 2015: 2). Patients' ignorance of how to effectively manage their diabetes may contribute, at least in part, to less effective diabetes self-management (Lynch *et al.* 2012: 814). As a result, it has been noted that poor management may be a risk factor for health literacy and perception (Inoue *et al.* 2013: 2). Type 2 diabetes treatment and management are significantly impacted by the presence of additional chronic illnesses (Nowakowska *et al.* 2019: 1). Comorbidities, or chronic conditions present in addition to type 2 diabetes, complicate healthcare outcomes, treatment options, care requirements, and associated costs (Nowakowska *et al.* 2019: 1). End-stage renal disease, hypertension, and cardio-vascular complications are all more common in diabetics (Sarwar *et al.* 2010: 2217). There are many obstacles to self-care that people with multiple chronic conditions report, including physical limitations, knowledge gaps, financial limitations, logistical concerns, and the requirement for social and emotional support (Feary *et al.* 2010: 958).

Diabetes is a major contributor to end-stage kidney disease, accounting for 44% of all new cases of kidney failure in 2011 (Centre for Disease Control and Prevention, 2014). In 2012, the total cost of diabetes diagnosis in the United States was \$245 billion, which included 176 billion in direct medical costs and 69 billion in lost productivity as a result of absenteeism from work, reduced productivity at work and at home, unemployment as a consequence of chronic disability, and premature death (American Diabetes Association, 2013: 35). In patients with diabetes, complications related to diabetes account for about 20% of commercial insurance

(Fitch, Pyenson and Iwasaki, 2013: 611). HIV/AIDS and tuberculosis (TB) co-epidemics in South Africa have coincided with the emergence of diabetes, adding to the strain on a precarious public health system that provides care to more than 80% of the population (Council for Medical Schemes, 2017). Individuals, families, governments, and insurance providers cover the costs of hospitalization and medication for the treatment of diabetes and its complications, such as renal failure, visual impairment, and amputations (Erzse *et al.* 2019: 2). Achieving and maintaining glycaemic targets is advised to reduce the risk of complications in diabetes patients because diabetes-related complications add to the financial burden (Bain *et al.* 2020: 103 and Fitch, Pyenson and Iwasaki 2013: 611). According to Akena *et al.* (2015: 8), patients who had co-morbid diabetes and depression were more likely to have higher health care costs.

Prior studies have identified several variables influencing diabetes management, including patient perceptions of their health status, their attitude toward themselves, cultural differences, physician-patient communication, and psychosocial variables (Beverly and Wray 2010: 212). Being a member of a specific ethnic minority is also a significant risk factor for type 2 diabetes because of the complex interactions between genetic and environmental factors linked to chronic stress and lifestyle (Jager *et al.* 2019: 208). A number of modifiable factors, such as lack of access to care that is culturally appropriate, act as a barrier to receiving healthcare services and increase the risk of diabetes (Oo, Nau and Kyi 2020: 2). While it is generally acknowledged that cultural beliefs can have an impact on management, they can also lead to poor communication and understanding (Jager *et al.* 2019: 208). Therefore, understanding the perspectives of patients is essential for creating a management protocol that is efficient and adapted to the patients' needs. The first step in providing sensitive and capable diabetes care is being aware of the need for cultural sensitivity (Oo, Nau and Kyi 2020: 2). Research on health-related quality of life has increased, especially among diabetes patients, for whom outcomes like physical, social, and mental wellbeing are crucial parts of treatment and management (Ali *et al.* 2010: 86). Research has found that diabetes co-morbid depression has been linked to negative outcomes like poor diabetes management, non-adherence to medication, and mortality, (Ali *et al.* 2010: 75).

1.4 PROBLEM STATEMENT

The World Health Organization (WHO) predicts that by 2030, diabetes will rank as the 7th leading cause of death (WHO, 2016: 6-8). Further, cardiovascular disease (CVD), which has a mortality risk of 70%, is three times more likely to develop in people with type 2 diabetes (WHO, 2016: 8). Thus, each diabetic patient loses an estimated ten years of life due to premature death. Although diabetes epidemiology and management have improved in developed nations, such advancements are still lacking in South Africa, where the prevalence of the disease is rising (WHO, 2016: 10). Since a variety of factors, such as ethnicity, social support, and patient perceptions influence disease management, diabetes prevention, treatment, and management in South Africa continues to be a major public health concern. Poor glycaemic control and long-term complications are consequently caused by psychosocial issues (Gupta *et al.* 2016: 1). It is thought that having more social support will result in better self-care (Dong *et al.* 2019: 3). Understanding the various means of communication between people with diabetic patients and members of their family, partners, friends, and caregivers, including their love, care, and motivation, is thus one of the areas of medical research interest (Dong *et al.* 2019: 3). The goal of this study is to examine diabetics' experiences of managing treatment and the psycho-social factors related to having DM among patients who are 55 years of age or older in Africa due to the dearth of information available regarding diabetes among this population and the risks associated with it (Werfalli *et al.* 2016: 72).

1.5 AIM:

This study therefore aims to explore diabetics' experiences of managing treatment and the emotional and social factors associated with living with the disease.

1.6 OBJECTIVES:

- To understand patient perceptions of diabetes personally.
- To explore personal and social factors that influence living with diabetes.
- To understand the patients, experience of managing their diabetes treatment.
- To understand cultural factors influencing health beliefs and practices that may affect diabetes management.

1.7 SIGNIFICANCE OF THE STUDY

Patients with diabetes will be able to learn from this study in order to effectively manage their condition. According to Alam *et al.* (2021: 36), diabetes is one of the most prevalent metabolic disorders, and its prevalence is increasing at an alarming rate globally. While the global incidence of diabetes among adults over the age of 18 increased to 8.5% (2014) from 4.7% in 1980, the number of diabetic patients quadrupled (from 108 million in 1980 to 422 million in 2014) in just 34 years. Information on the true prevalence of diabetes in South Africa is scarce. However, the most recent IDF estimates for 2019 indicate that with an estimated 4.6 million people affected, South Africa had the highest prevalence of diabetes (ages 20–79) and the highest number of deaths attributable to DM in 2019 (Ikram and Pillay 2022: 33). Other diabetic patients will benefit from understanding how individuals handle stress, dietary customs, and cultural considerations in order to better manage their illness.

1.8 THEORETICAL FRAMEWORK- THE BIOPSYCHOSOCIAL MODEL OF HEALTH AND DISEASE (ADAPTED FROM FRAZIER, 2020: 1-4; LEHMAN DAVID AND GRUBER, 2017: 1-17)

The field of health psychology is expanding and making significant strides in theory, research, and applications that have a profoundly positive impact on people's lives, the medical industry, and global public policy. The biopsychosocial model, an interdisciplinary and multifaceted model that postulates the interrelationship between biological, psychological, and socio-ecological influences on health and disease, has served as the department's guiding principle for more than 40 years (Frazier 2020:2). Bolton and Gillett (2019: para. 1. L1) provided a summary of four decades of research in *The Biopsychosocial Model of Health and Disease: New Philosophical and Scientific Developments*. They came to the conclusion that the model is inadequate from a clinical, scientific, and philosophical standpoint. A holistic view of health within the biopsychosocial matrix is required, as evidenced by current issues in health psychology, behavioural medicine, and medical science and practice. The theoretical foundation of the biopsychosocial model of health and disease is depicted in the Figure 1 below.

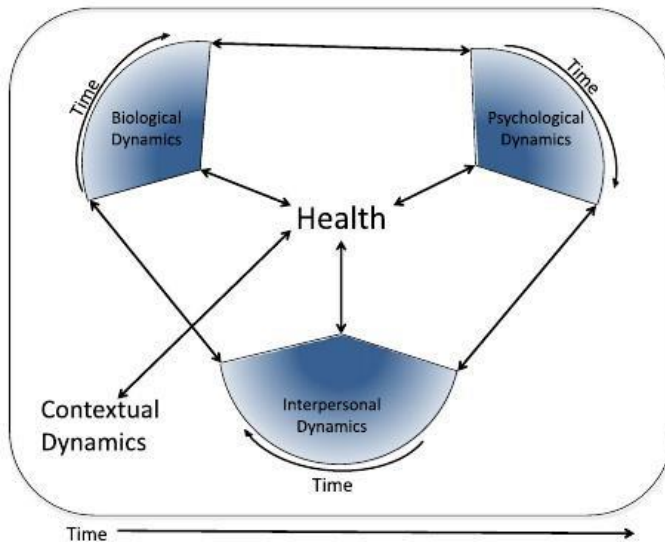


Figure 1. The Biopsychosocial Model of Health, (Lehman, David and Gruber, 2017: 2)

The dynamic biopsychosocial health model extends the biopsychosocial model by incorporating a dynamic systemic approach and expanding the knowledge of social influences using Bronfenbrenner's developmental theories. Each model portion contains structures that impacts one another, the model's dynamics, and the health of the user. The two types of social dynamics are interpersonal and more general contextual dynamics (e.g., culture). Additionally, because all dynamics are dynamic over time, the degree to which a system affects a person's health can fluctuate over time (the blue shading in each wedge represents the ebb and flow of centrality). Factors that are more important to the individual are found in the wedge's darker regions. These factors have an ever-changing impact on health.

1.8.1 Biological factors

Biological factors are the primary elements of the body that influence and determine health. The cardiovascular and immune systems, for instance, are essential for overall physical wellbeing, and neural systems like the limbic system are critical for understanding how the physiological and psychological spheres interact with health. Each of these systems is made up of an intricate network of cells and structures. For instance, the immune system interacts with the circulatory system, social dynamics, and psychological dynamics in addition to acting to prevent infections and diseases. The two types of diabetes are the focus of this study. T2DM is primarily caused by a combination of two main factors: impaired pancreatic beta-cell insulin secretion and the inability of insulin-sensitive tissues to respond to insulin. T1DM is an autoimmune condition brought on by beta-cell destruction in the pancreas (Saberzadeh-Ardestani *et al.* 2018: 294; Galicia-Garcia *et al.* 2020: 6275). In this study, the researcher

looked at how participants managed their disease and treatment thereof. In doing so, the definition of diabetes and how it impacts a person physically and psychologically are examined.

1.8.2 Psychological Factors

Psychological factors include the cognitive, interpersonal, motivational, attitudinal, and behavioural systems that influence health. Major studies in psychological science have investigated how self, identity, personality, coping mechanisms, substance abuse, addiction, stress assessment, emotions, illness schedules, anxiety, depression, and health behaviours all contribute to a better understanding of physical and mental health. According to research, people with diabetes have a lower quality of life than people without diabetes (Rodriguez-Almagro *et al.* 2018: 4213). The purpose of this study is to investigate the emotional and social aspects of diabetic patients' treatment experiences and day-to-day life. In order to understand the psychological dynamics that affect diabetic patients personally and socially, as well as how this affects the management and treatment of the disease, the researcher looked at psychological dynamics.

1.8.3 Interpersonal Factors

The effects of actual or imagined social contact on one's health are interpersonal factors. Interpersonal dynamics are explained using Bronfenbrenner's typology, and they involve both direct interaction with other people and the effects of other people's actions (Lehman, David and Gruber 2017: 2). Furthermore, rather than focusing on the complexity of interpersonal relationships, health research recurrently appears to limit interpersonal factors to single static construct measures (Frazier 2020: 3). Healthcare professional communication method, peer pressure, and parenting strategies are examples of interpersonal constructs that change over time in response to personal health and dyadic and group processes. The complexity of the embedded social networks in which individuals and communities' function is ignored by static measures. The aim of this study was to explore how a patient's social network and interpersonal interactions impact their ability to manage or receive treatment for diabetes. Family, friends, and other social relationships are included in this. The cultural and traditional practices of diabetic patients are another important facet of this dynamic, and they have an impact on how the disease is managed and treated.

1.9 DEFINITION OF CONCEPTS

1.9.1 Diabetes Mellitus

Diabetes mellitus refers to a group of metabolic disorders characterized by chronic hyperglycaemia. The cause is either an interruption in insulin secretion or an interruption in insulin action, or both (Petersmann *et al.* 2019: 1).

1.9.2 Type 1 diabetes mellitus

In most cases, immunological factors contribute to type 1 diabetes, which is brought on by the destruction of beta cells, which leaves the body completely insulin deficient. Latent autoimmune diabetes in adults is the term for it (Petersmann *et al.* 2018: 406).

1.9.3 Type 2 diabetes mellitus

Chronic hyperglycaemia is a common metabolic disorder associated with type 2 diabetes. Due to a higher risk of heart disease, stroke, diabetic neuropathy, kidney diseases, vision loss, and amputation, it is linked to a lower life expectancy (Hurtado and Vella 2019: 10).

1.10. OVERVIEW OF RESEARCH METHODOLOGY

A qualitative research approach was used to conduct the study in the eThekweni region of KwaZulu-Natal. This method was selected as the researcher sought to gain an in-depth understanding of how patients experienced and managed their condition. A non-probability purposive sampling method was utilized to recruit diabetic patients through liaison with the Diabetic Association. Approval for this study was granted by the Institutional Research and Ethics Committee (IREC) at Durban University of Technology. Gatekeepers' permission was sought from the Diabetic Association and permission from all participants were granted. Participants were made aware that all their information will be kept anonymous and confidential. An in-depth semi-structured interview was used to collect data from sixteen participants. Thematic data analysis was used to identify specific themes to analyse the data collected.

1.11 STRUCTURE OF THE DISSERTATION

Chapter 1 – Introduction

Chapter 2 – Literature review

Chapter 3 – Research Methodology

Chapter 4 – Results and discussions of findings

Chapter 5 – Recommendations and conclusion of the study.

1.12 CONCLUSION

The first chapter provides an overview and outline of the research topic. The chapter discussed the research problem, the context of the study, its aim and objectives, and the significance of the study. The theoretical framework used to guide the research was also discussed. A brief description of the methodology was also provided. The chapter (Chapter 2) that follows will present an in-depth discussion of the literature that underpins the topic under consideration.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

A subject advances when previous investigations are logically synthesized based on the outcomes (Kumar, Paul and Unnithan 2019: 386). Literature reviews make significant contributions to the conceptual, methodological, and thematic development of various domains as a research methodology (Snyder 2019: 336; Hulland and Houston 2020: 353). There have been various published studies that employ the same old theories, measures, and methods, according to Paul and Criado (2020: 1). The primary goal of a review article is to identify significant research gaps based on which concepts, theories, and methods are commonly used and where studies have been conducted. A critical component of the systematic review process is the method of searching for literature. It entails conducting a thorough review for studies with the goal of producing a straightforward study identification report that explains how studies were identified and how the review's findings fit into the corroborating information (Cooper *et al.* 2018: 1).

2.2 UNDERSTANDING DIABETES MELLITUS (DM)

Diabetes mellitus (DM), a chronic metabolic noncommunicable disease (NCD), has reached epidemic proportions around the world (Lall *et al.* 2020: 25). It is defined as a metabolic disorder characterized by hyperglycaemia due to a lack of insulin secretion or insulin action (Sami *et al.* 2017: 66). Diabetes is a chronic metabolic disorder that affects people's physical, social, and mental well-being (Kalra *et al.* 2018: 698). According to the International Diabetes Federation (IDF) data from 2018, diabetes affected 382 million people worldwide and is expected to reach 592 million by 2035 (Kalra *et al.* 2018: 698). However, according to a more recent study, the IDF's 2019 data concluded that 9.33% of adults aged 20 to 79 have diabetes. It is also predicted that the number of diabetics, which was 463 million in 2019, will rise to 578 million by 2030 and 700 million by 2045 (Ilhan *et al.* 2020: 1). Diabetes has quadrupled in the last three decades and is now the ninth leading cause of death worldwide (Bosun-arjie *etal.* 2019: 2).

Diabetes and its complications are a major global health threat. Diabetes is a leading cause of death worldwide, affecting approximately 415 million people, the majority of whom live in low and middle-income countries. This figure equates to one DM death every six seconds. Poorly controlled diabetes has also been linked to organ damage, particularly to the eyes,

kidneys, nerves, and cardiovascular system (Jaacks *et al.* 2016: 331; Zheng, Ley and Hu 2018: 88 and Sami *et al.* 2017: 66). It is becoming more common in developing countries, according to Ayele *et al.* (2011: 1), with an estimated 8.5% of adults suffering from the disease. Type 2 diabetes accounts for approximately 90% of all diabetes cases (Ozcan *et al.* 2018: 1855). It is considered as one of the most pressing global health issues (Huang *et al.* 2010: 543), and the total number of diabetics worldwide is expected to rise from 171 million in 2000 to 366 million by 2030 (Speight *et al.* 2012). Diabetes, according to Balasubramaniam *et al.* (2019: 2585), is putting an increasing strain on healthcare systems around the world.

2.2.1. Type 1 and 2 diabetes

Diabetes mellitus type 1 (T1DM) is caused by the autoimmune destruction of beta-cells in the endocrine pancreas. T1DM pathogenesis differs from type 2 DM pathogenesis, in which insulin resistance and beta cell insulin secretion play a synergistic role (Paschou *et al.* 2018: 38). The current model of this disease's etiopathogenesis emphasizes the interaction of genetic and environmental factors (Sharif *et al.* 2018: 1081). T1DM accounts for only about 10% of all diabetes cases worldwide, but it occurs much earlier in life and is becoming more common (Paschou *et al.* 2018: 39). According to Paschou *et al.* (2018: 38), type 1 diabetes is usually present in people who have no family history of the disease. Although symptoms usually appear in childhood or adolescence, they can appear much later in life (Katsarou *et al.* 2017: 1).

Type 2 Diabetes Mellitus (T2DM) is the most common type of diabetes mellitus and is usually diagnosed in adults (Kusnanto, Arifin and Widyawati 2020: 1681). T2DM has a complex aetiology that includes both irreversible risk factors like age, hereditary factors, ethnicity, and race and reversible lifestyle factors like nutrition, physical exercise, and smoking (Sami *et al.* 2017: 65). Type 2 diabetes is distinguished by a relative lack of insulin as a result of pancreatic beta cell dysfunction and insulin resistance in target organs. Global increases in weight gain, unhealthy lifestyles, and an aging population resulted in a fourfold increase in the incidence and prevalence of type 2 diabetes between 1980 and 2004 (Chatterjee, Khunti and Davies 2017: 2239). Excessive stress may precipitate diabetes, and stress can exacerbate the patient's condition (Kusnanto, Arifin and Widyawati 2020: 1681). Patients with type 2 diabetes must be treated with exercise, medication, and a strict diet (Kusnanto, Arifin and Widyawati 2020: 1681). Diabetes and its complications are becoming more common, putting a strain on healthcare costs and health-related quality of life (Cannon *et al.* 2018: 11).

2.3 GLOBAL OVERVIEW OF THE INCIDENCE OF DIABETES

Diabetes affects an estimated 30.3 million Americans (9.4% of the population), 23 million have diabetes, and 7.2 million have an undiagnosed disease (Cannon *et al.* 2018: 5). Diabetes prevalence has risen dramatically in the United States (US) population over the last half-century. Approximately 40% of diabetic Americans are 65 or older, and 25% of all US adults over the age of 65 have diabetes (Cannon *et al.* 2018: 5). According to Abdoli *et al.* (2019: 32), Tennessee is firmly placed in the Centre for Disease Control and Prevention's (CDC) 'Diabetes Belt,' with the 5th highest rate of diabetes (14.9%) in the US, which is substantially greater than the national average (9.4%). Diabetes is one of the major health care problems in Romania, according to evidence from a study conducted by Badescu *et al.* (2016: 122), with a prevalence of 11.6% and prediabetes of 16.5%. Diabetes affects approximately 77 million people in India, with an 8.9% prevalence (International Diabetes Federation, 2019). Diabetes is highly prevalent among the diverse ethnicities living in the Middle East, according to Al-Maskari *et al.* (2011:1286), with nearly 17% of adults in the United Arab Emirates, 15% of Kuwaitis, and 14% of Saudis diagnosed with type 2 diabetes mellitus. Diabetes cases are expected to rise by 142.9% in Sub-Saharan Africa, from 19.4 million in 2019 to 47.1 million in 2045. South Africa has the second highest number of diabetics among Sub-Saharan African countries (Adedokun *et al.* 2019: 2).

India has the world's second highest number of diabetics (69 million as of 2015) and is one of the epicentres of the global DM epidemic (International Diabetes Federation, 2015). Other South Asian countries with high diabetes rates include Pakistan, Bangladesh, Nepal, and Sri Lanka (International Diabetes Federation, 2015). Diabetes is more prevalent and has poorer health outcomes in South Asian populations (Sohal *et al.* 2015: 7). Diabetes occurs at 50% higher rates in South Asian patients than in the general population (Khan *et al.* 2011: 98). Asian Indians in countries such as the United Kingdom, the United States of America, Fiji, Mauritius, Malaysia, Singapore, South Africa, and the Gulf region of the Middle East have a higher prevalence of diabetes than the native population (Unnikrishnan, Anjana and Mohan 2016: 358). Similarly, Rahman *et al.* (2020: 1) stated that multiple epidemiological studies have consistently shown that South Asian citizens of the United States have a higher prevalence of type 2 diabetes than other immigrants and Caucasians. One such study compared 34,456 adult immigrants in the United States and found that South Asians had a higher prevalence of type 2 diabetes than White European immigrants (Badescu *et al.* 2016: 122). Despite abundant evidence that diabetes management, which include dietary changes, daily exercise, and

adherence to prescribed medications, reduces morbidity by 53-63% and mortality by 46%, diabetes management in South Asian patients remains poor as they are less likely to engage in physical activity and eat healthier (Sohal *et al.* 2015: 13).

2.4 DIABETES IN SOUTH AFRICA

Diabetes affects approximately 19 million people in Africa today, with T2DM accounting for 95% of cases, and is expected to rise to 47 million by 2045. (Godman *et al.* 2020: 51). Undiagnosed diabetes affects 69.2% of Africans, and 77% of all diabetes deaths occur in people under the age of 60, highlighting the magnitude of the diabetes epidemic (International Diabetes Federation, 2017). Rapid globalization, an aging population, and urbanization are driving this, as evidenced by the increasing prevalence of diabetes with economic development (Motta *et al.* 2017: 249). Globally, the prevalence of T2DM and obesity is rising at an alarming rate. South Africa was once considered one of the world's most obese countries (Adam and Rheeder 2017: 523). Due to the epidemiological shift from communicable to noncommunicable or 'lifestyle diseases,' Sub-Saharan Africa, including South Africa, is now facing a double epidemic (Ganjifrockwala, Joseph and George 2017: 22). T2DM is a major cause of morbidity and mortality in South Africa, owing to increasing urbanization and unhealthy lifestyle factors (Pheiffer *et al.* 2018: 1). Several factors, including population aging, economic transition, and metropolitan growth linked to nutrition transition and obesity, have all contributed to the rising prevalence of diabetes (Peer *et al.* 2014: 200).

Diabetes has become increasingly prevalent in South Africa. In 2010, approximately 9% of men and 11.8% of women had diabetes, whilst the NCD Risk Factor Collaboration reported a prevalence of 4.8% and 7.7% for men and women, respectively (NCD Risk Factor 2017: 1429). T2DM was found in 7% of people aged 20 to 79 in another study, with an estimated 2.28 million people with the disease. Diabetes was the fifth leading cause of death in South Africa in 2012, and the third leading cause of death in KwaZulu-Natal, with 1.39 million people still undiagnosed (Ramkisson, Pillay, and Sartorius 2016: 35). According to the Global Burden of Disease study, high BMI and hyperglycaemia were the second and third leading risk factors for early death and disability in South Africa, after unsafe sex, in 2015 (Global Burden of Disease, 2016). Diabetes is linked to numerous micro- and macrovascular complications, putting a significant strain on the South African healthcare system (Pheiffer *et al.* 2018: 2). Many low and middle-income countries are undergoing demographic, nutritional, and epidemiological changes that have resulted in an increase in noncommunicable diseases, and

South Africa is experiencing this quickly, with approximately 2.3 million people affected by diabetes (Macaulay *et al.* 2018: 278).

South Africa has one of the highest diabetes prevalence rates in Sub-Saharan Africa. Diabetes was estimated to affect approximately 2.28 million (8.3%) of the population in 2015. (Adedokun *et al.* 2019: 2). Diabetes is a significant contributor to the disease burden in South Africa, with prevalence rates of 2.4% in men and 3.7% in women (Mash *et al.* 2012: 2). According to Thomas (2019: 24), the Indian population group has the highest prevalence of diabetes in South Africa, with a prevalence of 11-13%. This is followed by 8-10% amongst the Coloured population, 5-8% in the African population, and 4% in the white population. Furthermore, the proportion of diabetic-related deaths in South Africa rose from 5.1% in 2014 to 5.5% in 2017 (Thomas 2019: 3). Similarly, Stokes *et al.* (2017: 2) reported that diabetes is the second leading natural cause of death in South Africa, accounting for 5.4% of all deaths. A study, conducted by Bailey *et al.* (2016: 9) revealed that the prevalence of hyperglycaemia was significantly greater in South African Western Cape communities compared to Zambian communities, which could be attributable to differing diet and lifestyle, levels of physical exercise, or genetic factors between the two regions. As Pheiffer *et al.* (2018: 2) concluded, that due to high rates of communicable diseases, non - communicable disease, child and maternal mortality, and injury-related disorders, South Africa is dealing with a quadruple burden of disease and thus has restricted resources to address the steadily increasing healthcare and financial costs of diabetes.

2.5 RISK FACTORS FOR DIABETES

Diabetes is a self-managed disease that requires patients to perform a variety of activities independently, such as dietary control, physical exercise, glucose monitoring or adjustment, and utilization of health-care services (Lee *et al.* 2020: 452). Knowing what factors are associated with diabetes risk perception may provide insight into how people perceive their own risk. Unfortunately, research on this subject is scarce (Pellulo *et al.* 2019: 5). Diabetes is becoming more prevalent as a result of factors such as an aging population, economic development, rapid urbanisation, unhealthy eating habits, and a sedentary lifestyle (Zheng, Ley and Hu 2018: 88). Living in cities has been linked to an increased risk of diabetes and pre-diabetes. Urbanization is also linked to a decrease in physical activity energy expenditure (PAEE), which is a risk factor for metabolic syndrome on its own (Uloko *et al.* 2018: 1313). Diabetes can be better managed by recognizing its complications and, as a result, improving

nutrition knowledge, attitudes, and practices (Sami *et al.* 2017: 65). Optimal and adequate nutrition, dieting, physical activity, and medicines consumption are the four essential aspects of therapeutic lifestyle modifications in the treatment of diabetes (Gupta *et al.* 2017: 232). Similarly, Lopez *et al.* (2014: 495) stated that family history of diabetes, older age, obesity, a history of gestational diabetes, impaired glucose metabolism, physical inactivity, and race/ethnicity are risk factors for its development. The main causes of the rapid increase in the incidence of type 2 diabetes have also been identified as lifestyle and environmental factors (Sami *et al.* 2017: 67). Nutritional self-management is defined by the American Diabetes Association as an important step in providing people with diabetes with knowledge and skills about treatment, nutritional issues, medications, and complications. Research has found that people who are at high risk of developing type 2 diabetes have poor nutritional knowledge (Mohieldein, Alzohairy and Hasan 2011: 124). Any challenging dietary changes that are difficult to accept in society or by the individuals with whom they live, on the other hand, can eventually lead to non-adherence or non-compliance (Grabowski *et al.* 2017: 7).

2.5.1 Knowledge and patient perception of Diabetes Mellitus

Adherence to treatment can only be improved with knowledge. Disease knowledge and awareness, the complexity of medication regimens or their adverse reactions, financial constraints, psychological characteristics, and a lack of support from others are all contributors to non-adherence (Gupta *et al.* 2017: 235). According to a 2015 study, patients' diabetes knowledge and self-care management are insufficient. Diabetes outcomes are influenced by a lack of awareness about the disease (Mohammadi *et al.* 2015: 522). Research supports the notion that low health literacy is associated with poor management, disease knowledge, and lower adherence to diabetes self-care (Osborn, Bains and Egede 2010:913). A study conducted by Bani in Saudi Arabia, found that the majority of patients were unaware of the significance of diabetes monitoring (Bani 2015: 112). Individuals require the following information to assess their risk: the severity of adverse effects, strategies for modifying vulnerability, and the ease with which harm can be avoided (Rosal *et al.* 2011: 48). Diabetes attitudes, beliefs, and knowledge may influence treatment (Nam *et al.* 2011: 1). A study of Samoans found that common dietary practices, the impact of their history on food choices, and how their cultural traditions interacted with modern lifestyle all influenced patients' perceptions of diabetes risk (Shahab *et al.* 2019: 319). Non-adherence to treatment and disease management can be exacerbated following an unhealthy nutritional diet or lifestyle routines, a lack of physical, emotional, and financial support, and a lack of empathy, understanding, and knowledge

(Vongmany *et al.* 2018: 186). Poor adherence among patients with type 2 diabetes has been attributed to misconceptions about the disease's potential severity and differences in patients' understanding of the disease (Nam *et al.* 2011: 2). Diabetes patients benefit greatly from knowledge and education in order to develop their own self-care practices and routines (Ayele *et al.* 2011: 5). Another study conducted in Slovakia compared two patient groups (those who received diabetes education and those who did not). Diabetes education significantly increased patients' awareness of the disease, as per findings made ($p < 0.001$) (Magurova *et al.* 2012: 97). The study also revealed that diabetes education can enhance a patient's overall quality of life and reduce the strain on their family.

2.6 PSYCHOSOCIAL EFFECTS OF DIABETES

People with T2DM must adapt to new lifestyles by changing their physical and psychological behaviours. Several studies have linked T2DM to significant psychological impairments, particularly depression, anxiety, and stress. People with T2DM have significantly higher rates of depression (22.4%) and anxiety (32%), compared to the general population (10%), which has an adverse effect on the disease itself (Bassi *et al.* 2021: 1). Self-care considerations in chronic care management can be difficult. Patients frequently find themselves in practical and moral quandaries regarding their self-care activities, resulting in issues of honour and shame (Guassora *et al.* 2014: 197). Furthermore, because most self-management tasks must be completed multiple times per day, many patients may become chronically frustrated, discouraged, or frustrated with the disease, which frequently appears unresponsive to their best efforts (Lee *et al.* 2020: 452).

Over the last 25 years, healthcare providers and researchers have come to recognize the value of a patient centred approach for people with medical conditions (Inzucchi *et al.* 2015: 145 and Scholl *et al.* 2014: 5). According to Heltberg *et al.* (2017: 58), some patients with severe T2DM are exposed, due to concurrent chronic diseases and complex psychosocial needs. Psychological challenges represent the negative emotions and experiences associated with diabetes, where "everything is a mountain to climb" (De Wit *et al.* 2020: 6). Clinical depression and diabetes distress are common emotional states among diabetics, and they can significantly impair glycaemic control, reduce the frequency of blood glucose monitoring, and increase microvascular complications, healthcare expenditure, and use (Van Buren *et al.* 2018: 86).

Psychosocial well-being is an aspect of T2DM patients that is frequently overlooked (Ozcan *et al.* 2018: 1855). Diabetes distress refers to the emotional burden, stress, and worry associated

with diabetes. Diabetes distress may be increased by the daily demands of people with type 2 diabetes (Mathiesen *et al.* 2019: 19). Depression is slightly more common in diabetics, with most cases going undiagnosed (Badescu *et al.* 2016: 121). According to the Diabetes Study, more than 40% of all people with type 2 diabetes have moderate diabetes distress, and nearly 30% have severe diabetes distress (Ozcan *et al.* 2018: 1855). A qualitative study conducted by Kristensen *et al.* (2018: 345), found that all patients were familiar with the medical prescriptions and physical exercise, but the majority of patients expressed difficulty in adopting the recommended lifestyle change. Some patients with psychological disorders used sedentary strategies to reduce stress and find psychological ease, such as playing computer games or smoking cannabis, in the same study.

According to published studies, approximately 12% of people with type 1 diabetes and 18% of people with type 2 diabetes suffer from depression (Speight *et al.* 2012: 2). Negative emotions and experiences related to disease complications include uncertainty about the future; people are afraid of their health deteriorating. The majority of patients are concerned about losing limbs, vision, or kidney function (De Wit *et al.* 2020: 7). In contrast, Kristensen *et al.* (2018: 345) stated that, while emotional rather than medical aspects dominate patients' experiences of chronic diseases, despite significant symptoms, most patients in this study actively focused on the positive side of life.

The American Diabetes Association and other diabetes organizations recommend a psychosocial evaluation of diabetics to improve diabetes-related health outcomes. Gupta *et al.* (2016) A diabetes diagnosis is perceived to disrupt self-character, requiring critical self-assessment and, in most cases, a lengthy process of reconciling the requirements of diabetes management with leading a full life (Burridge *et al.* 2014: 75). Furthermore, in recent studies of insulin-naïve type 2 diabetes patients, 33% reported a reluctance to take insulin if it was prescribed. Patients viewed insulin treatment as evidence of personal failure to deal with the illness (Nam *et al.* 2011: 2). Patient-related factors like illness comprehension, stress management, and motivation for control; family-related aspects such as social or monetary support; treatment-related aspects such as simplicity and suitability of routine; or factors related to medical care, such as easy access to competent doctors and a relationship with medical experts, all assist in self-management (Polonsky and Henry 2016: 1301; Hilliard, Powell and Anderson 2016: 593).

2.7 FAMILY SUPPORT AND CULTURAL INFLUENCES

Families are frequently the first line of assistance for those with type 2 diabetes, and they play a crucial role in its management. They frequently, however, have limited diabetes management resources and knowledge (Scarton *et al.* 2016: 144). Diabetes distress has been linked to a lack of social support, and social stigma frequently prevents people from discussing or seeking help for psychological issues (Seamark and Gabriel 2018: 125). Regardless of their views on self-care, most patients stated that their doctor was an important supporter of self-care and saw them as a companion or guardian (Kristensen *et al.* 2018: 345).

As part of individual treatment and healthcare, family support and social relationships are advantageous for improved blood sugar control and general quality of life (Miller and DiMatteo 2013: 423). Positive family involvement can encourage positive choices and assist the patient in identifying and overcoming adherence barriers (Vongmany *et al.* 2018: 186). It can have an impact on the patient's psychological health, offer additional guidance and financial assistance, and instil self-belief in them to follow advice, resulting in behaviour change to implement a balanced diet, lifestyle, exercise, and medical regimen (Vongmany *et al.* 2018: 186). Family involvement can also contribute to improvement in glycaemic control and diabetes self-management through shared health-related tasks or activities (Baig *et al.* 2015: 95). It maintains track of the progress in their clinical condition or the progression of health problems (Vongmany *et al.* 2018: 186). Finally, it increases motivation for self-sufficiency, positive behaviour, and independent attitudes toward the disease (Markle-Reid *et al.* 2017: 6 and Pamungkas, Chamroonsawasdi and Vatanasomboon 2017:7).

The impact of a patient's disease on the life quality of their relatives may have a significant effect on the level of care and adherence to treatment that the patient receives (Golics *et al.* 2013: 795). Despite the benefits, family involvement can lead to obstructive behaviours, refusal to share the burden, and limited family support or engagement (Bennich *et al.* 2017:4). Similarly, Abdoli *et al.* (2019: 36) came to the conclusion that participants experienced social stigma, with community members viewing type 2 diabetes as a self-inflicted disease caused by a lack of self-control and obesity, and that this social stigma influenced participants' disclosure. Friends and family are critical, treating the individual as if they were a sick person first, before becoming a member of the family (De Wit *et al.* 2020: 7). Unresolved psychological and social issues frequently have a detrimental effect on the patient's well-being and social life (Kalra *et al.* 2018: 698). Incorporating psychological, emotional, behavioural, and social factors into

treatment modalities would assist in the reduction of psychological barriers to diabetes adherence and self-care (Kalra *et al.* 2018: 698).

It is often difficult for people to engage in the various health behaviours required for good glycaemic control on a consistent basis. Competing for daily demands, frustration, other forms of emotional distress, and a lack of self-commitment are all obstacles (Tong *et al.* 2015: 5). Moreover, inadequate social support from members of the family has been linked to poor diabetes self-management (Miller and DiMatteo 2013: 427). Research undertaken by Pamungkas, Chamroonsawasdi and Vatanasomboon (2017: 5), family support has a positive effect on patients' self-management behaviours. Diabetes care is influenced by the fact that people with T2DM are nested within their families. Family members can offer both practical and emotional assistance (Baig *et al.* 2015: 93).

Instrumental support involves assisting patients with particular tasks such as scheduling medical appointments or providing assistance with insulin injections. Emotional support can include reassuring and encouraging patients who are distressed or frustrated as a result of their diabetes care (Baig *et al.* 2015: 93). Pamungkas, Chamroonsawasdi and Vatanasomboon 2017: 8) conducted a systematic review of 23 existing studies (between 2008 and 2016) that examined the effects of involving the family as a primary source of social support for T2DM patients' self-management. The findings confirmed the significance of family involvement in T2DM health outcomes. Diabetic patients can benefit from the active support and care of family members (Baig *et al.* 2015: 93). A study of over 5000 adults with diabetes discovered that family, friends, and co-workers all play an important role in improving well-being and self-management (Kovacs *et al.* 2013: 768). Social support was found to be associated with improved self-reported health in a long-term follow-up study of middle-aged and older adults with type 2 diabetes. Family cohesion and functioning have also been linked to better self-care behaviors and blood glucose control in patients (Nicklett *et al.* 2013: 935; Walker *et al.* 2015: 83). According to Hu *et al.* (2014: 52), participating in educational interventions with family members may provide support to diabetes patients, aid in the development of healthy family behaviours, and encourage diabetes self-management.

Patients' family and friends can help them overcome obstacles to diabetes self-management, but their actions can also be harmful (Baig *et al.* 2015: 93). Close relatives can encourage the patient to change the types of food prepared or consumed, and enjoy similar foods in a relaxing environment, participate in physical activities, accompany the patient to medical appointments,

reprioritize family finances and make necessary lifestyle changes (Wichit *et al.* 2017: 39). All of these supportive actions will help patients improve their dietary habits, treatment adherence, healthcare, and clinical outcomes (Ahmed and Yeasmeen 2016: 105). The family structure, as well as its beliefs and problem-solving abilities, can amplify the stress and strain associated with disease management. The changes in lifestyle necessary for optimal diabetes self-management frequently conflict with existing family routines (Manoogian, Harter and Denham 2013: 85). According to participants in studies of adults with type 2 diabetes, non-supportive behaviour patterns of relatives were associated with being less adherent to one's diabetes treatment plan and having relatively poor glycaemic control (Mayberry, Rothman and Osborn 2014: 135). Patients suffering from major depression or adults with low health literacy may be more vulnerable to the negative effects of obstructive behaviours in the family (Mayberry, Rothman and Osborn 2014: 135; Mayberry *et al.* 2015: 366). Diabetes self-management requires family members to have knowledge of the disease, strategies for changing family routines, and optimal ways to cope with the disease's emotional aspects (Baig *et al.* 2015: 93). In this context, a 2017 study examined interconnected problem domains (knowledge, communication, support, daily life, roles, and concerns) to help comprehend how family involvement can be endorsed in health systems (Grabowski *et al.* 2017: 7). Attending health education programs may benefit family members more directly by reducing their own psychological distress about their loved one's diabetes and improving their own health behaviours (Sorkin *et al.* 2014: 121). According to Ramkisson, Pillay, and Sartorius (2016: 38), retired homemakers were found to have significantly lower levels of distress among South African participants, possibly because they had fewer stressors to deal with and more time to adhere to the strict medication and self-care regimes. Similarly, marital status was linked to lower levels of distress, most likely due to spousal support. Another South African study discovered that family support for food preparation and serving improves diabetes outcomes (Mphasha, Mothiba and Skaal 2021: 93).

2.8 CULTURE AND DIABETES MANAGEMENT

In patients from various racial and ethnic minority groups, family involvement in diabetes self-management has been shown to be important. Culture and language also influence patients' health beliefs, attitudes, and literacy, which has an impact on management (Nam *et al.* 2011: 1). Recognizing a patient's family and cultural environment is essential for promoting diabetes self-care and considering how to culturally tailor interventions for patients from racial/ethnic minority populations (Baig *et al.* 2015: 95).

Type 2 diabetes is especially prevalent among ethnic minorities living in Western societies (Ozcan *et al.* 2018: 1855). African Americans and Native Americans have higher rates of type 2 diabetes risk factors than other racial/ethnic minority groups (Karter *et al.* 2013: 575). Ethnic minorities have a higher rate of end-stage diabetes complications and related mortality (Ozcan *et al.* 2018: 1855). Young girls in Sub-Saharan Africa are encouraged to gain weight in order to be fertile and bear children after marriage, and there is a strong belief that when a woman gains weight, she is happily married and well cared for by her husband (Appiah, Otoo, and Steiner-Asiedu 2016: 3). Cultural barriers to physical activity can increase the risk of type 2 diabetes. Participating in leisure time activities, for example, means spending less time doing housework for South African women (Goedecke *et al.* 2017: 88). Due to limited access to culturally appropriate care and noncompliance with health recommendations due to religious beliefs, ethnicity contributes to diabetes risk (Oo, Nau and Kyi 2020:2). Beliefs about health care are culturally constructed and influence people's treatment decisions (Permana 2018: 188). Prayer, which includes reading scriptures, singing hymns, and giving testimonies, was found to be an important part of illness management in the same study. Prayer, Qur'an recitation, remembrance of Allah, fasting, charity, prophet's methods, and modified Islamic methods are the most common spirituality interventions among Muslims, particularly among those in a critical care setting (Permana 2018: 188). Carbohydrates are already abundant in the Indian diet (Banerjee, Chakraborty and Pal 2020: 352). According to a study conducted among Bamar diabetics, it is common practice for women over the age of 40 to consume one tablespoon of sugar every night to prevent premenopausal symptoms, thereby increasing their blood glucose levels (Oo, Nau and Kyi 2020: 5). When there is no cultural barrier, patients with T2DM find it simpler to adhere to his\her diet (Ramsameer 2016: 33).

A study conducted in Kenya found that ritual obligations observed among the Swahili of Lamu town had a negative influence on diabetic patients' self-management behaviour, such as attending cultural events, which is detrimental to dietary adherence (Abdulrehman *et al.* 2016: 5). According to the same study, the traditional diet in Lamu town is high in starch and low in protein and vegetables (Abdulrehman *et al.* 2016: 5). According to a South African study, cultural practices regarding traditional foods were discovered to be a barrier to nutrition and dietary management, in the efforts to improve diabetes (Ebrahim, De Villiers and Amhed 2014: 81-82). Another South African study found that self-management of diabetes is defined as a physically and emotionally dangerous disease and is influenced by the patient's food culture. It was defined as a self-control exercise heavily influenced by complex interactions between the

patient's traditional and religious beliefs (Masupe *et al.* 2018: 47). Future research examining how ethnic differences affect management and risk factors is still required, as are additional investigations into the causes and implications of missing ethnicity data (Mathur *et al.* 2020: 9).

2.9 DIABETES AFFECTING WORK LIFE

The occupational context may be particularly difficult in this regard because diabetes self-management is only possible if it is seamlessly incorporated into daily work life. The working population with diabetes spends one-third of their time at work, but the difficulties unique to juggling diabetes management and work life have received little attention (Lee *et al.* 2020:452; Hansen *et al.* 2018: 73). The main factor that may contribute to poor glycaemic control among diabetic workers is a lack of time for self-management. Long work hours can also make it difficult for people to properly manage their diabetes because they have less time to monitor their blood sugar levels, take oral or insulin medication as needed, and/or eat balanced meals at regular intervals (Lee *et al.* 2020: 453). The primary occupational factors that hinder diabetes self-management include time constraints, the need to complete unforeseen tasks or attend unforeseen events, disruption of regular work schedules, physically taxing tasks (which complicate glycaemic control), and a lack of access to appropriate foods (Loerbroks *et al.* 2018: 131). Longer working hours can worsen glycaemic control because they put more strain on the body while at work. Long workdays are frequently likely to be accompanied by demanding jobs. Negative coping mechanisms, such as overeating, could result from the increased stress levels (Lee *et al.* 2020:453). Furthermore, negative behavioural patterns of neglecting diabetes self-management may also be influenced by a lack of privacy, a feeling of being watched, and unhygienic conditions (Loerbroks *et al.* 2018: 132).

The workplace is a crucial setting for the formation of social bonds and the expression of social identity (De Wit *et al.* 2020: 6). Numerous diabetics reported that the extent to which their co-workers and/or their employers supported them at work, had a significant impact on how their diabetes affected their work life (Cleal *et al.* 2019: 92). Bullying and violence can negatively impact one's ability to cope and one's self-esteem. They have also been associated with a higher risk of developing chronic illnesses, such as type 2 diabetes (Xu *et al.* 2018: 76). Physical disabilities and diabetes management responsibilities must coexist with work life. Throughout their lives, people can suffer from societal stigma, which can have a negative impact on their well-being, willingness to seek assistance, and self-care (for example, refusing to inject insulin

in public to avoid drawing attention to themselves) (De Wit *et al.* 2020: 6). Additionally, feelings of guilt associated with managing diabetes at work due to stigma and discrimination perceptions, frequently result in employees needing workplace accommodations (Lee *et al.* 2020: 453). In a study by Cleal *et al.* (2019: 96), it was found that, in some cases, discrimination was caused by employers' failure to understand the needs of people with diabetes. Participants in the study stated that employers needed to understand that stress at work and a lack of predictability have a negative impact on blood sugar levels. Numerous recent epidemiological studies have shown that mental health issues are a major cause of work disability among diabetics and have highlighted the significance of a favourable psychosocial work environment for people with diabetes (Ervasti *et al.* 2016: 210). Diabetes management is more challenging for both men and women who experience significant social stressors and workplace discrimination (Xu *et al.* 2018: 80).

Despite the fact that diabetic patients experience distress frequently, research indicates that a large portion of work-related distress is potentially avoidable, and that making line managers and co-workers available as social support networks may help reduce the burdens that diabetes patients experience due to their jobs (Hakkarainen *et al.* 2016: 6, Cleal *et al.* 2019: 98). According to a study by Raymond *et al.* (2019: 308), health coaching and financial incentives enhanced glycaemic control over a 5-year period. Recent research has advocated for the implementation of interventions aimed at all employees with type 2 diabetes, which may be an effective way to cut costs associated with lost productivity (Brown *et al.* 2018: 1036). Workplace diabetes prevention initiatives, using both primary and secondary prevention perspectives, appealed to employees and showed promise for effective implementation. (Brown *et al.* (2015: 177), made this conclusion. This was found, according to the authors' focus group interviews with 36 local employees Workplace health programs appear to be more accessible than traditional ones because they do away with many barriers to participation, such as the need for transportation and competing family commitments (Centre for Disease Control and Prevention, 2016).

Higher absenteeism, disability retirement, and lower lifetime earnings are all associated with diabetes (Hansen *et al.* 2018: 73). McCarthy *et al.* (2021: 218) discovered that, despite the fact that many adults with diabetes are productive workers, diabetes has been associated with a decline in work productivity. In the Middle East and Northern Africa, the adult population's missed days of work and the financial burden of lost productivity are the indirect costs of diabetes that are the most concerning (Bommer *et al.* 2017: 423). A study done with diabetic

patients in Nigeria, found that diabetes related co-morbid depression and joblessness are positively correlated (Igwe *et al.* 2013: 69). According to Akena *et al.* (2015: 10), who conducted a study in Uganda, there are a variety of explanations that could account for these results, including the stress that people experience when they lose their jobs or other sources of support. This stress may have contributed to the development of depression. Another study undertaken in South Africa, by Ramkissoon, Pillay, and Sartorius's (2016: 37), found that unemployment significantly increased diabetes distress levels.

2.10 COMORBIDITIES ASSOCIATED WITH DIABETES

Diabetes is a serious, lifelong condition that raises the risk of heart disease, vascular death, and depression (Engstrom *et al.* 2016: 1). Over three million people per year lose their lives to diabetes and its complications. The patient's health, productivity, and quality of life are all negatively impacted by the serious complications that are linked to this disease. More than half of diabetics die from cardiovascular disease (CVD), primarily heart disease and stroke, which is the only cause of end-stage renal disease and calls for dialysis or kidney transplantation (Sami *et al.* 2017 and Rizkalla 2014: 375).

Patients with diabetes frequently have comorbid conditions, with DM patients having at least one comorbid condition and 88.5% having two or more, according to statistics (Ho, Chen and Lou 2018: 193). Ilhan *et al.* (2021: 74) stated that diabetics run the risk of developing serious side effects like CVD, nephropathy, retinopathy, and neuropathy when blood sugar control is not attained. Close monitoring of glucose, lipid, and blood pressure levels is necessary to reduce the risk of complications and the progression of the disease because CVD is the main cause of morbidity and mortality in type 2 diabetics (Chatterjee, Khunti and Davies 2018: 2239). Diabetes is one of the main causes of premature heart attacks and death because it develops 5 to 10 years earlier (Sohal *et al.* 2015: 2). For people with type 1 diabetes, the cause of death is 44%, and for people with type 2 diabetes, it is 52%. The age-adjusted prevalence of coronary heart disease among white Americans is nearly twice as common in those with type 2 diabetes as it is in those without because type 2 diabetes doubles the risk of death from cardiovascular causes by a factor of two to six (Glovaci, Fan and Wong 2019: 3).

More than 200 countries have been affected by the novel coronavirus disease (COVID-19), which has already claimed thousands of lives (Banerjee, Chakraborty and Pal 2020: 351). Despite the low overall mortality rate, diabetes has become a distinct comorbidity in COVID-19 patients, associated with severe disease, acute respiratory distress, and increased mortality.

Various studies found different rates of diabetes among COVID-19 patients. According to studies, prevalence rates in Chinese patients ranged from 5.3% to 8.2% (Guan *et al.* 2020: 1710; Wu and McGoogan 2020: 1240). A number of factors may contribute to the increased risks of COVID-19 severity and poor prognosis associated with hyperglycaemia. First, studies have demonstrated that having numerous chronic conditions increased the risk of composite endpoints and death rates in COVID-19 patients. Diabetes patients were more likely to have other comorbidities like high blood pressure, heart disease, and kidney problems (Zhang *et al.* 2020: 2).

According to a study done in India, DM has become a distinct comorbidity that is linked to severe illness, acute respiratory distress syndrome, and higher mortality in people with the coronavirus (COVID-19) (Banerjee, Chakraborty and Pal 2020: 351). In a recent Chinese study carried out during the COVID-19 pandemic, it was discovered that older people with type 2 diabetes mellitus had worsening glycaemic control, as evidenced by higher fasting blood glucose levels (Xue *et al.* 2020: 6). Comorbidities require older diabetic patients to receive more complicated medical care. These older patients may experience increased self-management stress due to heavier burdens, more complicated prescriptions, and a higher risk of severe comorbidities (Ho, Chen and Lou 2018: 203).

In order to empower patients and alter outcomes like better diabetes management, delayed progression, and increased medication adherence, it is important to understand how they perceive their condition (Balasubramaniam *et al.* 2019:2589). Additionally, altering one's lifestyle, including losing weight, increasing physical activity, and adopting a healthy diet, continues to be one of the primary methods for managing diabetes (Zheng, Ley and Hu 2018: 95). Highly active antiretroviral therapy (HAART) and metabolic issues like dyslipidaemia, dysglycemia, and diabetes mellitus, however, have been linked in several studies (Dimala *et al.* 2016: 1). Lin *et al.* (2018: 1-2) claim that long-term HAART use has increased the risk of diabetes mellitus in HIV-infected patients. Inflammation, HIV infection, and HAART interactions were thought to significantly increase the risk of diabetes in earlier research (Lin *et al.* 2018: 1-2).

2.11 MANAGEMENT AND CONTROL OF DIABETES

Type 1 diabetes mellitus is currently treated with insulin, and type 2 diabetes mellitus, is treated with other oral hypoglycaemic medications like sulphonylureas, thiazolidinediones, and peptide analogues (Bordoloi and Dutta 2014: 88). Through an improvement in the patient's

dietary knowledge, attitudes, and practices, diabetes mellitus can be managed. These elements are viewed as essential components of all-encompassing diabetes care (Islam *et al.* 2015: 5). Effective adherence and glycaemic achievement largely depend on improving the facilitating behaviours, overcoming the negative behaviours, and optimizing or reinforcing the equivocal behaviours (Vissenberg *et al.* 2017: 336). By controlling blood sugar levels with various medications, engaging in various forms of exercise or yoga therapy, or following a specific diet plan, the disease can be avoided (Narayan, Patra and Dinda 2012: 45).

Dietary guidance is essential for managing and preventing type 2 diabetes (England *et al.* 2017: 191). Clinical studies have demonstrated that carbohydrate restriction and weight loss can reduce hyperglycaemia, obesity, and type 2 diabetes mellitus in people with obesity-related type 2 diabetes. However, those who have type 2 diabetes report that understanding and making healthy eating decisions are the most difficult aspects of having the condition. They also find conflicting and confusing dietary advice (England *et al.* 2017: 191). A diet high in fibre and low in saturated fat, sugar, and salt is advised in order to improve glycaemic control (Ley *et al.* 2014: 2001). Globalization has also caused a rapid change in food traditions, so it is fair to say that these broad perspectives on food have an impact on the self-management of type 2 diabetes in a number of different ways (Knusten *et al.* 2017: 300).

2.12 TRADITIONAL MEDICINE AND DIABETES

In order to prevent diabetes mellitus, 800 medicinal plants are used, according to the World Ethnobotanical Organization (Verma *et al.* 2018: 2). The most common type of primary care is traditional medicine, which includes common foods and herbs. Studies have shown that 80% of people in developing countries use traditional medicines as their main form of treatment for a variety of illnesses (Valdez-Solana *et al.* 2015: 3). The same study came to the conclusion that some patients use traditional medicine instead of going to the hospital to get their medications. Similar to this, some participants mentioned using traditional medicines as a backup and to help defray the cost of conventional medicines, if they were unable to afford them (Kasole, Martin and Kimiywe 2019: 9). According to reports, 67.2% of diabetic patients in Northern Tanzania manage their diabetes with traditional medicine (Kasole, Martin and Kimiywe 2019: 1). To the contrary a study of diabetics in Bamar revealed that although patients sought both traditional and modern medical care, they believed that using only traditional methods could completely cure their condition (Oo, Nau and Kyi 2020:4).

In developing nations like South Africa, the use of herbal remedies to treat diabetes mellitus is on the rise (Odeyemi and Bradley 2018: 1). The use of "traditional" medicines in South Africa's pluralistic healthcare system is frequently reported to be as high as 80%, though usage varies by province and between rural and urban areas (Davids, Gibson and Johnson 2015: 756). The study by Davids, Gibson, and Johnson (2015: 758), found that more than half (52.79%) of their sample reported using traditional medicine at least once a day for two weeks. Few participants in a study of 27 black women in Soweto sought treatment from a traditional healer for glycaemic control (Mendenhall and Norris 2015: 4). Due to the widespread perception that pharmaceutical products on the market cause severe complications when used for an extended period of time, many South African patients seek treatment from traditional healers (Semenya, Potgieter and Erasmus 2012: 441).

2.13 CONCLUSION

Globally, type 2 diabetes mellitus has been shown to be very burdensome (Cannon *et al.* 2018: 5). The potential for qualitative research related to the influence of psychosocial factors in diabetes care has increased due to the growing emphasis on patient self-care, medication adherence, and diabetes management. In order to better understand how experiences, beliefs, attitudes, and behaviour patterns affect clinical procedures and outcomes, researchers and healthcare professionals in the field of diabetes use qualitative methods (Ritholz, Beverly and Weinger 2011: 496 and Gupta *et al.* 2016: 1). A high prevalence rates of diabetes contributes significantly to the disease burden in South Africa (Mash *et al.* 2012: 2). As previously mentioned, the Indian population in South Africa, has the highest prevalence of diabetes (11–13%). The Coloured population follows with 8–10%, the African population, with 5-8%, and the White population with a prevalence of 4% (Thomas 2019: 24). Additionally, from 5.1% in 2014 to 5.5% in 2017, more South Africans died from diabetes-related causes overall (Thomas, 2019: 3). It may be possible to help people recognize their risk by identifying the variables that influence how people perceive their diabetes risk. Sadly, not much research has been done on this topic (Pellulo *et al.* 2019: 5). Lack of diabetes awareness affects diabetes outcomes. Studies show that poor management, knowledge of the disease, and lower adherence to diabetes self-care are all related to low health literacy (Osborn, Bains and Egede 2010: 913 and Mohammadi *et al.* 2015: 322). Diabetes distress is the emotional strain, stress, and worry brought on by having the disease. The daily demands of those with type 2 diabetes may make diabetes distress worse (Mathiesen *et al.* 2019: 19). Although friends and family can assist patients in overcoming diabetes self-management challenges, family members' actions can also be

detrimental (Baig *et al.* 2015: 93). This literature review examined the psycho-social and emotional aspects of having diabetes as well as its management during treatment. The design and methodology used to guide this study, together with the methods used to gather crucial data for the study, are covered in the chapter that follows.

CHAPTER THREE: METHODOLOGY

3.1 INTRODUCTION

Data must be gathered, processed, analysed, and interpreted as part of a research project in order to provide an answer to a specific question or provide a solution to a specific problem (Rai and Thapa 2015: 2). Research is done to learn new information, educate future researchers, create cutting-edge analytical techniques, and investigate new treatments for diseases and other global issues (Caparlar and Donmez 2016: 212). The study design, study area, sample population, sampling techniques, data collection methods, and data collection tools are all described in this chapter. In addition, the ethical issues are discussed in this chapter.

3.2 RESEARCH PARADIGM

The study philosophy adopted by the researcher, and the choice of research methodology, determines the research objective(s), research instruments created and used, as well as the researcher's search for a solution to the issue under investigation (Khaldi 2017: 16).). The two primary research paradigms, namely, qualitative, which is typically associated with the social sciences, and quantitative, which is typically associated with the natural sciences, will be established by these two research frameworks.

Numerous techniques are used in quantitative research to examine the relationship between variables and test objective hypotheses. These variables can be measured in turn, enabling statistical analysis of numerical data (Creswell 2003:4 and Roger 2015: 1). The systematic examination of social phenomena expressed in ways that "describe, illuminate, and explain the object of study" constitute the tenets of qualitative research (Bearman 2019: 8). Qualitative research emphasizes comprehending a research question, as a humanistic or idealistic method. It is a technique for looking into and understanding the meaning that people or groups assign to a social or human issue. Whilst qualitative research is used to gain a better understanding of people's views, perspectives, attitudes, behaviours, and interactions, quantitative research is more dependable because it is based on numerical information and techniques that can be made objectively and replicated by other investigators (Creswell 2003:6 and Vibha, Bhijaini & Sanjay 2013: 192). It is based on first-hand observations of humans acting as meaning-making agents in their daily lives and emphasizes the "why" of social phenomena rather than the "what." The primary aim of qualitative research is to shed light on the perspectives of the

participants or patients, who are the focus of a study. It makes use of "emergent design," a method that iteratively combines data analysis, preliminary data inspection, and data collection.

In qualitative research, which aims to fully comprehend a research subject rather than predict outcomes, the interpretivist and constructivist paradigms are used (Denzin and Lincoln 2011:4). Creswell and Poth (2018:7) claim that interpretivism aims to advance knowledge by comprehending people's various points of view and the meanings attached to them. In general, qualitative research is sensitive to both the perspectives of the researchers and the participants and values people's lived experiences (Tomaszewski, Zarestky & Gonzalez 2020: 2). By using focus groups and interviews as a data collection method, qualitative research emphasizes the essence of a lived experience or phenomenon that can be observed or felt by people with divergent viewpoints (Tomaszewski, Zarestky & Gonzalez 2020: 2; Mittal 2010: 2). In qualitative research, subjectivity is accepted, and the researcher frequently participates in the measurement process and has a significant impact on the conclusions drawn from the data. The researchers go through several stages of data interpretation during the data analysis process to turn the data into descriptions of themes, patterns, or theoretical models (Haven and Van Grootel 2019: 236). In order to explore the experiences of patients with diabetes and the management thereof, a qualitative research method was used to guide the current study. This particular methodological approach was selected, because it advances a deeper comprehension of this human condition, in various contexts of a perceived situation (Bengsston 2016: 8). The purpose of qualitative descriptive research is to provide a concise overview of specific events that individuals or groups of individuals have encountered (Lambert and Lambert 2012: 1).

3.3 RESEARCHERS' ROLE AND REFLEXIVITY

Understanding how researchers understand and carry out their role in research is crucial because it has a significant impact on the ethical conduct of research (Cumyn *et al.* 2018: 621). Reflexivity is a place to begin self-studying and to investigate relationships with others (Kirk 2005: 233). As a result, in order to be reflexive, we must consider both our roles as researchers and the relationships that enable us to fulfil those roles (Harrison *et al.* 2012: 5; Lunenberg and Samaras 2011: 3). Reflexivity is a type of critical thinking that aims to articulate the contexts that shape research processes and, as a result, the knowledge generated (Lazard *et al.* 2020: 160). The objective is to map the effects, opportunities, and constraints of a particular method of approaching a subject. Dodgson (2019: 220) argued that if a researcher explicitly explains

the contextual intersections between the participants and themselves (reflexivity), it not only strengthens the validity of the results but also broadens comprehension of their work.

Reflexivity is necessary throughout the entire research process, from developing a research question to gathering and analysing data, to deriving conclusions (Bradbury-Jones 2007: 5; Guillemin and Gillam 2004: 21). For instance, self-reflection during an interview enables the researcher to identify questions and content that they tend to emphasize or avoid, as well as become conscious of their own reactions to interviews, opinions, emotions, and their triggers (Berger 2016: 3). By asking open-ended questions and, when necessary, follow-up questions to participants, the researcher made sure that the research was carried out ethically. In addition, the researcher kept a reflective journal in which, following each interview, she recorded her thoughts and ideas. The researcher meticulously recorded her interactions with the participants, her values and beliefs and how they might have affected the study. She also made procedural notes on what was done and why.

3.4 STUDY SETTING

The study setting is the physical, social, and cultural environment in which the researcher conducts the study. In qualitative research, the emphasis is primarily on the significance of the study, and the researcher observes participants in their natural environment (Bhattacharya 2019: 162). This study was conducted in Durban, or its administrative entity eThekweni Municipality which is a large metropolitan city located on the east coast of South Africa, within the largely rural province of KwaZulu-Natal (KZN). The third largest of South Africa's metropolitan areas, Durban is the largest city and port on the continent's east coast (eThekweni Muni 2014a). The culture and people of the eThekweni region are diverse. Native Africans make up most of the population (74%) followed by Indian, White, and Coloured people (17,7,2) (Stats SA 2012). With a population of 3.66 million, Durban has high rates of unemployment, poverty, and informality, with 42% of residents being classified as poor. Many residents of the city also reside in 'rural' areas that are within the city's boundaries.

Participants were selected from in and around the Durban vicinity with assistance from the Diabetic Association. The Diabetic Association is a welfare organisation which provides support and information to people with diabetes. It has a network of branches and support groups around the country. The Diabetic Association is a member of the International Diabetes Federation (IDF), which represents 146 diabetes organisations in 121 countries and representatives are intimately involved in several working committees on this prestigious body

(Diabetes South Africa, n.d para. 3). The Association acts in the general interest of people with diabetes by promoting awareness and campaigning for more cost-effective treatment. The mission is to enhance the lives of people affected by diabetes (Diabetes South Africa, n.d para. 1). This is done through wellness groups as well as activities and information on their social media accounts.

3.5 SAMPLING PROCESS

3.5.1 Study Population

A study population is a large number of individuals or things that are the focus of a specific scientific investigation. The population of interest is the study's intended research or treatment population. Enrolling the entire target population in clinical research studies is frequently inappropriate or impractical. Instead, researchers will draw a sample from the relevant population to include in their study (Majid 2018: 2). African, Indian, and White groups of diabetic patients from various racial backgrounds made up the study population.

3.5.2 Sampling Strategy

A sample is a small group that has been chosen to represent the entire population. Sampling is the process of choosing a sample for a study with the goal of drawing conclusions about the entire population. When selecting observations from a population to include in the sample for a sample survey, a sampling method is used (Rai and Thapa 2015: 2). To select a sample from a sampling frame, there are essentially two options: probability and non-probability. The non-probability sampling method was appropriate in relation to the objectives of the study. Non-probability sampling is a sampling technique that is predicated on the notion that any particular universe-wide constituent will have a chance of being included in the study sample (Etikan and Bala 2017: 2). The five non-probability sampling designs are quota sampling, accidental sampling, judgmental sampling or purposive sampling, expert sampling, snowball sampling, and modal instant sampling. The researcher decided to use purposeful sampling for this investigation. When choosing the units to be studied (such as people, cases/organizations, events, or pieces of data), the researcher must use judgment, which is why purposeful sampling is also referred to as judgmental, selective, or subjective sampling. The sample being studied is typically quite small, especially when compared to probability sampling techniques (Saunders, Lewis and Thornhill 2012: 5). The Diabetic Association assisted the researcher in the recruitment of participants. Attached is a letter of permission requesting assistance, to recruit participants (Appendix A). Additionally, contact was made with a senior educator who oversees the Association's diabetic patients, and Gatekeepers permission was granted for the

study to proceed, using participants linked to the Association (Appendix B). The Association also informed its members about the study, and those who were interested in participating, contacted the senior educator, who then gave the researcher a list of participants along with their contact information. The Association was made aware that a diverse group of participants was needed for this study, both in terms of gender and race.

3.5.3 Study Sample

An initial sample size of 16 participants was selected for this study with a minimum of 4 participants across the ethnic groups. Data was collected till saturation. Data sufficiency or information redundancy, which means no new information is obtained, is how the term "data saturation" is best defined (Braun and Clarke 2019: 201). Many researchers agree that data saturation is a major factor in determining the appropriate sample size for a qualitative case study (Aguboshim 2021: 180). Data saturation is the "gold standard" for qualitative research of the highest calibre. The focus of qualitative research is on the various perspectives and opinions of participants rather than the total number of participants (Hancock *et al.* 2016: 2124). Saturation was achieved after sixteen participants were interviewed. There are no new data, themes, coding, or data when data saturation is reached, and the study cannot be replicated (Fusch and Ness 2015: 1409). Researchers who use qualitative case studies are unlikely to agree on the precise sample size needed to reach saturation (Marshall *et al.* 2013: 14). This is due to the fact that there are no universal study designs and that the focus of qualitative research is typically not sample size or generalization but rather sample adequacy that can justify saturation (Fusch and Ness 2015: 1411; Aguboshim 2021: 182). Many people support the idea of data saturation based on rich and thick data rather than just sample size (Azmat and Rentschler 2017: 321).

3.6 ELIGIBILITY CRITERIA

An individual's qualification to participate in a research study is determined by the eligibility requirements in the study. Prior to the submission of an ethics application and the beginning of data collection, these standards are established (Majid 2018: 3; Kamangar and Islami 2013: 5). The inclusion and exclusion criteria that make up eligibility standards specify who can be objectively and consistently included or excluded from the study population. The exclusion criteria are characteristics or factors that disqualify the recruited population from the study. These variables could affect the outcome parameter as confounders (Garg 2016: 642; Majid 2018: 3 and Kamangar and Islami 2013: 5). Demographic, clinical, and geographic traits are

typical inclusion criteria (Patino and Ferreira 2018: 84). Common exclusion criteria include traits of eligible individuals that make them highly likely to be lost to follow-up, miss scheduled data collection appointments, provide inaccurate data, have comorbidities that could skew the study's findings, or increase their risk for adverse events.

3.6.1 Inclusion Criteria

- Patients diagnosed with type 1 or 2 diabetes who are of African, Indian, White racial groups were included.
- Patients diagnosed with type 1 or 2 diabetes for at least 5 years.
- Patients who were fluent in either English or IsiZulu.

3.6.2 Exclusion Criteria

- Patients who were not presenting with any other serious illnesses.
- Patients below the age of 50.
- Patients diagnosed with diabetes for less than 5 years.

3.7 DATA COLLECTION

3.7.1 Data Collection Tool

The nature of the particular events under study is learned through data collection in qualitative descriptive studies. Therefore, a few open-ended, one-on-one interviews or focus group interviews are required for data collection. Data collection may also include making observations and looking over records, reports, photographs, and documents (Lambert and Lambert 2012: 2). In qualitative research, scientists frequently aim to comprehend human experience. Therefore, interviews are one of the most popular qualitative data collection techniques in research on health professional education (Bearman 2019: 2). Qualitative research favours less structured, more open-ended data collection methods (Morgan and Harmon 2001: 976). In contemporary society and in all genres, interviews take on a variety of forms of interaction that are based on question-and-answer cycles (Rhoulston and Choi 2018: 233).

Interviews are frequently the only method of data collection for researchers. This strategy is effective when learning about people's perspectives, beliefs, and sense-making (Rhoulston and Choi 2018: 243). In qualitative research designs, a discussion of the interview protocol is common. Interviews give precise information about the perspectives and experiences of

participants on a given subject. In order to give the researcher a complete set of data for analyses, interviews are frequently combined with other types of data collection (Turner 2010: 754). A series of questions are asked during an interview, usually orally by the interviewer and verbally by the interviewee (Morgan and Harmon 2001: 976).

An in-depth understanding of human experience is one of the goals of qualitative research. One of the most popular and widely used methods of data collection in the social sciences is qualitative semi-structured interviewing (Bradford and Cullen 2012: 5; Bearman 2019: 1). They are valuable because they give researchers the chance to investigate subjective perspectives and compile in-depth accounts of people's experiences (Evans and Lewis 2018: 2).

A semi-structured interview process was used for the sake of this study. A semi-structured interview is distinguished analytically by comparing participant responses by item. The same questions are asked to everyone in the same order, ensuring that the data collected is comparable and able to be numerically transformed and quantified (McIntosh and Morse 2015: 3). For qualitative research or to gather clinical data, the semi-structured interview is a type of exploratory interview that is frequently used in the social sciences. While a semi-structured interview typically adheres to a plan or procedure created in advance and focuses on a central issue to serve as a general framework, it also provides room for exploration and the opportunity to follow topical trajectories as the conversation develops (Magaldi and Berler 2020: 4826; Baumbusch 2010: 253). The goal of the semi-structured interview is to elicit subjective responses from participants about a particular circumstance or phenomenon they have observed. When there is sufficient factual knowledge regarding an experience or phenomenon, it is appropriate to use a relatively detailed interview guide or schedule (McIntosh and Morse 2015: 2).

3.7.2 Data Collection Process

Prior to the commencement of data collection, a gatekeeper's letter (Appendix A) was emailed to the Diabetic Association for permission to recruit participants. Data collection commenced when the researcher was granted ethics approval (IREC 122/20) (Appendix F) from the Institutional Research and Ethics Committee at DUT. All eligible participants were provided with a letter of information (Appendix C), consent form (Appendix D) as well as the interview guide (Appendix E). In light of the COVID-19 pandemic, the researcher provided personal protective equipment to participants such as masks and gloves to participants who

were involved in face-to-face interviews. There were seven participants who were involved in face-to-face to interviews. A letter of information (Appendix C) and informed consent (Appendix D) had been given to all interested patients, explaining the purpose of the study as well as requesting permission to participate. All research related documents were available in English and if the researcher encountered a participant who was not fluent in English, all research related documents were provided in IsiZulu. All participants were informed that their details would remain confidential, and anonymity would be maintained by a study identification number allocated to each participant. They were also notified that they would be free to withdraw from the study at any given time.

3.7.2.1 WhatsApp video call

The accessibility of participants is the most significant advantage of online video conferencing for qualitative research. Distance, geographical location, and travel funding are eliminated as logistical factors, that may limit opportunities for face-to-face interaction between the researcher and participants (Deakin & Wakefield 2013: 606). In light of the COVID-19 regulations, nine interviews were conducted via a WhatsApp video call. All participants were asked for permission to tape record the interview sessions, and where permission was granted, the sessions were recorded by the researcher. The interviews lasted approximately 45 minutes, so as to get in-depth information from the patients. The interview guide consisted of questions regarding patients understanding and perception of diabetes, how cultural practices influenced diabetes management and how patients managed the emotional and social factors resulting from living with diabetes. Data obtained from the interviews were then analysed and themes and sub-themes, were accordingly derived.

3.8 DATA ANALYSIS

The analysis of the information gathered through the interview process was one of the last steps, in the research process. In this stage, the researcher organizes the data into sections or groups of information, also known as themes or codes, in order to "make sense" of what has just been discovered (Creswell and Poth 2018:7). The qualitative descriptive design includes thematic analysis and qualitative content analysis (Vaismoradi *et al.* 2016: 100). Other methods that aim to develop "patterns" (themes, categories) across cases, such as the reflexive approach and thematic analysis methods, are also widely used (Braun and Clarke 2021: 328). There are sets of techniques used to analyse textual data and elucidate themes. The objective is to identify and explain implicit and explicit ideas in the data. Typically, codes are designed to represent

the emerging themes and link them to raw data as summary markers for later analysis. The following steps will be adopted when analysing the data:

Step 1- Familiarisation with the data

This involved reading/re-reading for the researcher to be immersed and familiar with the data. The researcher read through each transcript carefully and repeatedly to ensure familiarity with the data. Similar and meaningful extracts that emerged were then noted.

Step 2- Coding

This step required generating labels for important information from the data and information that was relevant to the research question. Once the researcher was familiar with the data, it was then labelled with specific codes which reflected the research objectives. The coding was done manually and independently by the researcher and coded using colours.

Step 3- Searching for themes

This involved examining the codes and collated data to identify significant broader patterns. When transcribing and typing data, data patterns and the emergence of similar meanings (themes) were noted.

Step 4- Reviewing themes

This entailed comparing the candidate themes to the data set to ensure that they told a story about the data and answered the research question. The researcher then went over all of the color-coded extracts that were grouped together under the initial themes to identify patterns and see if they reflected the meanings in relation to the data collected.

Step 5- Defining and naming themes

This entailed creating a detailed analysis of each theme, determining its scope and focus, and determining its story. It also entailed coming up with descriptive names for each theme. The researcher then refined and expanded on each theme. Each theme was then categorized appropriately.

Step 6- Writing up

Writing up involved weaving together the analytic narratives and data extracts as well as contextualising the analysis in relation to existing literature. The researcher then presented, a

written account, of how the themes and sub-themes were interrelated using actual quotations from participants' phrases.

3.9 ETHICAL CONSIDERATIONS

Ethics is the body of laws that directs how we expect ourselves and others to behave. Research ethics are a set of moral principles that specify how scientific research should be carried out and communicated (Hammersley and Traianou 2012: 16). These moral guidelines emphasize the necessity to (a) act benevolently (beneficence) and (b) refrain from harming others (non-maleficence). This means that in order to conduct research, a researcher must: (a) obtain informed consent from potential research participants; (b) reduce the risk of harm to participants; (c) safeguard their privacy and anonymity; (d) avoid deceptive practices; and (e) give participants the option to leave your study at any time (Goold and Herring, 2018: 6). Integrity and ethical issues are present throughout the entire research process. First, there is a significant normative impact on the research agenda when policies and choices favour some topics over others. In research, ethical issues frequently come into play when defining the question, designing the study, obtaining consent, using statistical methods, and analysing the findings (Knottnerus and Tugwell 2018: 1).

This research proposal was submitted to the Institutional Research and Ethics Committee (IREC) for ethics clearance (IREC 122/20) and approval to implement this study was secured. Permission to conduct the study, was obtained from the chairperson of Diabetic Association. All documents used in the data collection process was available in English and isiZulu. All participants were issued with a letter of information (Appendix C) as well as a consent form (Appendix D). All participants had been made aware that participation was completely voluntary, and they were free to withdraw from the study should they feel the need to do so. Participants were assured that their details would be kept confidential and anonymous and would only be made available to the researcher and supervisor. All data that was collected from participants, was to be stored in a locked cupboard for a period of 5 years and will thereafter be shredded and disposed of in an appropriate manner. All electronic data collected has been stored on a password protected external hard-drive and will be deleted after a period of 5 years.

3.10 TRUSTWORTHINESS

One strategy a researcher can use to convince readers and themselves that their research findings merit attention is trustworthiness (Nowell *et al.* 2017: 3). In order to parallel the traditional quantitative assessment criteria of validity and reliability, it is refined by the addition

of the credibility, transferability, dependability, and confirmability criteria. For the purposes of this study, the trustworthiness criteria used was proposed by Lincoln and Guba (1985), who considered the outlined criteria. Nowell *et al.* (2017: 3) further described the criteria as follows:

Credibility: Credibility is concerned with the accuracy of the data or participant perspectives as well as the interpretation and presentation of those data and perspectives by the researcher. The researcher interviewed participants and then transcribed their interviews into verbatim transcripts to preserve their credibility. In order to maintain credibility, this study was also overseen by qualified experts in the field of research.

Transferability: The generalizability of an inquiry is referred to as transferability. Only case-to-case transfer is a concern in qualitative research. Thick descriptions must be provided by the researcher so that those wishing to apply the findings to their research can assess their applicability. In order to support findings, the researcher combined extensive research from reputable journal articles with many references.

Dependability: Researchers must ensure that the research process is logical, traceable, and clearly documented to achieve dependability. The methodology that the researcher provided was comprehensive and described each step of the research process. Before putting together the final dissertation, the researcher engaged in a number of steps and processes. A proposal was completed, approved, and given the seal of ethical approval by the gatekeepers before the study could proceed.

Confirmability: Confirmability is concerned with demonstrating that the researcher's interpretations and findings are clearly derived from the data, necessitating a justification for the researcher's conclusions and interpretations. A journal for reflection was used for this. In addition, the researcher recorded her interactions with the study participants, her personal values and beliefs and how they might have affected the study, as well as procedural notes on what was done and why. Each interview's transcription was kept by the researcher, who then went through them all to identify themes and draw conclusions.

3.11 CONCLUSION

This chapter provided a detailed description of the research methodology used in this study. The data collection method included the use of semi-structured interviews, with the use of an

interview guide. Analysing data was conducted through thematic data analysis, whereby data was coded and elucidated into themes. Ethical considerations and trustworthiness were also discussed in this chapter. The following chapter, chapter 4, includes the data analysis and findings from the study.

CHAPTER FOUR: ANALYSIS AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter presents the data collected from interviews with diabetic patients and an analysis of the findings made. The aim of this study was to explore diabetics' experiences of managing their treatment and the emotional and social factors associated with living with the disease. These patients were sourced with assistance from the Diabetic Association. There were four objectives to the study, namely, to understand patient perceptions of diabetes personally, to explore personal and social factors that influence living with diabetes, to understand the patients experience of managing their diabetes treatment and to understand the cultural factors influencing health beliefs and practices that may have affected their diabetes management.

A semi-structured interview was conducted both in-person and through video conferencing using a series of interview questions to (Appendix E) to collect data. Thematic analysis was utilised to analyse data and extract themes as well as sub-themes. The sub-sections in this chapter elaborates on the participants demographic profiles, process of data analysis and includes a summary of the findings from the sixteen interview sessions.

4.2 DEMOGRAPHIC PROFILES

A total number of 16 participants participated in this study. The demographic profiles are presented in Table 1.

Table 1: Demographic Data

Participant I.D	Age	Gender	Highest level of Education	Occupation	Monthly household Income	Religion
P1	55	Female	Post-matric qualification	Co-owner of Business	R25 000-R50 000	Pentecostal
P2	58	Female	Matric	Unemployed	R15 000-R25 000	Christian
P3	56	Female	Matric	Unemployed	R15 000-R25 000	Christian
P4	59	Female	Matric + 2 years business	Receptionist	R15 000-R25 000	Non-practising Jewish
P5	52	Female	Post-matric qualification	Unemployed	R15 000-R25 000	NA
P6	50	Male	Post-matric qualification	Restaurant operator	R25 000-R50 000	Christian
P7	52	Female	Matric	Domestic worker	R10 000-R15 000	Christian
P8	57	Female	Post-matric qualification	Manager	R25 000-R50 000	Christian
P9	53	Female	Post-matric qualification	Financial advisor	R25 000-R50 000	Christian
P10	54	Male	Post-matric qualification	Manager (Corporate)	R25 000-R50 000	Christian
P11	56	Male	Standard 8	Unemployed	R10 000-R15 000	Christian
P12	76	Male	Post-matric qualification	Retired	R10 000-R15 000	Hindu
P13	60	Male	Matric	Small business owner	R15 000-R25 000	Hindu
P14	66	Male	Post-matric qualification	Retired	R15 000-R25 000	Christian
P15	60	Male	Post-matric qualification	Retired	R15 000-R25 000	Hindu
P16	60	Female	Matric	Unemployed	R15 000-R25 000	Hindu

4.2.1 Summary of demographic profiles of the participants

This study consisted of 16 participants of Indian, White and African racial origin. Six participants were White, five participants were African, and five participants were Indian. This study was made up of eight males and eight females, across all racial groups. A majority of the participants were Christian, with a few participants being Hindu.

4.3 SUMMARY OF THE DATA ANALYSIS PROCESS

The researcher used thematic analysis to analyse and interpret data and report patterns within the data (Braun and Clarke 2006: 74). The researcher recorded each interview session with permission from the participants. These recordings were transcribed verbatim and reviewed multiple times, by making notes and noting down potential codes. The method of coding, in the context of qualitative research, was used so that raw data was converted into usable data through the identification of themes and concepts that have a connection to each other (Austin and Sutton 2014: 438). Once data was coded and upon analysis of the data, themes were then developed. As themes were identified, the researcher made analytical conclusions from the data presented and interpreted the data according to the research objectives. The researcher excluded data that was irrelevant to the topic and the objectives.

4.4 DATA ANALYSIS AND FINDINGS

This section presents the data on analysis and discussion of the findings made. Five broad themes and fourteen sub-themes emerged from the data. The themes and sub-themes are presented in Table 2 below.

Table 2: Themes and sub-themes

THEME 1: Patient understanding of diabetes	Sub themes: <ol style="list-style-type: none"> 1. Personal understanding of diabetes 2. Patient uncertainty and reliance on medical practitioners for information on diabetes
THEME 2: Psychological effects	Sub themes: <ol style="list-style-type: none"> 1. Reaction to diagnosis 2. Judgement from others 3. Trauma and depression
THEME 3: Impact of diabetes on life	Sub themes: <ol style="list-style-type: none"> 1. Impact on health 2. Amputation 3. Impact on social life
THEME 4: Experiences of support	Sub themes: <ol style="list-style-type: none"> 1. Support from a diabetes group 2. Support from family
THEME 5: Treatment and management of diabetes	Sub themes: <ol style="list-style-type: none"> 1. Experiences regarding medicine usage 2. Effects of cultural foods 3. Use of traditional medicine 4. Experiences regarding prayer

Each theme and sub-theme presented, will be discussed below and evidenced with verbatim excerpts from the interview sessions.

4.4.1 THEME 1: PATIENT UNDERSTANDING OF DIABETES

The first theme is related to the participants' understanding and knowledge of diabetes. This theme has been divided into three sub-themes, namely, (i) *personal understanding of diabetes*, (ii) *patient uncertainty and reliance on medical doctors for information on diabetes*.

4.4.1.1 Sub-theme 1: Personal understanding of diabetes

The first sub-theme which was derived from the data relates to the participants general understanding of diabetes. Some of the participants indicated that they were aware of the illness, and they had a general

understanding of the disease. These participants indicated that diabetes refers to a high blood sugar level and this can be reflected in the excerpts below:

“To me, it is when you have too much sugar in your body. I do not know much about it, but it is when your sugar is high in your blood.” (P7)

“I believe diabetes refers to excess of sugar in the blood, you know...when people say “my sugar is high” then you know that they are diabetic, yes that is what I understand by term diabetes.” (P12)

“I think it refers to high sugars, everything to do with sugar and glucose control, that’s what I understand by it.” (P4)

The aforementioned excerpts reflect that participant understood that diabetes is defined as having high blood sugar levels, but they were unable to provide a more detailed explanation of the condition. The Centre for Disease Control and Prevention (CDC) (2020) stated that diabetes can result in an excess of sugar in the blood, which can cause serious health issues like heart disease, damage to the eyes, kidneys, and nerves, and an increased risk of stroke (Centre for Disease Control and Prevention, 2020). The lack of adequate diabetes education that the participants in the current study received, may be the reason for their low level of knowledge of the disease. Other participants indicated that diabetes refers to an “auto-immune/chronic disease”. This is reflected in the excerpts below:

“Well, your pancreas doesn’t work anymore, so you have to work for it. Basically, to answer that question, it is an auto-immune disease, and your pancreas is useless, so you have to work for it.” (P1)

“My understanding is that diabetes is a chronic and a potentially progressive disorder and a very difficult disease.” (P5)

“I am a type 1 diabetic and I refer to it as an auto-immune disease where your body has no insulin and no beta cells.” (P6)

“I see it as a chronic problem...in other words my insulin is not up to standard.” (P14)

These conclusions are supported by a study carried out in Ghana, which found that diabetes is in fact a long-term metabolic disorder that interferes with the proper storage and utilization of blood glucose, leading to hyperglycaemia (Annan-Asare *et al.* 2021: 18786). Many of the participants had Type 1 diabetes, and their responses show that they have a slightly different perspective on the disease. This might be because they were given a different diagnosis than Type 2 diabetics. Given that diabetes is a chronic illness with progressive symptoms, one participant described it as "potentially progressive" and "a very difficult disease." Therefore, having to manage and control it might be challenging for some

people. Therefore, individuals can manage their condition with the help of a proper understanding of their illness.

Without adequate training and knowledge, one may believe that diabetes simply refers to a "high blood sugar level." It can be inferred from the excerpts and consistent with the findings of the Centre for Disease Control and Prevention (2020) that participants had a general understanding of diabetes but were unaware of its effects. According to a study carried out in the Eastern Cape Province of South Africa, participants had a below-average knowledge and awareness of various aspects of diabetes care, such as dietary changes, glucose testing, use of insulin, physical activity, identifying complications, and screening (Owolabi *et al.* 2022: 8). These findings were supported by a study carried out in Pakistan and Bangladesh, which revealed that participants had little knowledge of diabetes (Ulvi *et al.* 2009: 800 and Jabbar *et al.* 2001: 218). Diabetes patients' knowledge is crucial due to the psychosocial discomfort they experience and the fact that ongoing treatment prevents them from participating in daily activities (Silva *et al.* 2018: 2).

Some participants had a general understanding of diabetes because of their family history. These participants indicated that they were aware of the disease because immediate family members had presented with it at some point in their life. They also expressed that they had expected to be diagnosed with the disease, as well because of their family history. This can be found in the excerpts below:

"My brother was a diabetic, he ended up in coma, but it is because he never really took care of himself and never educated himself about diabetes...I knew about him, and I did not want to become like him..."

(P1)

"You see, my parents were diabetic back in the day, as much as we did not know the correct medical terms back then, but they had an idea around it, although they did not really take care of themselves. So, with that being said, and through the experience in my life... I knew that diabetes may affect me." (P13)

Although the participants did not have a thorough understanding of diabetes, the aforementioned excerpts show that they were aware that family history is a risk factor for developing diabetes. Numerous studies show that complex genetic and environmental factors play a role in the etiology of diabetes (Moonsinghe *et al.* 2012: 834 and Temelkova-Kurkschiev and Stefanov 2012: 4). These participants' responses to questions about family history support the conclusions of several epidemiological studies, that a family history of diabetes, obesity, advanced age, and inactivity are all independent risk factors for developing diabetes. According to studies, people with a family history of diabetes are more likely to develop the disease (Yang *et al.* 2010: 1093; Xu *et al.* 2013: 951 and Meigs, Cupples and Wilson 2000: 2205).

In this study, it can be noted that two major factors contributed to the participants awareness and knowledge of diabetes, namely, level of education and type healthcare treatment received. Many participants with matric/post-matric qualifications noted that they had some knowledge about diabetes and diabetes management, whereas participants who did not complete their schooling career did not know much and relied on a medical professional for information. A study conducted in Ghana concluded that there was a statistical difference ($p < 0.050$) between the level of education of the participant and their level of diabetes knowledge (Anna-Asare *et al.* 2021: 18789). The excerpts below are responses from some participants (who did not complete matric) when they were asked the question, “Can you tell me what you understand by the term diabetes?”

“I really don’t understand what diabetes is, but I hear people saying if you eat too much of one thing or if you don’t have a balanced diet, they say you will become diabetic. So basically, having more of the one thing and less than the other.” (P12)

As reflected in the above excerpt, whilst this patient did not fully understand the disease, they had noted that poor dietary practice would lead to diabetes.

4.4.1.2 Sub-theme 2: Patient uncertainty and reliance on medical practitioners for information on diabetes

The second sub-theme which was derived from the data relates to the participants uncertainty and their reliance on medical practitioners for information regarding diabetes. This may be due to the fact that the individual trusts the medical practitioner to provide them with the necessary information.

“I did not know about diabetes. I really cannot explain to you what I understand by the term. Up until today I do not know much, I just remember that I went to doctor some many years ago and he did some tests, uhm then he told me that I am diabetic and ever since I have been on medication. This was 20 years ago...I am aware about it now but that is only because I have been on medication to treat it, but I didn’t ever go into detail finding out more about it.” (P16)

“I only know what the doctors told me...I remember going to the clinic for some other issues and when they did tests, they told me I’m diabetic...I never learnt about it myself.” (P11)

Some of the participants admitted that they had learned about diabetes from others, including doctors, and that they still did not fully understand what it was. The aforementioned excerpts reflect this. This is corroborated by a Sri Lankan study which found that accurate information from medical professionals and other information sources, such as the media, health bulletins, and the internet, is crucial for managing

and treating diabetes. A population's literacy level, common misconceptions, the degree of effective communication from the healthcare provider, and the accuracy of the information received are all crucial factors (Katulanda *et al.* 2011: 5). Understanding diabetes and managing it well can significantly lower the risk of developing complications related to it (Nisar *et al.* 2008: 668).

This study's participants were found to depend on outside resources for their diabetes knowledge. Their perceptions and level of knowledge about managing diabetes have in fact been crucial in how they approach treatment, its side effects, and the psychosocial and psychological effects that come with it. The results of this study are aligned with findings from a study done in the Eastern Cape of South Africa by Owolabi *et al.* (2022: 8), which came to the conclusion that there was a poor correlation between healthcare providers and diabetes knowledge. Health care professionals are concerned about this knowledge gap because it has been found that patients with low knowledge of diabetes are less likely to follow management and instruction from medical professionals (Tudhope *et al.* 2008: 170). According to a study by Rasmussen *et al.*'s (2016: 325), a significant number of Australians reported that there was poor communication between endocrinologists and other healthcare professionals, such as health insurance companies and physicians. All of the participants in their study emphasized the need for more adaptable communication channels with medical professionals.

4.4.2 THEME 2: PSYCHOLOGICAL EFFECTS

The second theme that was identified in the data was concerned with the emotions, feelings and fears that came with the management of diabetes. Three sub-themes emerged, namely, (i) reaction to diagnosis and (ii) judgement of others and (iii) trauma and depression.

Diabetes and depression are frequently linked, as is apathy when neither depression nor anxiety are present (Katon 2008: 11). Diabetes-related health outcomes have been linked to psychological factors (Rasmussen *et al.* 2013: 214). Living with a stigmatized condition has a big psychological impact and can make it difficult to do the best job of taking care of oneself. Therefore, stigma related to health has the potential to negatively impact the mental and physical health of people with stigmatized chronic conditions (Schabert *et al.* 2013: 5). The three sub-themes related to psychological effects are presented in the subsections that follow.

4.4.2.1 Sub-theme 1: Reaction to diagnosis

The first sub-theme derived from the data was concerned with participants reaction to their diagnosis of diabetes. This can be reflected in the excerpts below:

“It never really worried me. I did not know how to feel, it was like just another day at the clinic, it didn’t really affect me much. I think this was because I was not educated about it, and I just knew whatever the doctor and nurses told me, and I’ve been living with it ever since. I did feel confused at one point because I was wondering how did I end up with diabetes.” (P7)

Although diabetes is a debilitating disease, this participant did not indicate worry or anxiety over their diagnosis. She attributed it to being uneducated about the disease. Although she was not apprehensive, she however indicated confusion as to how she became diabetic.

“To me, it was nothing new. It never really bothered me. My father was a diabetic, so it wasn’t something that really bothered me. Hereditary as one would say. You know how they say, “hope for the best but expect the worst”. So, I lived my life as normal until I was diagnosed with diabetes. I think with us Indians, we end up with all these complications because of the lifestyle we live and the foods we eat.” (P15)

“I won’t say that it affected me look, maybe it did. Okay, I was 67 when they told me I was diabetic then I had to go on metformin and this and that...it was just another thing added to my routine...I think it actually only worried me when I realised I am now on chronic medication amongst all the other stresses in my life...because then I started thinking long term, you know....what the medication would do to me long term.” (P12)

The above excerpts reflected how participants reactions to the discovery of their chronic condition and diagnosis caused several reactions such as a mix of feelings, confusion, stress and worry when the information was disclosed by means of a diagnostic test or a medical practitioner. The fact that people did not have sufficient knowledge and understanding of diabetes, could be a major factor related to this. Intense intolerance of uncertainty was selected as a plausible explanatory variable because it has a connection to ambiguity, fear of the unknown, and the need to control the future. Uncertainty of emotion and emotion regulation are plausibly associated with type 2 diabetes health outcomes (Rasmussen *et al.* 2013: 214; Dugas, Freeston and Ladouceur 1997: 598). The data show that, even though some participants expressed uncertainty about their feelings and emotions after being told they had diabetes, there was still some apprehension, as one of the participants mentioned. This was because they were worried about having to take chronic medications, which would unavoidably increase their stress.

Uncertainty makes people more susceptible to the negative effects of illness, which results in poor illness management and diminished problem-solving abilities, as uncovered in a Canadian study undertaken by Carleton, Sharpe and Asmundson (2007: 2310). Participants in another study by Ramsussen *et al.* (2016:

320) highlighted the value of being connected to social networks with other diabetics and the need for flexible access to healthcare providers, to support effective management of the illness. Support groups for managing stress related to diabetes become essential due to the fear and anxiety displayed by patients. However, the majority of diabetic patients lack essential knowledge about managing the psychological component, and there are a number of reasons for this, including a lack of diabetes-related education, access to quality healthcare, and erroneous disease assumptions.

A study undertaken by Jannoo *et al.* (2017: 50), found that stress brought on by diabetes is associated with poorer quality of life, psychological distress, ineffective self-management techniques, and poor glycaemic control (Participants in a study undertaken by Rasmussen *et al.* (2016: 323) reported that major life changes had a significant psychological and social impact on their lives and that they may require support for effective diabetes management. All of the participants in the current study, said that managing their diabetes was simpler when their lives were predictable and structured, but that it became more challenging when they had to adjust their diabetes self-care routines to take into account changes in their personal circumstances. The excerpts below reflect those patients who found the transition to be diagnosed with diabetes as stressful and challenging. They said:

“So, I lived my life as normal until I was diagnosed with diabetes.” (P15)

“You know my life was easier before I found out I had diabetes. Living with disease unknowingly did not put so many restrictions on me. Now we must watch our food, take tablets...it’s too much.” (P7)

“Even though I didn’t know much about diabetes, my life was more smooth sailing you know, because prior to finding out...I didn’t have to worry about what I eat or get all hyped up if I miss my medication...it places a burden on you.” (P16)

As the above excerpts reflect, that with the onset of diagnosis, participants experienced diabetes related stress. This could be due to the fact that they would now have to make lifestyle changes, incur more financial costs for medication, and for those with underlying conditions, a risk for related complications. They felt a greater a burden to watch their diet and ensure that they took their medication timeously all of which created additional stress for them.

4.4.2.2 Sub-theme 2: Judgement from others

The second sub-theme derived from the data related to the actual psychological effects regarding diabetes and the stresses that come with managing the illness. The following excerpts reflect various feelings of

anxiety and frustration that participants experienced about being diagnosed with diabetes. These emotions related to the fear and frustration of being judged by others. Participants said:

“Dealing with it has been difficult, people don’t understand. They judge you. They don’t realise that it’s a 24/7 disease and it’s a difficult disease..... I always felt anxious around other people, just waiting for them to pass a negative comment.” (P5)

“You know, people either accept it or they don’t and they’re going to judge you anyway. This sort of disrupts your mind hey, it used to frustrate me. Always attracting negativity.” (P6)

“See when you’re out with friends, there’s things that you can and can’t do and for me, that’s where the frustration comes in, because they don’t understand why you can’t do what you can’t do. To them, it’s “oh you’re probably just pretending because you’re already overweight”, you know.” (P10)

“I used to feel guilty and ashamed whenever I restricted myself from certain thing because it felt like I’m the direct cause of what’s going on with me.” (P2)

“The depression came in during the first treatment phase where I was still getting used to this new and I had to stop certain things and start others.” (P10)

People with diabetes experience abundant guilt, anxiety, shame, and despair. Society in general, and healthcare practitioners, often refer to diabetes as a lifestyle disease, which suggests that the disease is caused by lifestyle issues. The excerpts above indicate that participants felt they were judged by family or peers after being diagnosed with diabetes. These judgemental attitudes of their illness caused individuals to become depressed and feel like “they’re not good enough”. One participant shared feeling ashamed of being unable to eat what they wanted. Another expressed deep frustration at the fact, that others feel they were pretending regarding their symptoms and condition.

According to the literature, words have an impact on one's health (Dickinson and Maryniuk 2017: 51). "Words can elevate or destroy," as the saying goes. This assertion also applies to diabetics, who may encounter disparaging remarks and attitudes, adding to the already stressful experience of having this disease (Dickinson *et al.* 2017: 1790). Conversely, supportive and cooperative remarks can improve health outcomes (Polonsky *et al.* 2017: 266). As a result, how families interact with people who have diabetes affects their engagement, understanding of the disease and how to manage it, the effectiveness of their treatment, and their psychosocial wellbeing. Diabetes patients' motivation, behaviour, and results are influenced by language (Dunning, Speight and Bennett 2017: 23). Stress, feelings of shame, and judgment can be exacerbated by the stigma, that has historically been connected to a diabetes diagnosis

(Dickinson *et al.* 2017: 1791). This was also seen in the current study, where people who felt judged by others experienced anxiety and annoyance.

The results of this study are also in line with a study by Dickinson (2018: 61), which concluded that adults with diabetes, felt blamed and judged as a result of the language used by friends, family, and the general public. Internalized stigma takes the form of feelings, emotions, and self-judgments in people with diabetes and is particularly relevant to type 2 diabetics who express feelings of failure, guilt, and blame. However, Schabert *et al.* (2013: 4) argued that it is unclear whether self-stigma is brought on by stigma that has been perceived or experienced, or, perhaps more likely, whether it exists independently of these perceptions and experiences.

4.4.2.3 Sub-theme 3: Trauma and depression

As diabetes is often regarded as a ‘silent epidemic’, it is possible for it to be diagnosed with significant pre-existing complications, which can cause anger and revolt at the time of diagnosis (Silva *et al.* 2018: 5). The excerpts below reveal how depressed and frustrated the participants felt:

“I felt terrible. My wife was very sick. I had cancer. It was very difficult to deal especially hearing stories from other people. It caused me a lot of stress. Especially when it came to cuts and bruises that took long to heal, and the risk of it getting septic, just the thought of that was traumatising. It has been a lot to deal with.” (P14)

“I was depressed. Like I said, I am a type 1 diabetic and when I was pregnant for my son, I basically lost him. I always wondered why doctors couldn’t pick up that something was wrong...So being diabetic took a lot out of me.” (P4)

One participant expressed their acute stress at being diagnosed and fear of cuts and bruises that could turn septic. He was deeply traumatised by the thought of becoming that ill. Another expressed feeling despondent that they were diagnosed late. This late diagnosis of diabetes by medical practitioners is evident in the excerpt that follows:

“I’ve been diabetic for 31 years, type 1 insulin dependent. When I was six and a half months pregnant, I had gestational diabetes, uhm the gynaes didn’t liaise with anyone in those days. I went for my 20-week testing and I gave the doctor a list of all my complications...Not being able to see, being thirsty and not being hungry. His reaction to me was “oh don’t worry you have a lot to live off” tapping my bottoms and my leg, in other words I’ve got a lot of fat to live off. I ended up in hospital after drinking 16l of coke. I

went into a coma and ended having contractions. The hospital messed up my treatment, my baby was a still born, she was dead inside me for 5 days.

I didn't want to live after that because, you know losing a baby, then waking up from a coma and being told that you're a type 1 diabetic...that was like the end of my life.” (P1)

The above excerpt reflects the deeply traumatic experience one participant experienced. Two participants in this study experienced the loss of an infant due to diabetes. This loss affected both their physical and mental health. The impact of being in a coma caused major psychological stress which was exacerbated by the loss of a child. As suggested, if these participants received timely and effective treatment from medical practitioners, this could have been avoided.

Other participants also had traumatic experiences from diabetes. This can be reflected in the excerpts below:

“At the beginning it was all okay....but then life got complicated, I had a minor heart attack...and eventually an amputation. I'm not sure whether I hurt myself in the bathroom or something on that specific day, but my wife saw some blood and asked me about it. I went to the doctor and he noted that he did not suspect any gangrene. However weeks went by and this began to irritate me, so my son decided to send me to a specialist, just by one look..he said this has turned into gangrene. I immediately had to go to hospital, and that's when I had the amputation. That is where the stress and fears came to play.” (P12)

Other participants experienced trauma due to having a heart attack as well as suffering an amputation after an injury/wound turned septic, again indicating failure of the medical practitioner. Although the following participant did not have a trauma related experience, the fear of premature death due to being diabetic was evident. This was because of the participants parents experience with diabetes and hence they became depressed.

“I was diagnosed about 20 years ago; I was extremely depressed. I had nobody at the time as I am divorced. My parents were late, and my daughter was fairly young. My parents had chronic illnesses, so I think there was always a fear of “what if I end up like them”. To me, it was depressing because I felt as if my life was now shortened.” (P16)

Participants in a study undertaken by Cecilio *et al.* (2016: 49), reported feeling frequently filled with fear, especially when they revealed traumatic family experiences involving diabetes related complications and deaths. According to some studies, when patients are aware of histories with traumatic

prognoses, such as death or amputations, they tend to fear repetition of events with a risk of tragic outcomes, such as those observed with relatives or close friends, especially if they are afraid of chronic illness problems. Participants in the current study similarly expressed fear due to negative past experiences with family members.

The study by Bruno *et al.* (2019: 1171) found that patients with diabetes are frequently burdened by numerous comorbidities and disease complications, which is consistent with the findings of this study. Because of their fear of complications (which is evident in the excerpts) and the overwhelming nature of their self-management regimens, patients with diabetes have poor emotional wellbeing (Pintaudi *et al.* 2015: 350). It should be noted that uncertainty and helplessness are the root causes of diabetes-related fears. The results of this study clearly show that people who had a heavier emotional load had expressed difficulty coping. This is evident in the excerpts below:

“I wasn’t actually stressed about having diabetes itself. I was more stressed and afraid of what will happen in the upcoming years. I knew that it is a chronic illness but now it’s something that is going to affect my life and cause more complications. Sometimes, I would forget to take my medication and I think this was because I would overthink scenarios in my head.” (P8)

“You know in our Indian culture, we eat a lot of unhealthy foods. When I was diagnosed with diabetes, the thing that scared me the most is all the other illnesses that will follow. You know, the high blood pressure, the high cholesterol and so for on. That is what worried me the most, the fear of what may be and off course, it was very difficult to change my diet.” (P13)

As experienced in the aforementioned excerpts, participants were concerned about the complications that would ensue through their diabetes. Another expressed fear of developing other conditions such as hypertension and the need to make major lifestyle changes.

Patients with diabetes frequently experience anxiety and health-related worries, which can lead to conflicting feelings about their diabetes care and emotional distress. Due to the stress of daily self-management routines and the worry of unforeseen complications, diabetes patients frequently experience poor emotional health and a lower quality of life (Jannoo *et al.* 2017: 51). As seen in the aforementioned excerpts, the people expressed a fear of the future and the unknowable, rather than concentrating on managing their diabetes once they were diagnosed. In order to accept the chronic condition, the patient must become aware of the discomfort and pain brought on by the disease's new limitations and learn to cope with them. In order to avoid stigmatizing people, it is important to reflect on alienated acceptance or adaptation to new habits and constantly re-evaluate health practices. This is necessary because words

like "patients," "diabetic person," and "carrier" reduce people to objects and subject them to passivity (Silva *et al.* 2018: 6).

Greater decision-making engagement and less psychological distress result in better self-management behaviours, which are linked to better diabetes control despite the lack of evidence linking poor decision-making and diabetes management (Stacey *et al.* 2017: 1432). It has been shown that diabetic patients who experience emotional distress and depression as a result of their co-morbidities and complications have a higher risk of dying (Naicker *et al.* 2017: 354). Furthermore, poor adherence to medication and lifestyle changes due to diabetes-related stress and depressive symptoms may have a negative impact on health outcomes (Fisher *et al.* 2008: 1098).

4.4.3 THEME 3: IMPACT OF DIABETES ON LIFE

The third theme was concerned with the impact of diabetes management on life. Three sub-themes emerged, namely, (i) Impact on health, (ii) Amputation and (iii) Impact on social life.

4.4.3.1 Sub-theme 1: Impact on health

The first sub-theme was derived from data, was concerned with challenges that participants experienced in their personal life, when it came to diagnosis and management and diabetes. This can be reflected in the excerpts below:

“It affected my vision; I sometimes feel very weak especially when I’m working and then I have to take some time to feel better then get back to work. This happens a lot.” (P7)

Apart from diabetes symptoms affecting the individuals work, for some, it also affected their sporting life which is reflected in the excerpts below:

“The one thing that’s a pothole for me is that I always loved playing tennis and before my CGM, I would test my sugars before the game and it will all be well then 10-15 minutes into the game, I’d have to stop because I felt like there was something wrong. That would irritate my teammates.” (P1)

“I was a very big sportsman back in the day, and after my diagnosis, I became very sedentary. I couldn’t strain myself and sports was something that I really enjoyed. When I had to stop, I felt very disheartened.” (P14)

The above excerpts reflect that individuals were negatively impacted and had to stop their sporting activities due to diabetes. It is evident from the excerpts that diabetes affected the individual’s health, which in turn restricted them from playing sport because they could not cope.

“Ever since, I am stricter with my diet and that frustrates me because I’m a person who loves food and now, I have to watch what I eat. So, think for me, that’s how it affected me personally.” (P10)

Participants talked about how diabetes had personally impacted them in various ways. One participant mentioned how their work life had been impacted by their diabetes-related symptoms, because they felt so weak and exhausted. Others said that playing sports was a big part of their lives and that they had to stop because of the effects of diabetes. Each person expressed opinions that were relevant to their way of life. Therefore, diabetes has a negative effect on a person's quality of life, particularly because of the emotional changes, the limitations it causes, and the process of accepting the condition. The results of a study measuring patients' quality of life in Brazil, found that physical and emotional factors were the most important predictors, with the emotional impact coming in second with a value of 77.2% (Diaz *et al.* 2016: 10), Hence diabetes mellitus negatively affects the patients' quality of life.

4.4.3.2 Sub-theme 2: Amputation

Two participants in this study experienced significant personal life changes due to the amputation of part of their leg. This is reflected in the excerpts below:

“After my amputation, driving became difficult and due to that I had to stop work. I always think if I could have avoided it, but the thing is, a small injury (which I didn’t even know happened) caused me to lose a limb, I mean how could I have avoided that? It really has made a significant impact on my life; I even struggle to walk up the stairs in my house so every time I need to move around, I have to call for my wife or our helper.” (P12)

One participant expressed his distress at the lack of mobility and the need to get help made him depressed. Another participant shared how the amputation affected his ability to conduct daily activities like driving or walking long distances. He felt very unworthy because of his circumstances.

“My life became extremely difficult ever since my amputation, and I do not have access to private medical care. I had my amputation 3 years ago, but I still struggle with daily activities. I got retrenched from work due to COVID, and I have not found a job since.... maybe it’s because employers think I will not be fit for the job. I cannot drive and I am unable to walk long distances. This puts a strain on my wife to do all work and manage the household. I feel useless...” (P11)

The participants in this study had amputations due to diabetic foot ulcers or partially healed wounds. As shown, minor injuries caused major complications that necessitated amputation. One of the most prevalent and disabling complications of diabetes is diabetes foot ulceration, which can have a lifetime

incidence of up to 25% in those with the disease (Coffey, Mahon and Gallagher 2019: 183). Due to its detrimental effects on physical and psychological functioning, as well as the increased risk of amputation and mortality, diabetes foot ulceration is a significant public health concern (Dubsky *et al.* 2013: 558). As found in the study, treatment is expensive and challenging, and frequently necessitates prolonged hospitalization and complicated medical procedures (Coffey, Mahon, and Gallagher 2019: 183). According to estimates, at least 75% of cases could be avoided with high-quality preventative care (Bus and Netten 2016: 197). The key to effective prevention is the patient's active participation in foot care (McInnes *et al.* 2011: 170 and Schaper *et al.* 2015: 87). Additionally, it was clear that patients neglected their feet, which led to amputations.

Other studies revealed that many people have disrupted lifestyles as a result of limitations on daily activities (Hjem and Beebwa 2013: 125). Many people are unable to drive a car, drive themselves anywhere, or go shopping without assistance. Activities frequently required advance planning (Coffey, Mahon and Gallagher 2019: 186). Participants in other studies, particularly those whose jobs put their feet at risk (such as standing for long periods of time or wearing steel-capped boots), also experienced job loss or were forced into early retirement (Foster and Lauver 2014: 20). Similar to this, Schabert *et al.* (2013: 4) noted that social and employment opportunities may be restricted as a result of perceived or actual stigma. Participants in this study shared how their leg amputation caused them to lose their jobs, and they also mentioned how their employers did not view them as valuable assets. Several accounts of workplace discrimination that participants attributed to their health condition were found in a qualitative study of adults with diabetes. For many people, this caused financial hardship. Those who persisted in their employment reported decreased productivity and a reliance on co-workers to maintain performance (Coffey, Mahon and Gallagher 2019: 188). The participants' sense of identity and self-worth were adversely affected, particularly when they were unable to support their families. Hjem and Beebwa (2013: 130) also mentioned the detrimental effects on one's health. Many participants expressed anger and frustration over the loss of their independence, while others felt helpless (Bradbury and Price 2011: 35). The participants frequently felt guilty and blamed themselves for their foot issues, and they expressed regret for not taking better care of their feet, according to the data. Coffey, Mahon, and Gallagher (2019: 190) also noted this. People believed that they were now a financial burden on their families.

4.4.3.3 Sub-theme 3: Impact on social life

The second sub-theme was derived from data was concerned with the social challenges experienced by participants:

“I’m a type 1 diabetic. So socially, it has affected me. I don’t go out late at night, I don’t really party with friends as I have to be cautious of my levels. If I do go out, then there’s a certain time that I have to go home because I don’t like taking my insulin shots in front of people, it makes me feel really uncomfortable, people stare. That’s kind of annoying you know.” (P6)

“At a braai or something, I would have to take time out to check my sugars especially when I start feeling dizzy. Everyone is having a good time and then there’s me with a chronic illness and now I have to leave a good conversation because hey, my sugars are acting up.” (P1)

“This one time, while I was driving, I experienced a terrible low, I was at a robot, and I literally fell asleep. The cops knocked on my window and one said to the other “she’s drunk” and at the time I’m trying to shake my hand and show them my medico bracelet. All that could come out from my mouth, was help I’m diabetic.” (P1)

“I used to drink occasionally; it was something that I enjoyed doing especially with friends. But over the years, I gave it up. Giving it up wasn’t something that I really wanted to do, but it is what it is. Now when I go out, I just watch everyone have a good time and I just have to abstain to keep my sugar level normal.” (P10)

The aforementioned excerpts illustrate the social effects of diabetes on participants. During a bout of hypoglycaemia, one participant described, how she was mistaken for being intoxicated. This may be considered a personal stereotype. Alterations in mood and cognition (such as irritability and confusion), motor deficits, trembling, sweating, vomiting, and, in severe cases, seizures are all hypoglycaemic symptoms. This set of signs and behaviours can be mistaken for drunkenness or other physiological issues because they resemble alcohol intoxication (Schabert *et al.* 2013: 5).

Participants in this study expressed their frustration with the way their efforts to manage their diabetes was affecting society. The impact of having diabetes on an individual's emotional state in relation to having to live with a chronic illness that required long-term treatment, was observed during interview sessions with some participants. This consequently influenced the individual's entire social network. The management of diabetes involves a number of variables, some of which are localized while others are global. Living with a chronic condition can be extremely dangerous because it alters both the person's routine and the routines of those around them (Peres, Franco and Santos 2008: 298). Insulin-dependent people have discussed how diabetes has changed their social lives. This might be brought on by anxiety about stigmatization and unfavourable views of insulin therapy. This is in line with discoveries made and reported in relevant literature (Holmes-Truscott *et al.* 2018: 659; Arda, Baran and Turan 2020: 238). In

one qualitative study, diabetics who felt rejected or experienced rejection or blame because of their illness or the self-care behaviours that were required for the management of the illness experienced stigmatization (Browne *et al.* 2013: 5). Another study found that the biggest barriers to type 2 diabetics receiving effective insulin treatment were feelings of fear and guilt (Edelman and Pettus 2014: 13). In the present study, participants also expressed feelings of embarrassment and fears of being an insulin user in public. It can be assumed that this may influence treatment non-adherence which in turn, has a negative impact on the management of the disease.

Diabetes is understood in its broadest sense when an individual changes their way of living and approaches to caring for their health in addition to receiving a clinical diagnosis (Silva *et al.* 2018: 6). It involves reflection, redefining one's perception of oneself and one's social network, identifying one's beliefs and values, and forging a bond of mutual support with another person in the pursuit of autonomy. It is common knowledge that effective self-care behaviour and, consequently, participation in treatment, depend on one's ability to recognize oneself in the condition of living with a chronic illness. It is clear from this study that people had problems navigating social media and society as a whole. This could be because non-diabetics do not have knowledge of diabetes and therefore are not empathic towards the diabetic individual. Such experiences caused the individuals to limit themselves when it came to aspects of social enjoyment and going out to social gatherings.

4.4.4 THEME 4: EXPERIENCES OF SUPPORT

The fourth theme was derived from data related to the support that participants received from their families and social support groups. Two sub-themes emerged from this, namely, (i) support from a diabetes group and (ii) support from family.

4.4.4.1 Sub-theme 1: Support from a diabetes group

The first sub-theme was concerned with the support that participants received from social support groups. A few participants expressed that they were part of a diabetes support group, while others were not. This is reflected in the excerpts below:

“Aside from my family, I form part of a support group for type 1 diabetics. It’s comforting knowing that there are others with similar problems as you and we help each other with stories of our personal experiences. We even have a WhatsApp group now and we communicate there.” (P1)

“You know as much as they say family is family (and I know that), but I think what helps me more is the support I receive from individuals with the same condition as me because we understand each other on

our bad days. Look, I am not disputing the fact that my family is there for me...but I also have to give credit to the diabetes focus group that I joined about 2 years ago, these members have really helped me on my diabetes journey.” (P9)

From the excerpts above and in the efforts to improve the quality of life, these individuals found it important to share their diabetic experiences with those who understand it and have had similar experiences. This, as evidenced, helped the affected individuals gain the strength and motivation to have a positive mindset to cope with the burden of the disease and significantly decreased their feelings of depression and anxiety. The above excerpts reflect that it is crucial for diabetics to be part of support groups, as it may lead to a better quality of life. The results were in line with another study, which demonstrated that social support has been promoted by most researchers as an important element of health care and management. Additionally, it was discovered that type 1 diabetics benefited most from social support, which led to better adherence to their treatment and lifestyle modifications (Al-Khalif *et al.* 2018: 2255). Social support for diabetes self-management can come from a variety of roles, including trained laypeople, community health workers, certified diabetes educators, and people with diabetes (Fleming *et al.* 2022: 1322).

Peer support groups for diabetic patients help in the learning process by sharing experiences and observing how others manage their diabetes. They also offer more support and encouragement, mutual guidance, and a decreased sense of isolation. These findings are supported by another study. It converts conventional, passive therapy into dynamic, efficient patient engagement that motivates the patient to increase self-management in cooperation with the healthcare professional (Sani *et al.* 2018: 496). Similarly, peer support has been shown in clinical trials to strengthen medication adherence, manage diabetes-related distress, and improve glycaemic control (Powers *et al.* 2016: 75 and Spencer *et al.* 2018: 1418).

4.4.4.2 Sub-theme 2: Support received from family

The second sub-theme reflected the support that participants received from their families. This is evident in the excerpts below:

“My wife and kids are very supportive. My wife makes sure my diet is followed and makes sure my medication is taken on time. My wife also makes sure I hit the gym when I’m supposed to.” (P10)

“My husband does not know much about diabetes, but he always makes sure I take my medication. When I am not well, he helps me and takes care of me. He is very good and caring. My husband and my child are the only family I have.” (P7)

“Honestly, I am so grateful for my family. My husband is God sent. Diabetes really took a toll on me with changes to my lifestyle, but my husband has really been there through it all. He takes me to all my check-ups, ensures that our fridge is stocked with the correct foods for me and he always assures me that it’s okay. So yes, my family has supported me through it all.” (P9)

The aforementioned quotes reflect the extent of support women received from their spouses. It is clear that they received assistance, related to remembering to take their medication on time and making sure their spouse had access to the right foods. Spousal support, which in this context refers to both long-term partners and legal spouses, is crucial to the performance of health behaviour (Jackson, Steptoe, and Wardle 2015: 386).

The spouse's support then gives the person the drive they need to effectively manage their treatment. The excerpts also reveal that spouses were crucial to the individual's dietary compliance, which is a crucial element for efficient diabetes management. As has been shown, there is a chance to support or thwart attempts at dietary modification when partners prepare or eat meals together (Albanese *et al.* 2019:320). According to Stephens *et al.* (2010: 199), spousal support for healthy eating and exercise is linked to higher dietary adherence. However, according to other studies, women generally feel less social support than men do. According to one study, while women cite a more varied group of other friends and family members, men specifically mention their partner as a primary source of social support for their glycaemic control (Mathew *et al.* 2012: 123). Wives are traditionally expected to take care of meal preparation and shopping, and they usually give men the nutritious food they need (Albanese *et al.* 2019: 318). The findings in this study were different to those in the literature, as husbands were actively involved in the dietary component of the diabetic individual. This could be due to fact that society and norms are changing and not only do “women belong in the kitchen”.

Apart from support received from their spouses, participants also reflected that they have full support from other immediate members of their families, i.e., their children. This can be reflected in the excerpts below:

“Support?...oh 100%!! If my daughter and I go on holiday, she won’t let me sleep alone, she would sleep there just to make sure I wouldn’t go into coma, which would happen a lot, they’ve been so supportive (Husband and child).” (P1)

“My kids are always checking up on me.” (P10)

“My daughter is there for me. She works in healthcare and she is very supportive. She assists me with all my medication and treatment and I live with her. She makes my life very easy and I don’t work, so she

makes sure I have all my desired meals and since I am overweight, she makes me do 30minutes of light exercise everyday.” (P16)

Despite the fact that type 2 diabetes is a degenerative condition, most diabetics manage their illnesses with the support of their families, and patients' perceptions of family support, has a positive impact on their attitudes toward self-care (Kristianingrum, Wiarsih and Nursasi 2018: 305). The aforementioned excerpts make clear that a diabetic person's perception of family support has a big impact on how well they are able to manage their condition. According to numerous studies (Gomes *et al.* 2017: 69; Huang *et al.* 2014: 23; Pamungkas, Chamroonsawasdi and Vatanasomboon 2017: 8 and Wichit *et al.* 2017: 43), family involvement or support from family, increased diabetic patients' self-care behaviours and led to favourable clinical outcomes, such as a decrease in HbA1C levels. This means that diabetes management can be improved with encouragement and participation from family. Family support is crucial for diet self-care behaviours, and patients without it may find it difficult to follow dietary requirements, as opined by Mogre *et al.* (2019: 2301). In contrast to the current study, their research also found that most households in northern Ghana, only have one cook or use a communal pot to prepare meals for the entire family, which can occasionally number more than ten people. Due to possible time constraints, those in charge of meal preparation may find it challenging to make special meals for the diabetic patient or to take their needs into consideration when preparing a family meal. However, in this study data regarding family support reflect that the participants had no challenges when it came dietary requirements and support from their families.

Overall, a family focus on living a healthy lifestyle can assist in diabetes management. This includes increasing physical activity, eating healthy and providing emotional support to the individual. This may motivate them to do better in the efforts to manage their diabetes and decrease some of the emotional strain that comes with management.

Some participants did not have support from immediate family. This can be reflected in the excerpts below:

“It’s actually a bit difficult for me because I don’t have any kids and my husband is disabled. This leaves me to rely on myself and him to rely on me. It does become mentally draining at times because I have so much to do. The plus side is, because of my educational background in the medical field ...I manage. But a little extra support won’t hurt.” (P5)

“I am actually single, and I live alone. It is very depressing at times especially when I think about the loss of my son...” (P4)

As evidenced, participants either did not have children or were single. This increased their personal burden to and also led to greater depression. According to the data, improving social and family support for diabetic patients is necessary to encourage their effective self-care behaviours. In studies where support is given by a peer who also has diabetes, the peer supporters typically experience at least as much clinical benefit as the peer recipients, demonstrating the benefits of a non-hierarchical, peer relationship (Sani *et al.* 2018: 497). It is advised for people in situations like the one above to join a peer-support group to help them on their journey.

4.4.5 THEME 5: COPING WITH TREATMENT AND MANAGEMENT OF DIABETES

The fifth theme derived from the data related to coping with the treatment and management of diabetes. Four sub-themes, namely, (i) experiences regarding medicine usage, (ii) effects of cultural food, (iii) use of traditional medicine and (iv) experiences regarding prayer emerged as follows:

4.4.5.1 Sub-theme 1: Experiences regarding medicine usage

The above sub-theme related to participants experience regarding the use of medicine for diabetes treatment, namely, use of tablets and insulin. Participants experiences varied with different treatments. These are reflected in the excerpts below:

“I take the tablet called Metformin. This is what was prescribed to me, and I take it regularly. I get it from the clinic. It has been helping me, so I don’t see or feel the need to change anything. I test my sugar when need be and I also avoid foods with sugar, but I eat my normal “curry and rice”. I’m not saying that it’s the best thing, but it works for me.” (P13)

“Personally, apart from all the other complications that I’ve experienced, I think the most important one is that I’m not on insulin (yet). My doctor gave me the famous metformin pill and that is what I take. This makes things a lot easier for me and I don’t have to go through the pain of taking insulin multiple times every day.” (P2)

Modern medications and necessary lifestyle changes can help patients achieve good glycaemic control, but they cannot reverse diabetes; instead, patients must continue treatment for the rest of their lives (Rafi *et al.* 2020: 2). The aforementioned excerpts show that the participants used metformin to manage their diabetes, and even though they called it "not the best thing," they reported having a good experience using it.

Over 120 million people used the diabetes medication metformin in the world in 2010 (Cardel *et al.* 2014: 1458). When combined with dietary changes, it is the first-line glucose-lowering therapy used to treat

type 2 diabetes (Cardel *et al.* 2014: 1458). It should be noted that participants in this study used metformin to treat their diabetes. This might be as a result of how convenient and easily accessible it was. Metformin has shown to significantly improve symptom and socio-psychological impacts in addition to having a positive impact on health-related quality of life outcomes (Mishra *et al.* 2021: 10). Apart from the two participants who specified the use of Metformin for their diabetes management, other participants also noted that adhering to treatment regimens was difficult. This is depicted in the excerpts below:

“You know, diabetes for me is very different as compared to everyone else. After my amputation, I have had lots of difficulties. I am always stressed out thinking about how I am going to help my family. I feel stressed all the time and with that, I tend to forget about my medication.” (P11)

“I’m very strict with my diet, but yohh...the medication just doesn’t do it for me. I don’t know if it’s just in my head, sometimes I tend to forget because it makes me feel sick after a while and if my wife doesn’t check on me, then I wouldn’t have taken it. It happens a lot.” (P10)

“Personally, it hasn’t really affected me much but if my daughter isn’t there, I always feel edgy and forget about some of the important things like my medication for one.” (P16)

Participants in the current study, had different experiences regarding adherence to treatment. From the excerpts, it can be concluded that participants tend to forget about their medication. Participants expressed that they felt stressed at their non-adherence to medication and its impact. It is also evident that family support positively influences the individual as they rely on family members for simple reminders, even though they may not be aware of it intentionally.

For some, participants who were insulin dependent indicated that they had difficult experiences regarding the use of insulin in public. This is reflected in the excerpts below:

“I don’t like taking my insulin shots in front of people, it makes me feel really uncomfortable, people stare. That’s kind of annoying you know.” (P6)

“For me, besides that tablets and stuff...I have to take insulin 3 times a day. I feel extremely uncomfortable taking it in public. As much as you think people mind their own business, they really don’t. Everytime I have to take my insulin in public, especially at restaurants...people always stare. They literally stare in a way that makes me feel like I’m an alienated species.” (P9)

“One of the most difficult things for me is insulin and the public. I literally will not take my insulin in public because of the way people are. I don’t blame them for staring or passing remarks to their friends, I guess it’s human nature, but it’s one of the reasons I also avoid going out.” (P4)

Members of the public tended to stare at them whilst they took their shots. This captures the stigma linked to both diabetes and other medical conditions.

According to recent research, some T2DM patients who take insulin may also experience psychological insulin resistance, which may impair their ability to use insulin as effectively (Holmes-Truscott *et al.* 2018: 658 and Davies *et al.* 2013: 521). Similar results were found in this study, where participants reported feeling "awkward" when using insulin in public, which resulted in insulin non-adherence. Individuals' self-stigma (such as feelings of embarrassment, guilt, or failure) and worries about being treated differently, because they have diabetes have a significant impact on their psychological barriers to using insulin treatment. The fear that using insulin will lead to personal failure and deteriorating health, as well as embarrassment over how others view insulin injections (Holmes-Truscott *et al.* 2016: 1153), will undoubtedly have an impact on how well a person takes their medication and may even put them at risk if they are not careful. Identification of the causes of insulin resistance is crucial, according to Holmes-Truscott *et al.* (2018: 658), as this will help with the creation of clinical education and counselling to lower insulin non-adherence. For instance, structured education initiatives emphasizing insulin management have enhanced diabetes self-efficacy (Lowe *et al.* 2008: 440).

4.4.5.2 Sub-theme 2: Effects of cultural food

The second sub-theme derived from data is associated with the cultural practices of the diabetic individual. This is reflected in the excerpts below:

"You know culturally, I think it's our food. During our prayers, we have a lot of sweet foods and sometimes we can't refuse to eat it. It is referred to as prasad and it's a holy offering that is given to you as a form of blessing. So yes, that would be my only point." (P16)

"You know in our Indian culture; we eat a lot of unhealthy foods." (P13)

"When we speak about culture, I can't tell you much that has affected my diabetes besides my cultural food... the foods are very oily based, lots of potatoes and so for on. The other thing that I can tell you is that during our festivals, Diwali for example...we are fed with a range of sweet and unhealthy foods." (P15)

The majority of the Indian participants in the current study noted that many "unhealthy foods" are forced upon them by their culture. It is also mentioned that when people participate in prayers or cultural rituals, they are required to consume the holy offering, which frequently consists of a combination of sweet and fatty foods, and that it is disrespectful to decline such offerings. Consuming such foods may then have

an effect on the person's diet and make treatment challenging. Blood glucose levels have been shown to increase as a result of cultural beliefs (Talekar *et al.* 2017: 188). In Japanese culture, people have close ties to their communities and frequently attend events, making it challenging to avoid eating a variety of foods. It has also been mentioned that not eating is seen as disrespectful. This however is difficult for the person's blood glucose (Sari *et al.* 2022: 6). According to the results of a study conducted in Fiji, attendees were required to consume sweets during religious services and festivals. These results demonstrate that patients are constrained by social norms, and they find it challenging to reject the dietary suggestions (Kumar and Mohammadnezhad 2022: 5). It is clear from the aforementioned excerpts that the majority of the Indian participants thought that culture had a significant impact on how they managed their diabetes. Researching the influence of cultural beliefs of diabetic patients may help many people improve self-management, (Sari *et al.* 2022: 2). They also came to the conclusion that every culture has distinctive cultural beliefs that tend to influence how the individual manages the disease.

4.4.5.3 Sub-theme 3: Use of traditional medicine

The third sub-theme derived from the data related to the participants experiences regarding the use of traditional medicine (TM). This can be reflected in the excerpts below:

“I am very old school; I also use herbal medicine from the Sangoma for my diabetes. Sometimes, on the days that I do not have my medication then I make this herbal tea and drink. I don’t feel sick or anything, so it works too.” (P7)

“My mum heard about something called “alamy”, which you boil and keep in the fridge. I drink this mixture everyday along with my normal medication, it has helped me...especially because I sometimes forget to take my medication, but this is a part of my diet.” (P8)

“I drink rooibos tea every day, I heard that it helps with diabetes.” (P11)

“I drink a mixture of moringa leaves (milli millies) and boiling water. Back in the day, my aunt was a pharmacist and this family old tradition just carried on through the generations. This helps my sugar levels.” (P14)

“There is a tree outside my house, we call it a tulsi tree. The leaves from this tree are known to have many benefits for health. I chew on the leaves twice a day. It was something that I learnt from my parents.” (P13)

As evidenced in the excerpts, most Indians and Africans utilised Traditional Medicine (TM) for their diabetes management. Some participants reported using a drink prescribed by their traditional healer or

Sangoma that has worked for them. Other participants reported to have used moringa or tulsi leaves to support their treatment.

Traditional healers, also known as Sangomas are keepers of ancient wisdom that allows them to communicate with the spiritual realm, which is inaccessible to common people. People in need contact them because they are experiencing health issues, a lack of employment, or other life issues. Sangoma's approach patients holistically and may diagnose the cause of a disease as disrespecting the ancestors or some other spiritual reason (Podolecka 2021: 166).

Chetty *et al.* (2022: 6) found through their study in Durban, a higher prevalence of TM use particularly among the African population. The excerpts also show that people relied on friends and family for information about TM, rather than seeking advice from medical professionals. Additionally, using TM was practical and simple to access. Even though people got their information from other people, it's likely that cultural beliefs had an impact on how TM was used because these practices have been used for generations. Complementary and alternative medicine (CAM) has always been practiced worldwide despite developments in conventional medicine (Bukhsh *et al.* 2018: 43). The same study found that people with chronic illnesses are more likely to use CAM than those with acute illnesses. Between fifty and two thirds of people living in developing countries use CAM, especially older people with chronic illnesses. Spiritual therapies, herbal treatments, over-the-counter remedies, and nutritional supplements are common forms of treatment (Bukhsh *et al.* 2018: 43).

Conventional medical treatments rarely restore normoglycemia or completely reverse the negative effects of diabetes, even though they can help patients avoid some of the most serious complications of the disease. It follows that it is not surprising that individuals with diabetes are more likely to use traditional medicine in addition to standard medical care than individuals without diabetes (Wong *et al.* 2021: 2). Participants in this study who said they used traditional medicine did so while adhering to a traditional medical regimen. Previous studies have revealed that diabetics turn to herbal remedies when they're not happy with conventional treatments. People also use herbs to avoid the possible negative effects of conventional treatments. These patients do so because they think that natural herbal remedies are more efficient and safer (Kesavadev *et al.* 2017: 65). Scientific studies showed that some medicinal plants were safe and effective in treating diabetes (Vaezi *et al.* 2021: 2).

Most participants recommended traditional medicine as the best alternative to conventional medicine (or even as the preferred ones), particularly those who were dissatisfied with the effectiveness of oral diabetes medications or insulin (Arifin *et al.* 2020: 119). A Malaysian study found that the majority of patients supplemented conventional medical care with traditional medicine, because they believed it would help

them manage their blood glucose levels. Other writers have also argued that the prudent application of herbal remedies backed by evidence can help with diabetes management (Vaezi *et al.* 2021: 5). Other studies have found that the majority of diabetic patients in African nations, frequently use complementary and alternative medicines to manage their blood sugar levels and enhance their health (Amaeze *et al.* 2018: 581 and Mekuria *et al.* 2018: 86). The "drumstick tree," "horseradish tree," or "miracle tree," *Moringa oleifera* Lam. (MO), is a flowering plant in the Moringaceae family that is widely cultivated in Africa, Asia, and the United States. It has been demonstrated that its leaves, seeds, flowers, and bark have a variety of beneficial nutritional and therapeutic properties (Watanabe *et al.* 2021: 3513). For instance, its seeds are typically consumed fresh, dried, or as roasted tea, whereas its leaves are typically consumed as vegetables and vitamin supplements. Significant amounts of protein, lipids, vitamins, nutrients, and phytochemicals can be found in MO leaves and seeds. They have been used to treat and prevent illnesses like diabetes, cardiovascular disease, renal damage, and carcinomas (Dhakad *et al.* 2019: 2871 and Kou *et al.* 2018: 244). The "Queen of Herbs" and highly prized medicinal plant in India is *Ocimum* sp, also known as Tulsi. It can aid in the management of psychological and immunological stress, as well as the regulation of blood sugar, hypertension, and total cholesterol (Pandiri and Moni 2018: 88).

Data from this study indeed reflect that more Africans and Indians used alternate forms of medicines as compared to the White participants. The use of TM was influenced by family members and family traditions. Given that diabetes is a life-long chronic illness, it is recommended that the individuals consult with a medical professional about the use of TM in order to ensure effective treatment and management.

4.4.5.4 Sub-theme 4: Experiences regarding prayer

The fourth sub-theme derived from the data reflected the participants experiences relating to prayer. Some participants in this study expressed that prayer played an important role in their diabetes management. They said:

"All I can say is pray! My wife and I very religious. Prayer will take you a long way! You know, I only lost a limb because of diabetes. I am grateful to God that it was not worse." (P12)

"I submit to the man above. He knows best and everything happens as per his call. I pray everyday that my illnesses does not get worse." (P7)

"Culturally....if you're talking about prayer, then yes I pray with my family...it's something that my wife and I do everyday with my kids." (P10)

"Culturally, I pray...there's nothing more, nothing less." (P14)

“But in terms of how culture has helped me, well...I pray, I believe God before everything, and God never fails....when I starting taking prayer seriously...I found that I was able to think clearly and be calm especially when it came to my illness.” (P16)

From the above excerpts, it can be concluded that individual's faith in God, assisted them in coping with diabetes. Prayer brought comfort and peace to the participants, who shared their gratitude that their illness was something that was manageable. According to Green's (2018: 1179) research, prayer is regarded in contemporary medicine as a complementary and alternative medicine (CAM). However, it offers comfort and hope to a lot of patients. Prayer can be helpful for patients who are dealing with illness, advanced disease, disability, or death. This idea is supported by numerous studies. The majority of the participants, in a study by Bukhsh *et al.* (2018: 44), in Pakistan engaged in prayer and Holy Quran recitation. Similar to this, Sari *et al.* (2022: 6), found that many Indonesian participants, turned to prayer to cope with their diabetes-related stress. Other studies have demonstrated the beneficial effects of prayer on one's health. For instance, patients in an intensive care unit (ICU) who heard prayers from family and friends had 10% fewer complications than patients who did not receive the same types of care (Deatcher 2002: 392). The results of this study also corroborate those of a study by Arifin *et al.* (2020: 118), which found that older participants felt more inspired to visit their place of worship following a diabetes diagnosis and that many of them reported that praying to God brought them comfort.

4.5 CONCLUSION

This chapter presented themes and sub-themes which emerged from the analysis of the data. The data was then presented in themes and sub-themes which were discussed. The findings reflected the personal health and social strain of diabetes. Findings included the challenges faced by the individual in terms of the stress and anxieties that are associated with the disease. The findings also reflected experiences of support received by the participants and how culture affected their management of the disease. Individuals in this study expressed that diabetes has impacted their lives in a significant way and those around them. It was found that diabetes also affected their psychological well-being due to the constant fear of its debilitating health effects. Finally, spirituality and prayer was found to create calm and peace amongst those struggling with the disease.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter concludes with a summary of the study's most salient findings in Chapter Four, as well as the related literature discussed in Chapter Two. The limitations and recommendations are also elucidated in order to support and guide future research and intervention strategies in this field of study.

5.2 SUMMARY OF FINDINGS

The summary of finding is presented according to the objectives of the study.

Objective one: To understand patient perceptions of diabetes personally.

In order to assist patients, manage their diabetes effectively, it was crucial to determine their understanding of the illness. Data from this study revealed that participants had a general understanding of diabetes and some participants who had matric/post matric qualifications had a better understanding of diabetes than those who did not. Data also revealed that some participants relied on family members and medical practitioners for information on diabetes.

Objective Two: To explore personal and social factors that influence living with diabetes.

The findings from this study indicate that participants experienced difficulty when it came to managing their illness. Some participants noted that they were compelled to make lifestyle changes, such as stopping their sporting activities and changing their dietary habits due to having diabetes. It was also noted that some participants experienced financial constraints, which made it difficult for them to afford proper medical care. It can also be concluded that adhering to treatment regimens was difficult for some participants due to fear and judgement from society. Non-diabetics do not understand the complexity and seriousness of the illness, and it was therefore noted that they tended to pass judgment to others. Some participants also faced challenges when it came to social gatherings, as they felt compelled to adhere to certain dietary practices.

Objective Three: To understand the patients, experience of managing their diabetes treatment.

Participants in this study had a range of different experiences when it came to their diabetes treatment. Two participants in this study experienced the loss of a child which stirred a range of negative feelings towards the illness. Another two participants experienced amputation of part of the limb. This also stirred feelings of frustration and they felt demotivated to move forward. Others expressed that dietary changes were difficult, as well as adhering to treatment and medication. Many participants expressed that they

received support from family members, and this assisted them in managing their diabetes effectively. Some participants also noted that they received support from a diabetes group.

Objective Four: To understand cultural factors influencing health beliefs and practices that may affect diabetes management

Cultural factors also influenced the management of diabetes. Most of the Indian participants noted that during cultural festivals, adhering to their dietary requirements was difficult. This was due to Indian culture imposing many “unhealthy foods”. It is considered disrespectful to refuse holy offerings, which often consists of sugary and oil dishes. The study also found that African and Indian participants had used traditional medicines. Those that reported to have used traditional medicine, indicated that it had helped them manage their diabetes effectively. Apart from this, participants also indicated that their spirituality, particularly prayer had brought peace and comfort to them.

5.3 LIMITATIONS OF THE STUDY

- The COVID-19 pandemic placed a limitation on the data collection process of this study. This resulted in some interviews being done using a WhatsApp video call rather than an in-person interview.
- Another limitation related to the recruitment of participants from the Coloured racial group. They could not be sourced and hence the researcher included more participants from the African, Indian and White racial groups in order to reach data saturation.

5.4 RECOMMENDATIONS

- The study revealed that there is a greater need for diabetics and non-diabetics to receive reliable information on the illness to allow for effective management and prevention of the disease. This must be offered
- The health sector should become an integral part in disseminating information about diabetes.
- The need for family support and diabetic support groups was found to be crucial in the management of diabetes. This should be available to the diabetic population.
- There is a need for further studies to be conducted with regards to the cultural factors, traditional medicine, and the influence of prayer on diabetes management.

5.5 CONCLUSION

The findings made in this study highlight the need for future investigations to supplement the current body of evidence regarding the effects of diabetes and its management. Initiatives to increase information on diabetes will effectively assist in management of the disease. From this study, it can also be concluded

that healthcare and medical practitioners influence diabetes management and further research must be conducted with regards to healthcare practices and diabetes management. Providing support to diabetics has been shown to positively influence treatment. With regards to the cultural effects, it can be concluded that cultural practices and the use of traditional medicine, indeed influence diabetes management and further research is needed determine the impact of such, in the efforts to manage diabetes.

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APPENDICES

APPENDIX A: LETTER REQUESTING PERMISSION



[Date]

Address

Dear Sir/Mam

Request for Permission to Conduct Research

I am registered as a Masters student of Health sciences in the Department of Community Health Studies at Durban University of Technology. I would like to request your permission to assist me in conducting my study titled "Living with diabetes: Managing treatment and psycho-social aspects of the disease". I would like your assistance in recruiting diabetic patients who are of Indian, White and African ethnicity and are 50 years and older.

Given the growing burden of the disease, the main aim of this study is to explore diabetics' experiences of managing treatment and psycho-social factors related to the disease and the main objectives are:

- 1) To elicit patient perceptions regarding the meaning of diabetes.
- 2) To explore personal and social factors influencing living with diabetes.
- 3) To understand ethnicity specific health beliefs and practices that may affect diabetes management.

I have attached a copy of my proposal and I would highly appreciate your assistance.

If you require any further information, please do not hesitate to contact me (Cell: 062 087 1804) or email (udhavanar68@gmail.com). Thank you for your time and consideration in this matter.

Yours sincerely,

Udhavana Ramraj

Durban University of Technology

Programme: Environmental Health

Dept. of Community Health Studies

APPENDIX B: LETTER FROM DIABETIC ASSOCIATION

DURBAN BRANCH
 PO Box 684 Gillitts 3603
 The Meeting Place on Kensington,
 Suite 15 Kensington Boulevard,
 54 Adelaide Tambo Drive,
 Durban North 4051
 Tel: 0861 222 717 Cell: 084 7177 443
 E-mail: durban@diabetessa.org.za
 NPO No : 000 799 PBO No : 930 034 545



WE CARE FOR THE NATION

23 October 2020

Dept. of Health Science
 Durban University of Technology

TO WHOM IT MAY CONCERN

This letter serves to confirm that Diabetes South Africa gives permission for Udhavana Ramraj to recruit patients (via our Facebook page and Wellness Groups) for her research study "Living with diabetes: Managing treatment and the psycho-social aspects of the disease".

We wish her well in her endeavours.

Kind regards,

Pilile Dlamini
 Chairperson



MANAGEMENT BOARD : Chairperson: P. Dlamini; Treasurer: L. Curry; Secretary: B. Nkomonde; Adv. R Mohamed; G. Ndlovu; M. Naicker; J. Russell
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APPENDIX C: LETTER OF INFORMATION



LETTER OF INFORMATION

Title of the Research Study: Living with diabetes: Managing treatment and psycho-social aspects of the disease.

Principal Investigator/s/researcher: Udhavana Ramraj, BHSc
Environmental Health

Co-Investigator/s/supervisor/s: Professor P Reddy, PhD;
Professor R Bhagwan, PhD; Dr N Govender, PhD.

Brief Introduction and Purpose of the Study: Given the fact that diabetes is a growing burden in South Africa and ranks second among the top ten leading natural causes of death, accounting for 5.4% of deaths in the country. Barriers to treatment and management of the disease include cultural barriers, perception and understanding of the disease as well as psychosocial factors resulting from living with it. In light of these factors, the purpose of this study is to explore diabetics' experiences of managing treatment and psycho-social factors that are related to the disease.

Greeting: Good morning/Gooday, I hope you're well. Thank you for taking the time out to meet with me today.

Introduce yourself to the participant: My name is Udhavana Ramraj and I am a first year masters student. I have a previous Bachelor of Health Science qualification in Environmental Health.

Invitation to the potential participant: I would like to invite you to participate in my research study.

What is Research? Research is a systematic search or enquiry for generalized new knowledge.

Outline of the Procedures: If you agree to participate in the study, you will be issued with a consent form requesting your permission for participation. Personal protective items such as a mask and gloves will be

availed to you at the interview, if you do not come to the interview with same. A hand sanitiser will also be available. You will be required to participate in an interview which will be conducted by the researcher. The interview will take approximately 45 minutes. The interview will be conducted in a quiet room as discussed between you and the researcher, for your convenience. You are welcome to stop us at any point to ask any questions if needed. The interview will also be recorded using a voice recorder if permission is granted.

Risks or Discomforts to the Participant: In the event that there is a medical emergency, staff of the Diabetic Association will assist. However, there are no potential risks or discomfort in this study.

Explain to the participant the reasons he/she may be withdraw from the Study: Participation is voluntary and you are allowed to withdraw from the study at any point without any consequences.

Benefits: The results of this study will assist in creating awareness about the management of diabetes as well as how to cope with the stresses that come with it. It will also assist in determining how different ethnic groups manage their diabetes. Given the fact that your general practitioner assisted, results will be made available to him/her to enhance the management of diabetes amongst other patients.

Remuneration: There is no remuneration offered for participating in this study.

Costs of the Study: The participants will not be required to pay any costs.

Confidentiality: A study I.D will be given so your details will remain confidential and anonymous at all times.

Results: Results will be made available to the Diabetic Association as well who will then use it to develop new strategies for management of diabetes.

Research-related Injury: There will be no research related injury as you are only required to participate in an interview.

Storage of all electronic and hard copies including tape recordings: All electronic data will be stored on a password protected hard-drive and will be deleted after a period of 5 years. Data in the form of hard copies will be stored in a steel cupboard which will be locked and only accessible to the researcher and supervisors. This will be disposed appropriately after 5 years.

Persons to Contact in the Event of Any Problems or Queries:

Please contact the researcher: Udhavani Ramraj (0620871804), my supervisor Professor R Bhagwan (0313732197) or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported

to the Director: Research and Postgraduate Support Dr L Linganiso on 031 373 2577 or researchdirector@dut.ac.za.

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APPENDIX D: CONSENT



CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Udhavana Ramraj about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- I have also received, read and understood the above written information (Participant Letter of Information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

_____	_____	_____	_____
Full Name of Participant	Date	Time	Signature / Right
Thumbprint			

I, _____

(name of researcher) herewith confirm that the above participant has been fully

informed about the nature, conduct and risks of the above study.

Full Name of Researcher

Date

Signature

Full Name of Witness (If applicable)

Date

Signature

Full Name of Legal Guardian (If applicable) Date

Signature

APPENDIX E: INTERVIEW QUESTIONNAIRE

Interview Guide

Introduction: I would like to thank you for taking the time out to talk to me today. My name is Udhavana Ramraj and I am currently a master's student at Durban University of Technology. I am conducting this research to understand your views about diabetes. Diabetes is a metabolic disorder which causes high glucose levels. I would like to use the information I get from you to assist other patients in managing and preventing the disease.

You will be given a research identification number. The reason for this is to get clear and truthful responses from you and assuring you that your response is completely confidential. You are also not obligated to answer any question which you feel uncomfortable with.

Before I begin, I would like you to introduce yourself and if need be, please ask any questions you want before we commence.

Questions:

1. I would like to first ask what is your age, gender and occupation?
2. What is your highest level of education?
3. What religion do you follow?
4. If possible, can you also tell me what is your monthly household income?

Now I would like to focus on diabetes itself:

5. Can you tell me what you understand by the term diabetes?
6. Can you share with me when you were diagnosed with diabetes and what it has been like living with the disease?

Probe: How did you feel when you were told you had it?

7. Can you share with me what you think are the common signs and symptoms of diabetes and tell me what symptoms you have been experiencing?
8. Can you share with me how being diagnosed with diabetes has impacted on your personal life?

Probe: Please share with me how it has impacted your social life?

Probe: Please share with me how it has impacted your health in general?

9. In your day-to-day efforts to improve your sugar level, how has your condition influenced your relationship with your family and other significant others such as your spouse and immediate family members?
10. How do you cope with the stress of managing diabetes? What are some of the things that you do?
11. Is there anything in your culture that encourages or discourages your efforts to control your blood sugar? Have you tried to use alternative or cultural ways of dealing with your condition?

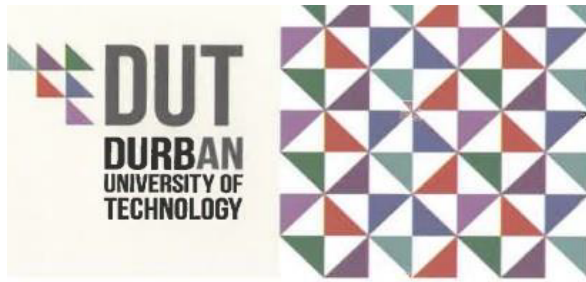
Probe: How have these methods worked in helping you manage your diabetes?

12. Can you please share with me your experiences regarding management of your diabetes and how your cultural practices play a role in this?

Probe: Please can share with me any challenges you face in managing your diabetes because of your culture?

Thank you for your time and participation in this interview. You have been of great assistance.

APPENDIX F: IREC APPROVAL



Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375

Email: lavishad@dut.ac.za

http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

23 November 2020

Ms U Ramraj
55 Colchester Crescent
Parkgate

Dear Ms Ramraj

Living with diabetes: Managing treatment and the psycho-social aspects of the disease

I am pleased to inform you that Full Approval has been granted to your proposal.

The Proposal has been allocated the following Ethical Clearance number **IREC 122/20**. Please use this number in all communication with this office.

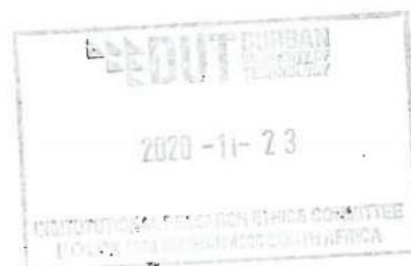
Approval has been granted for a period of **ONE YEAR**, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOP's] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC SOP's.

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

Dr M A Sathar
Deputy Chairperson: IREC





Institutional Research Ethics Committee
 Research and Postgraduate Support Directorate
 2nd Floor, Berwyn Court
 Gate 1, Steve Biko Campus
 Durban University of Technology
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 Tel: 031 373 2375
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http://www.dut.ac.za/research/institutional_research_ethics
www.dut.ac.za

24 March 2022

Ms U Ramraj
 55 Colchester Crescent
 Parkgate

Dear Ms Ramraj

Living with diabetes: Managing treatment and the psycho-social aspects of the disease
Ethical Clearance number IREC 122/20

The Institutional Research Ethics Committee acknowledges receipt of your Safety Monitoring and Annual Recertification report.

I am pleased to inform you that the study has been approved to continue.

Please note that ethical approval has been extended till **23 November 2022** if the research is not complete within this time, you will be required to apply for recertification three months before the expiry date.

Yours Sincerely

Prof J K Adam
 Chairperson: IREC

ISITHASISELO C



INCWADI YOLWAZI

Isihloko socwano: Ukuphila nesifo sikashukela: Ukunakekelwa kokulashwa kanye nokuphathelene nezengqondo zezempilo zesifo sikashukela.

Umshehi nomcwano: Udhavana Ramraj, BSc Environmental Health

Umpathi wocwano: Professor P Reddy, PhD; Professor R Bhagwan, PhD; Dr N Govender, PhD.

Isingeniso Nenhloso Yocwano: Ngokubona umthwalo okhulayo walesi sifo sikashukela eNingizimu Afrika, esingesesibili phakathi kwezimbangela eziyishumi zezifo eziholela ekufeni kwemvelo, okubalelwa u 5.4% wabantu abafa ngalesi sifo ezweni. Izingqinamba eziphathelene nokulashwa nokubhekelwa kwesifo sikashukela okubalwa kuzo izingqinamba zamasiko, ukucabanga nokuqonda ngomuntu ophila nalesi sifo. Inhloso yalolucwano ukuhlola izinto abantu abaphila nesifo sikashukela abahlangabezana nazo manqondana nokwelashwa nesimomqondo esiphathelene nesifo.

Uhlaka lwezinqubo: Uma uvuma ukuba ingxenye yalolucwano, uzothola ifomu lokucela imvume yakho yokubamba iqhaza. Uzocelwa ukuthi ubambe iqhaza kwinkhokhono ezoqhutshwa ngumcwano ozosizwa ngumsizi ngezilimi ezimbili ukuze kube lula kuwe uma kunesidingo sokuphendula ngolimi lwakho. Wamukelekile ukusimisa nganoma yisiphi isikhathi noma ukubuza noma imuphi umibuzo uma unesidingo.

Izingozi noma ukungakhululeki ukuba ingxenye: Akuzoba khona ngozi noma isizathu sokungakhululeki kulolucwano.

Inzuzo: Imiphumela yalolucwano izosiza ekwaziseni abantu ngokuthi singangqandwa kanjani isifo sikashukela nokuthi ubhekana kanjani nengcindezi ehambisana nelesifo. Ucwano luzosiza ekunqumeni ukuthi izinhlanga ezahlukahlukeni zibhekana kanjani nesifo sikashukela. Udokotela wakho ojwayelekile uyena osizayo, imiphumela izotholakala kuye ekuthuthukisa ukuphathwa kwesifo sikashukela kwezinye iziguli.

Izizathu ezingadala ukuthi ungabe usaba ingxenye yocwaningo: Ababambiqhaza ngokuzithandela bavumelekile ukuphuma kulolucwaningo noma ngasiphi isikhath ngaphandle kwemiphumela.

Inkokhelo/ Iholo: Ayikho inkokhelo yomuntu othanda ukuba ingxenye yalolucwaningo.

Izindleko zocwaningo: Azikho izindleko ezilindelwe ukuthi zikhokhwe abantu abayingxenye yalolucwaningo.

Ubumfihlo: Uzothola i-I. D/ inamba yocwaningo okuzokwenza ukuthi sibe semfihlakalweni ngaphandle kokuthi saziwe ukuthi singobani.

Ukulimala Okuhlobene Nocwaningo: Ngeke kube khona ukulimala okuhlobene nocwaningo njengoba ucelwa ukuthi ubambe iqhaza kwinhlolekhono.

Abantu ongathintana nabo uma unenkinga: Xhumana nomcwaning: Udhavana Ramraj (0620871804), my supervisor Professor P Reddy (0313732808.) or the Institutional Research Ethics Administrator on 031 373 2375. Complaints can be reported to the DVC: Research, Innovation and Engagement Prof S Moyo on 031 373 2577 or moyos@dut.ac.za

ISITHASISELO D



IMVUME

Isivumelowano sokuba yingxenywe yocwaningo:

- Ngiyavuma ukuthi ngilutholile ulwazi kumcwaningi u-Udhavana Ramraj

maqondana nohlobo, indlela yokwenza, okuzuzayo nobungozi balolu, cwaningo- Research Ethics Clearance Number: _____

- Ngilutholile, ngafunda futhi ngaqonda lonkeulwazi olubhalwa ngenhla incwadi yolwazi lokuba yingxenywe) maqondana noncwaningo.
- Nginyaqonda ukuthi imiphumela yalolu cwaningo ngifaka neminingwane yami emaqondana nobulili, iminyaka, usuku lokuzalwa, ama-inishiyali nembangela yesifo kuoba yimfihlo lapho kudluliswa umbiko ngocwaningo.
- Uma ngibuka izinto ezidingekayo kulolu phenyo, ngiyavuma, ukuthi ulwazi oluqiwe ngenkathi kucwaningwa lungadluliselwa ngendlela yamakhompyutha umcwaningi.
- Noma inini, ngale kokucindezelwa, ngingahoxa futhi ngiyeke ukuba yingxenywe yalolu cwaningo.
- Ngibe nethuba elanele lokubuza imibuzi futhi (ngokuthanda kwami) ngizibona ngikulungele ukuba yingxenywe yalolu cwaningo.
- Nginyaqonda ukuthi izinto ezinths ezibalulekile futhi ezithuthukisayo ezingatholakala lapho kwenziwa ucwaningo ezihlobene nokhuthi bengiyingxenywe ngizonikezwa zona.

Amagama agcwele oyingxenywe yesithupha

Usuku

Isikathi

Isignesha/ Iphrinti

Mina, _____

(igama lomcwaningi) ngiyaqiniseka ukuthi lo ongenhla obeyingxenywe yaloli cwaningo ubazi

ngokugcwele ngohlobo, indlela okwenziwa ngayo
nobungozi baloli cwaningo olungenhla.

Igama eligcwele lomcwaningi

Usuku

Isignesha

Igama eligcwele (uma kudingeka)

Usuku

Isignesha

Igama eligcwele lomqaphi (uma kudingeka) Usuku

Isignesha

ISITHASISELO E

Mhlahlandlela Wokuxoxa

Isingeniso: Ngithanda ukukubonga ngokunginika isikhathi sokukhuluma nami namhlanje. Igama lami ngingu-Udhavana Ramraj futhi njengamanje ngingumfundi wamakhosi eDurban University of Technology. Ngilapha nomsizi wami ozobe ehumusha imibuzo yami uma kudingeka. Ngenza lolu cwaningo ukuqonda imibono yakho ngesifo sikashukela. Isifo sikashukela ukugula okubangelwa yi-metabolic ebangela amazinga aphezulu kashukela. Ngithanda ukusebenzisa ulwazi engiluthola kini ukusiza abanye abaguli ekuphatheni nasekuvimbeleni lesi sifo.

Uzonikezwa inombolo yokuhlonza ocwaningweni .Isizathu salokhu ukuthola izimpendulo ezicacile neziyiqiniso ezivela kuwe futhi ekuqinisekisa ukuthi impendulo yakho iyimfihlo ngokuphelele. Awuphoqelekele ukuphendula noma imuphi umbuzo ozizwa ungakhululekile kuwo. Ngaphambi kokuthi ngiqale, ngithanda ukuthi uzethule futhi uma kudingeka, ngicela ubuze noma imiphi imibuzo oyifunayo ngaphambi kokuba siqale

IMIBUZO

- 1.Ngithanda ukase okokuqala ngeminyaka yakho ,ubulili , umsebenzi owenzayo ?
- 2.Ifumando yakho ugane kuliphi lbanga?
- 3.Ungaphansi kwayiphi inkolo?
- 4.Uma ungakwazi ukhululekile ngokungazisa malini imali eniyitholayo ngenyanga eniziphilisa ngayo?

Manje sibhekana ngpo nesifo sikashukela uqobo

- 5.Ungangitshela lini oyiqondoyo noma oyaziyo nayelana nesifo sikashukela?

6. Ungangicobelela ngolwazi mayelans nokuthi : Wathola nini ukuthi uphila nesifo sikashukela futhi ukuthols kunjani ukphila nalesisifo?

Probe: Wazizwa kanjani mhla utshelwa ukithi unalesisifo

7. Ungakwazi ukungitshela iziphi izinkomba ezibonakalayo nokushintsha emzibeni uma uhaqwe ilesisifo wena ungangitshela ushintsho olubekhons emzimbeni wakho usunalesisifo

9. Ungakwazi ukungichazela ukuthi ukutholakala unalesisifo sikashukela kube namuphi umthelela empilweni yakho ngasese?

Probe: Kube namuphi umthelela empilweni yakho nokuxhumana nabanye abantu?

Probe: Ngiyakunxena ukuba uxoxisane nami ukuthi ukuba nalesisifo kube namthelela muni kwezempilo yakho ngokwejoyalekile?

11. Emizamweni yakho yansuku zonke yokuthuthukisa izinga lakho loshukela, isimo sakho sibuthinte kanjani ubudlelwano bakho nomndeneni wakho nabanye ababalulekile njengoshade naye namalungu omndeneni asondelene naye

12. Ukwazi kanjani ukumelana nengandezi yokulwisana nesifo sikashukela?

Lziphi ezinye zezinto oyaye uzenze?

13. Kukhona yini okwenziwayo ngokwesiko lakho okukhthaza noma okungagqu gquzeli okwezayo ukulwisana noshukela egazini? Uke wazama ukusebenzisa ezinye izindlela / noma eminye imizamo noma izindlela ezisesikweni ukungwamana nokulwa nesimo sakho?

Probe: Zikusize kanjani lezindlela ozisebena sile ekukusizeni ukulwisana nalesisifo?

14. Ungakwazi ukuxoxisana nami ungitshele ngezinto noma izimo odlule ngapansi kwazo mayelana nokubhekana nokulwisana nesifo sikashukela kanye nobuthi iziphi izinto enizenzayo eziyisiko lenu ezidlala indima enkulu ukulwisana nalesisifo?

Probe: Ungangixoxela ungichazele noma iziphi izinselela obhekane noma onqwamane nazo ukulwisana nokubhebhethaka kuka shakela ngenxa yezinicolelo namasiko?