KNOWLEDGE, ATTITUDES AND PRACTICES OF PEOPLE LIVING WITH DIABETES MELLITUS TYPE 2 (T2DM) FROM THE EDEN DISTRICT REGION OF SOUTH AFRICA

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A mini-thesis submitted in the fulfilment of requirements for the degree of Master of Public Health (MPH) at the School of Public Health, University of the Western Cape.

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KEY WORDS

Diabetes Mellitus

Knowledge

Attitudes

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Foot Care

Amputation

Eden District

DECLARATION

I declare that *"Knowledge, attitudes and practices of people living with diabetes mellitus type 2 (T2DM) from the Eden district region of South Africa"* is my own work.

It has not been submitted to any other institution for degree or examination.

Sources used and quoted have been indicated and credited accordingly by complete referencing.

Maxine Sherna van Reenen

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ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome
BMREC:	Bio-Medical Research Ethics Committee
DALY's:	Disability Adjusted Life Year
DM:	Diabetes Mellitus
ECM:	Enterprise Content Management
ICD 10:	International Classification of Disease, 10th Edition
HIV:	Human Immuno-Deficiency Virus
IDF:	International Diabetic Federation
KAP:	Knowledge, Attitude and Practice
MI:	Myocardial Infarction
MOPD:	Medical Out-Patient Department
NCD's:	Non Communicable Diseases
NHI:	National Health Initiative
PHC:	Primary Health Care
PVD:	Peripheral Vascular Disease
RVD:	Retroviral Disease
SOPD:	Surgical Out-Patient Department
SPSS:	Statistical Package for the Social Sciences

TIA:	Transient Ischemic Attack
T2DM:	Diabetes Mellitus Type Two
WCDoH:	Western Cape Department of Health

DEFINITION OF CONCEPTS

Knowledge: In the context of this study, knowledge is classified as the ability to understand concepts, risks and general information regarding T2DM.

Attitude: In the context of this study, attitude is classified as the mental and emotional approach participants adopted towards the lifestyle adjustments of the disease.

Practice: In the context of this study, practice is classified as the application of skills and or information relating to T2DM and habits adopted in the management of the disease.

Diabetes Mellitus: A metabolic disease in which the blood glucose levels are higher than normal.

Diabetes Mellitus Type 1: A chronic condition in which the pancreas produces little or no insulin. It has been shown to affect people of different age groups, though commonly diagnosed in children and adolescents. This type of diabetes mellitus commonly occurs due to a genetic disorder.

Diabetes Mellitus Type 2: A chronic condition that affects the way the body processes blood glucose whereby the body either does not produce enough insulin or it resists insulin. Type 2 is largely diet-related and develops over time.

Morbidity: The state of suffering from a specific disease or medical condition.

Mortality: The state of being subject to death.

Peripheral Neuropathy: Pain, weakness and numbness, usually in the hands and feet, caused by nerve damage. Peripheral Neuropathy is a complication of diabetes.

Amputation: Amputation is the surgical removal of a limb by trauma or non-trauma and medical illness. To prevent any malignancy and gangrene, amputation is performed as a medical measure to control pain or disease progression in the affected limb.

ABSTRACT

Background: Diabetes mellitus, a chronic condition in nature, is categorized into type 1 or type 2. By definition, it is classified as raised blood glucose levels. This burden contributes vastly to the rise in morbidity and mortality on a global scale and contributes quite significantly to its growing health care costs. In The Eden District, a peri-urban setting, patients are not adequately informed, lack knowledge about health, and have poor compliance attitudes and practices to prevent diabetes-related secondary complications. In order to develop and implement healthcare strategies, prevention interventions and education on diabetes, one needs to understand the knowledge, attitudes and practices of this population.

Aim: To determine the knowledge, attitudes and practices of patients with T2DM in the Eden District.

Methodology: A quantitative cross-sectional analytical study design was used to determine the knowledge, attitudes and practices of T2DM patients in the Eden District. Data from 117 consenting adult respondents using a structured questionnaire administered by the primary researcher was collected and stored for analysis. Statistical data analysis was conducted using the analysis software, SPSS version 27. A descriptive analysis was employed to summarize the responses to the levels of knowledge, attitudes and practices of respondents. A framework was developed for scoring purposes and used to categorize and define responses necessary to the aims and objectives of this study. Associations between knowledge, attitudes and practice scores, demographic and socio-demographic variables were further described using analytical statistics. P-values of <0.05 was used as statistically significant.

Results: Of the 117 respondents questioned, 69.2% were females, and 30.8% were males. The majority of respondents were over 50 years, making up 69.2% of total respondents participating in the study. The second highest group of respondents were in the age category

of 40-49 years, at 17.9%. The coloured population was the most represented in this study at 54.7%. In terms of education, 47% of respondents received secondary education, but only 27.4% completed grade 12. Only 3.4% of the respondents had no schooling. Looking at the respondents' employment status, most of them were not active participants of the working class. Approximately 42.7% of the respondents were retired, and 33.3% were unemployed. The monthly income per household reflected that 51.3% of respondents' households had a monthly income of R 0-4000. Analysis of knowledge showed that 81.2% of respondents had good knowledge, and the distribution was equal across both genders. The majority of respondents, 74.36%, showed to have good practices. The association between the knowledge and attitude scores of respondents to T2DM showed a strong significance with a p-value of 0.001. The association between the good practices and gender yielded a p-value of 0.008 showing statistical significance. A significant association was noted between physiotherapy intervention and exercise with a p-value of <0.05. There was an association between smoking and amputation resulting from T2DM (p-value of <0.05).

Conclusion: The findings of this study showed the population had good knowledge about T2DM. The knowledge aspect of the questionnaire revealed that despite respondents reflecting good knowledge across all ten questions (80.2%), less than 50% knew about T2DM curability, the normal ranges for blood glucose levels and natural nutritional properties of their dietary intake. Results yielded showed respondents' knowledge and attitudes showed a statistically significant association between the two. The more knowledgeable the respondents were, the more likely they were to have good attitudes toward T2DM. Our study revealed that many respondents did not implement smoking cessation advice as proposed by medical professionals. Yet, in this study, there was a significant association between smoking and amputations. This study shows that intervention in health

facilities need to be further supported by health messages in communities in order to intensify the prevention intervention programmes.

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Diabetes mellitus is a well-known medical condition distinguished by a rise in blood glucose levels. This condition contributes to high morbidity mortality and health costs worldwide. The primary forms of diabetes mellitus can be categorized as type 1 or type 2. Type 1 diabetes which accounts for 5-10% of cases, is caused by a deficiency of insulin secretion or the destruction of insulin-producing cells in the pancreas. Type 2, which accounts for 90-95% of all cases, results from a combination of the muscles' inability to respond to insulin (Colberg et al., 2010)

Diabetes Mellitus is one of the major non-communicable diseases (NCDs) in South Africa and is quickly developing into a significant public health problem (Booysen & Schlemmer, 2015). Globally, an estimated 422 million adults were living with diabetes in 2014, compared to 108 million in 1980 (WHO, 2016). However, the most substantial surge in approximately the next two decades in Type 2 diabetes (T2DM) prevalence will be in developing economic countries, like South Africa. Furthermore, within South Africa, T2DM contributes substantially to disease burden and is the fourth most common diagnosis in Primary Health Care facilities (Mash et al., 2014).

Whilst there seems to be quite a bit of research done regarding the attitudes and beliefs of patients and their families pertaining to T2DM in South Africa, there is little to no research and data relating to the Southern Cape region nor recommendations made for better care practices resulting from these types of studies. In the past, South Africans diagnosed with T2DM were predominantly affluent urban communities, but with westernization, it has become prevalent in rural communities (Moodley & Rambiritch, 2007). There are quite a few rural areas within the Southern Cape, some of which rely solely on Primary Health Care facilities for care and education on various health-related topics.

According to (Moodley & Rambiritch, 2007), the greatest weapon in the fight against diabetes mellitus is knowledge. With knowledge, patients are equipped to seek advice and inspired to take charge of their illness. If given the relevant knowledge, T2DM patients will know to seek other sources if their clinics are inadequately equipped.

1.2 Problem Statement

T2DM is one of the leading causes of morbidity and mortality globally (Bradshaw, Norman,

Pieterse, & Levitt, 2007). In The Eden District, a peri-urban setting, patients are not adequately informed, lack knowledge about health, and have poor compliance attitudes and practices to prevent diabetes-related secondary complications. As a result of the lack of knowledge leading to poor compliance, complications arise, leading to overburdened health facilities, as these patients require more appointment visits to facilities and often results in a lengthier hospitalization stay when admitted (Zhang et al., 2010).

Working as a health professional in an acute, regional facility, I became involved in the rehabilitation and management of patients with various conditions. The patients mainly treated by the rehabilitation team had complications that arose from T2DM. These complications included Peripheral Vascular Disease (PVD) resulting from tobacco use, which leads to peripheral neuropathy causing weakness of limbs or critical limb ischemia, resulting in non-traumatic amputations. In addition to PVD, delayed and poor wound healing is another complication of T2DM as the vascular system of these patients is compromised. Patients with T2DM increased by 9% (550 in 2015 and 600 in 2017) in two years (Stark, 2018). These numbers are only reflective of the outpatient visits to the facility. If these conditions are managed correctly at a primary facility through health promotion and preventative measures, complications and sequelae leading to hospitalization need not occur. Self-management does not only mean healthy eating but knowing what to eat and what to substitute in the diet for more cost-saving yet nutritious food. It also means possessing the knowledge and attitudes to seek advice and medical attention as needed once signs or symptoms appear. Moreover, self-management also includes knowledge and attitudes of medication use and compliance thereof, as well as knowledge and attitudes for behaviour adjustments to make and maintain lifestyle changes where applicable.

1.3 Purpose of Study

The purpose of this study is to determine the level of knowledge of T2DM patients their beliefs and practices related to T2DM. With this information, one will be able to recommend and possibly implement intervention strategies to address these concerns, combat the growing burden of disease and prevent co-morbidities and secondary complications related to the disease.

In addition, another tool used to impart knowledge is that of the service provider or health professional. With the findings of this study, one can motivate for more resource allocation for employment of Health Professionals in Primary Health Care (PHC) settings. Dietetics

services are strained, as only a handful cover the Eden District and only one in the GRH, offering dietetic and nutritional services. These services are pertinent to educating patients about their diet and lifestyle changes and adaptations required. More nursing staff or possible specialist services for foot care and hygiene could be recommended with motivating data for support. A cross-sectional study conducted in South Africa regarding awareness of foot care amongst DM patients showed that only 24% knew how to perform self-care correctly (Dikeukwu & Omole, 2013). Earlier studies have reported a lack or absence of podiatry services in the public sector in South Africa (Mash et al., 2014). Thus, the inclusion of Podiatry services in the public sector could be an opportunity to bridge that gap in terms of service delivery as the National Health Initiative (NHI) looms nearer, equal coverage for all.

This study will, therefore, assist in highlighting gaps in patients' understanding of T2DM. The findings of this study could provide health care workers with insights into the effectiveness of the current educational material and methods used to educate patients with T2DM. Furthermore, knowledge acquired from the study can assist in developing culturally appropriate and context-specific interventions for people living with diabetes.

1.4 Structure of mini-thesis

Chapter one describes the aetiology, background and problem of T2DM, highlighting the rationale and outlining the purpose of this study.

Chapter two explores the association between knowledge attitudes and practices of T2DM globally and in South Africa. This chapter discusses multiple reviews of past and present studies contributing to evidence-based practice management currently used in patient care management.

Chapter three briefly describes the study aim and objectives, method and study design, sampling of respondents, data collecting methods, data capturing and analysis, ethical considerations, limitations and generalizability.

Chapter four discusses the results yielded from the study. The results presented in this mini-thesis address the aim and objective of this study.

Chapter five discusses the analysis of the results and the relevance of the findings to current evidence practice.

Chapter six concludes the study, outlining and highlighting recommendations proposed based on results in this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The following review explores multiple evidence-based diabetes mellitus related knowledge, attitudes and practices. It covers implications of knowledge or lack thereof in the management of diabetes and subsequent sequelae. It further identifies gaps in health care systems and management strategies necessary to improve service delivery in addressing global disease burdens. This evidence could be used as motivation for better health care service delivery in anticipation of the imminent National Health Insurance Initiative (NHI) in South Africa.

2.2 Prevalence of Diabetes Mellitus II in developing countries and South Africa

The number of people living with diabetes in 2014 approximated to 422 million adults. This prevalence compared with 108 million in 1980, over three decades prior, showed to have quadrupled in diabetic cases. (WHO, 2016). Furthermore, in 2012, 1.5 million deaths were due to diabetes alone across the globe (WHO, 2016). The prevalence of diabetes is increasing worldwide, particularly in low- and middle-income countries (Mash et al., 2014). In 2000 and 2030, the occurrence of diabetes among all age groups globally was estimated to be 2.8% and 4.4%, respectively (Rheeder, 2006). In South Africa, diabetes shifted in the listings of highest causes of death, moving from tenth (2.7%) in 1997 to sixth (3.6%) cause of death in 2012, with an increase of 29.3% in standardized death rates (Pillay-van Wyk et al., 2016). Pillay-van Wyk et al. (2016) further reported an estimated type 2 diabetes prevalence varying between 3% to 28.7%. The most significant proportion of people with diabetes was documented in Durban's Indian communities, at 13%, and Cape Town's elderly Coloured community at 28.7% (Rheeder, 2006).

According to Guariguata and colleagues (2013), the greatest increase in the prevalence of T2DM over the next 20 years will be in developing economies, and South Africa will be at the forefront of this increase, having a higher baseline prevalence rate than any other African country.

The prevalence of DM in South Africa had nearly doubled since 2000 when Bradshaw et al. saw an increase in the prevalence of almost 6%. T2DM prevalence was estimated to be over 3.1 million, with just less than a quarter of a million patients diagnosed and treated in government facilities in 2014. As per the International Diabetic Federation (IDF), in 2019,

35,833.2 people in South Africa's adult population were living with DMII. An estimated 4.5 million South Africans in the public sector will have T2DM by 2030 (Guariguata et al., 2014)

To confer with the latest IDF atlas (International Diabetes Federation, 2019), Africa presented with the largest quantity of undiagnosed people, with 3 in 5 people undiagnosed for diabetes. Three out of four deaths resulting from diabetes are in people under the age of 60 years, this resulting in the highest proportion amongst the IDF regions.

2.3 Burden of Diabetes

Diabetes Mellitus has proven to be a major threat to global public health as one of the fast-growing non-communicable diseases (NCD) (Fatema et al., 2017). Its rise in morbidity and mortality has significant implications for acute and chronic health care services (Mayosi et al., 2009). The burden caused by diabetes mellitus and subsequent complications continues to escalate daily (Titilope, 2019).

In 2015, the global burden of disease study estimated that high body mass index and hyperglycemia ranked as the second and third leading risk factors for T2DM, respectively (Guariguata et al., 2014). Diabetes Mellitus is rapidly emerging as a significant health problem and represents one of the major non-communicable diseases (NCDs) in South Africa (Booysen & Schlemmer, 2015).

In South Africa, T2DM already contributes substantially to the burden of disease, and it is the fourth most common diagnosis in Primary Health Care facilities (Mash et al., 2014). A study conducted in four Cape Town hospitals highlighted the impact of T2DM on public health services (Dunbar, Hellenberg, & Levitt, 2015). An estimated 72.3% of lower extremity amputations in these facilities were in people with T2DM. The T2DM group underwent more multiple lower extremity amputations and had numerous admissions than the non-DM group. Furthermore, in this study, infection and ulcer were the leading causes of amputations in the DM group compared with the non-DM group (Dunbar et al., 2015). This further laments the chronicity of diabetes by highlighting the impact the continuous care and management required for this disease has on the healthcare system and the resources necessary on an unceasing basis.

In 2018, Guariguata et al. sought to estimate the annual projected cost and expenditure in the treatment and management of T2DM in the public sector of South Africa to project

future costs for 2030, when the National Health Insurance is to be implemented, to ascertain the financial readiness to treat this disease. However, it did not consider the costs of increased social grants resulting from T2DM complications, such as amputees or hemiplegics who are unable to rejoin the workforce. Moreover, these estimates exclude the cost of decreased productivity due to absenteeism or inability to work.

Patients' lives, well-being and health, are at risk of deteriorating and threatened, should their disease not be adequately taken care of, resulting in complications or even death (Titilope, 2019). Guariguata et al. 2014 further estimated an annual incidence for T2DM related conditions with 12614 new cases of T2DM related blindness, 3311 new cases of amputations, 11307 new cases of CVA and 8672 new cases of heart diseases in the year 2018.

Diagnosis, treatment and control of 240000 T2DM patients in South Africa for 2018 was estimated at R2.7 billion of total direct costs (Erzse et al., 2019). Half of which was used to cover diagnosis and treatment, and the other half-covered complications from T2DM. The cost to treat a patient in South Africa with T2DM in 2019 was estimated at 1245 (USD) (International Diabetes Federation, 2019). The IDF further documents that Africa had the second-lowest diabetes-related expenditure associated with diabetes at 1% of global spending.

2.4 Risk Factors for Diabetes Mellitus

The risk factors associated with diabetes are complex. Multiple risk factors have been identified in the development of diabetes. These include increased body mass index, physical inactivity and poor dietary intake (Mayosi et al., 2009). In 2010, an estimated 3.4 million deaths worldwide were due to overweight and obesity. In addition, obesity leads to increased years of life lost to 3.9% and 3.8% disability-adjusted life years (DALYs) worldwide (Lim et al., 2012). Obesity is associated with an increased risk of NCDs and ranked the fifth highest risk of death in South Africa in 2000 (Draper, Davidowitz, & Goedecke, 2016). The link between obesity and diabetes could be explained by mechanisms leading to insulin resistance and pancreatic β-cell dysfunction (Al-Goblan, Al-Alfi, & Khan, 2014). Overweight and obesity also interplay with other risk factors such as physical activity.

Globally, it is estimated that physical inactivity resulted in 6-10% of major NCDs (Lee et al., 2012). WHO stated in 2018 that one in four adults fail to meet the global standard for physical activity levels, with 80% of the adolescent population doing too little physical activity (World Health Organization, 2018). Findings by Lee et al. (2012) suggested that physical inactivity is as great a risk for the development of DM as smoking and obesity. Obesity and a lack of exercise or physical activity give rise to the inability of the body to react and utilize insulin to regulate blood-glucose levels. This is one of many critical factors contributing to the development and exacerbation of T2DM (Phillips & Steyl, 2014)

Bourne et al. (2002) stated that poor dietary intake has been linked to diabetes, suggesting that diets high in fat and low in fibre typical of the western diet have been implicated in the development of NCDs, including diabetes. A high intake of saturated fats, total fat intake and fatty acids may contribute to the risk of diabetes. In contrast, omega-3 fatty acids, low glycemic index foods and non-starch polysaccharides were associated with a decrease in risk of T2DM (Steyn et al., 2004). These risk factors need to be addressed to prevent NCDs, including diabetes. Persons who are able to adequately manage their risk factors through diet control and increasing their physical activity can control disease progression and reduce disabilities and premature death. (Lee et al., 2012).

Eliasson (2003) reviewed several studies and revealed that the development of type 2 diabetes is another consequence of cigarette smoking. Cigarette smoking is a risk factor for peripheral vascular disease (PVD) and accounts for one-fifth of all cardiac deaths and doubles the risk for heart failure (Czernin & Waldherr, 2003).

2.5 Knowledge regarding Diabetes Mellitus (T2DM)

As Moodley et al. (2007) stated, knowledge is the best arsenal in the attack against diabetes mellitus. If individuals with T2DM are adequately equipped with relevant knowledge, they can seek advice and be inspired to take charge of their illness through lifestyle and behavioural adaptations, better practices, and better informed and conscientious decisions regarding their condition (Moodley & Rambiritch, 2007). It is therefore essential to ascertain levels of understanding and their knowledge regarding the disease in order to formulate and implement appropriate prevention and education strategies and interventions

Guariguata and colleagues (2014) reviewed studies from various countries that agreed that T2DM knowledge is generally poor amongst T2DM patients. Knowledge is essential in any disease. It may assist in disease prevention, delay of onset or progress and disease exacerbation through understanding and adaptation of knowledge into practice. Through knowledge, imminent chronic comorbidities can be prevented, significantly affecting the quality of life of the patient and family. It is said that elements of knowledge, attitudes and practices (KAP) are interrelated, and if one of the elements were high, the other two would be affected positively (Fatema et al., 2017).

Knowledge yields positive attitudes and practices to lead to better management of diabetes, resulting in overall improved quality of life. This positivity to self-care and management of the disease to achieve goals, benefits and helps the health care service provider, as well as patient, achieve mutual goals in diabetes management (Al Bimani, Khan, & David, 2015).

Many patients are afraid to accept and acknowledge their illness because of stories heard within the communities, wrong advice and stigmas (Mendenhall & Norris, 2015). Lack of knowledge and misinformation, as previously mentioned, was a significant aspect of involuntary non-compliance in terms of self-care skills and management (Kamel, Badaway, El-Zeiny, 1999)

A study done by Al-Maskari et al. (2013) suggested that having a family member with a history of T2DM positively impacted respondents, as close relatives would act as a source of health-related information for education and assistance with disease management.

According to Al Bimani et al. (2015), patients' attitudes and practices are positively influenced by knowledge and awareness about the disease, ultimately allowing for better management of their condition and overall quality of life.

2.6 Management of Diabetes Mellitus (T2DM) at Health facilities in South Africa

The Society for Endocrinology, Metabolism and Diabetes of South Africa established patient management guidelines developed from the results of international research for patients with diabetes in South Africa. In 2012, the Society of Endocrinology, Metabolism and Diabetes of South Africa developed specific guidelines for diagnosing and managing T2DM for primary health care (PHC). These guidelines emphasize the importance of patient education to improve disease self-management (Phillips & Steyl, 2014).

In April 2016, the Global Report by WHO was published. Requests were made for greater

global involvement in terms of risk reduction pertaining to T2DM and increased health care visibility and accessibility for people with diabetes.

Whilst there seems to be quite a bit of research done regarding the attitudes and beliefs of patients and their families about T2DM in South Africa. There is little to no research and data relating to the Southern Cape Region nor recommendations made for better care practices as a result of these types of studies.

In the past, most South Africans living in wealthy urban communities were diagnosed with T2DM, but with the influence of westernization, it is fast becoming prevalent in rural communities (Kumar, Mash, 2007). That said, there are quite a few rural areas within the Southern Cape. Some of which rely solely on Primary Health Care facilities for care, education and assistance of various health-related topics. It is thus imperative to ensure that the correct foundation is laid at PHC and grassroots level to ensure compliance and avoid the escalation and exacerbation of conditions. According to Zhang et al. 2010, people with T2DM have more outpatient visits, use more medication, have a higher probability of being hospitalised and are more likely to require long term care.

Health facilities spend exorbitant amounts of money on pharmacological treatment, but little is said or documented about the costs incurred due to surgical interventions and rehabilitation. As previously mentioned, these patients' hospital stay is generally more extended than individuals who do not have T2DM, some requiring multiple surgeries to manage the immediate threat to life. This is why T2DM management must take a holistic approach to help patients and their relatives gain disease understanding and knowledge to acquire skills necessary for the implementation of structures for support, management and control of their disease. Furthermore, Mshunqane et al. (2012) state that to successfully manage T2DM, individuals should focus more on monitoring their dietary intake weight control and maintain an active lifestyle by engaging in increased physical activity.

Although the health system and multidisciplinary team drive the treatment of diabetes, it remains the responsibility of the patient and their families to maintain compliance to manage the disease effectively.

2.6.1 Exercise Therapy in the treatment of Diabetes Mellitus T2DM

Environmental risks coupled with genetic factors bear a strong correlation to the development of T2DM, with an increase in body weight, decreased levels of physical activity and increased age (Colberg et al., 2010).

Ancient Physicians, as far back as 400BC, believed physical activity to be valuable for health. This was later contradicted in the 20th century by recommending bed rest as prescribed care for patients who have suffered Myocardial Infarctions (MI: heart attacks) (Lee et al., 2012). However, recent studies have identified physical inactivity as an essential risk factor associated with T2DM. According to Mshunqane et al.(2012), T2DM is better controlled if patients participate in regular exercise. The World Health Organization (2018) recommends that T2DM persons do at least 150–300 minutes of moderate-intensity aerobic physical activity or at least 75–150 minutes of vigorous-intensity aerobic physical exercise; or an equivalent combination of moderate- and vigorous-intensity activity throughout the week.

Regular physical activity has shown to possess several changes to physiological aspects to benefit metabolic function for favourable muscular activation and liver insulin sensitivity to assist with glycaemic regulation. Through consistent physical activity, the risk for cardiovascular disease (CVD) is minimised considerably (Hayes & Kriska, 2008)

2.6.2 Nutritional Therapy

The global prevalence of T2DM is expected to increase because of ageing and growing urbanisation (Zhang et al., 2010). Muchiri, Gericke and Rheeder (2016) further emphasise the importance of knowledge and attitudes toward dietary and related behaviour changes and should be addressed as part of any dietary intervention.

Black communities tend not to want to lose weight or continue to eat in excess for cultural acceptance. Being thin or losing weight can be seen as being unhealthy and sick, making many believe that people will think they have HIV/AIDS if they were to lose weight (Draper et al., 2016). People tend to think that the fatter the individual, the more wealth and success the person has, and this could be a further driver for excessive eating and a reluctance to exercise. It shows attractiveness and is associated with affluence and being treated well by their spouse (Draper et al., 2016). In a previous study, an increase in obesity was not only attributed to the perception of wealth and prosperity but also affluence and

happiness, making it increasingly difficult to treat and prevent overweight and obesity (Faber et al., 2005). It has been suggested that nutrition therapy for black patients is unsuccessful when the diet prescription does not relate to the cultural and economic situation (Nthangeni et al., 2002)

In a study by Mendenhall et al. (2015), many women struggled to forego their traditional diets, such as pap and meat, a cultural staple in the rural community. Another participant in the study noted the difficulty in denying themselves the "treat" of the township junk food in the form of viennas, Bunny Chows and chip snacks. Mendenhall et al. (2015) further lament that in order to prevent secondary complications and maintain healthy, stable glycaemic levels, one has to monitor the caloric intake to ensure adequate body weight, blood glucose and blood pressure levels.

2.6.3 Foot Care

Foot problems constitute a significant part of morbidity in individuals with diabetes (Chandalia, Singh, Kapoor, Chandalia, & Lamba, 2008). Diabetic related lower extremity neuropathies and complications are global problems, contributing to significant financial strain on individuals and their families. Foot ulcers are chronic complications of diabetes mellitus. Individuals who have diabetes are susceptible to complications of the foot or feet and should therefore be equipped with the necessary knowledge and skills to care for their feet and identify complications as they arise and manage timeously (Desalu et al., 2011). Furthermore, Boulton et al. (2005) state that people at greatest risk of foot ulcerations can be recognized by careful medical foot assessments, education and regular follow up checks.

Persons with diabetes could suffer the lifetime risk of developing a foot ulcer with an infection rate as high as 25% (Boulton et al., 2005). Worldwide, over a million lower leg amputations were performed due to diabetes. Moreover, the costs incurred - personal, medical, social and financial, are exorbitantly high for preventable complications such as foot ulcers (Bakker et al., 2005)

The most substantial increase in T2DM is likely to be in developing countries (Desalu et al., 2011), where foot complications that are neuropathic and yet preventable are still a concern (Boulton et al., 2005). Complications arising from foot problems constitute an increasing public health problem from more frequent and repeated admissions, amputations and mortality.

In addition to medical costs are indirect costs that affect the patient, family and society. Activity limitations resulting in participation restrictions decreased productivity, workability, and a further decline in quality of life. This also results in loss of income and an increase in government subsidies through disability grants.

Diabetic foot complications have become a community problem and are the primary cause of hospital and healthcare facility admissions, amputation and mortality in T2DM patients. Furthermore, it is assessed in a review that the costs of non-traumatic amputations in 1998 ranged between US$ 16488-US$ 66215 (Boulton et al., 2005). This study reviewed cost data on inpatient costs globally per amputation.

It is rather difficult to estimate the cost of a prosthesis, as three categories need to be considered when making the decision to obtain a prosthesis. These three categories are the labour and fabrication costs, secondly the material costs and lastly, the running and maintenance costs of wearing a prosthesis (Össur, 2021) In the public sector, patients pay a percentage of costs depending on their income (Western Cape Government, 2019). In essence, not every patient will carry the total cost of prostheses. The excess thus falls on the health department budget allocated to the specific institution managing the patient.

It is, therefore, imperative that preventative and prophylactic foot care is advocated for to decrease patient morbidity, risk of amputations as well as lower health care expenditure (Al-Asmary, Mostafa, & Al-KhadiI, 2013).

2.6.4 Patient Education and Training for Effective Self-Management

As stated by Glanz et al. (2008), health education is considered as the course of supporting individuals, separately or collectively, in order to make educated decisions about problems affecting their health and those of others.

Successful management of T2DM is dependent on engaging an interactive relationship between persons with diabetes, their health care practitioners and the facilities they access (Mshunqane et al., 2012). Through this interaction, health care providers are able to empower individuals with education and knowledge in the ongoing treatment and self-care management of their disease (Muchiri et al., 2016).

2.6.5 Self-management

Self-care is the individual's choice of intervention required to minimise risk behaviour and maintain overall health and wellness (Snowden et al., 2010). It has been further suggested that self-care and self-management are beneficial in treating T2DM (Niroomand et al., 2016). Lifestyle management is essential in diabetes care and is achieved through combined physical activity interventions, proper diet and nutritional care, health care counselling, self-management education and support. (Titilope, 2019)

Self-care strategies are designed and implemented to provide individuals with tools through education and training. This training will equip them with the necessary skill-set and capabilities to manage their disease from a multifaceted approach (Renpenning & Taylor, 2003). Through self-management and assistance of family and friends to encourage and maintain self-management activities can allow for better glycaemic control, improved insulin response, reduction in weight and overall better quality of life, thereby decreasing risks of diabetic complications and mortality.

Smoking is a modifiable risk factor, and it exacerbates the dangers and predispositions to T2DM. It further contributes to secondary complications of T2DM, such as diabetic nephropathy (kidney failure) and peripheral neuropathy in diabetic patients (Titilope, 2019). Through smoking cessation, diabetic patients can improve overall symptoms glucose control, thereby improving quality of life and preventing complications and death. By reducing smoking consumption or completely ending the habit, self-care and management of T2DM would be made easier, as this lowers the risk of PVD and other complications caused by smoking and tobacco use.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter describes the study setting, research method and study design, study population and the selection of respondents. It explains the inclusion and exclusion criteria used to select the respondents, the process of data collection used and the analysis of data. Moreover, this chapter highlights the study aim and objectives that were the basis of this study.

3.2 Aims and Objectives

3.2.1 Aims

To determine the knowledge, attitudes and practices of patients with T2DM in the Eden District.

3.2.2 Objectives

- To determine the level of knowledge diabetic patients have on their illness.
- To determine the attitudes of diabetic patients toward treatment and management options of T2DM.
- To determine the beliefs and current practices implemented by diabetic patients regarding T2DM.
- To determine the level of compliance to the management of T2DM.
- To identify the reasons for non or poor compliance to management strategies for T2DM.
- To determine differences in knowledge scores between patients with and without non-traumatic amputations.

3.3 Study Setting

This study was conducted in the George Provincial Hospital (GRH), which serves in the Eden District. It is a regional facility offering specialized services and is the second-largest populated non-metro municipality in the Western Cape. George Regional Hospital offers specialized services and surgeries not made possible at the district level due to a lack of multiple resources ranging from medical staff to water and sanitation and waste management. It was thus the reason for conducting this study at GRH. Statistics received from the Integrated Development Plan 2017 estimated the population of the Eden District at 613124, 70% of which access the public health services, making up quite a large portion of the population. (Eden District Municipality, 2017). The Eden District includes the following towns: Riversdale, Mossel Bay, Oudtshoorn, Uniondale, Herald, Haarlem, Knysna, Plettenberg Bay, Sedgefield, Ladismith and George. There are 89 health facility sites within the District (Eden District Municipality, 2017).

3.4 Research Methodology

3.4.1 The Research method

A quantitative cross-sectional analytical study design was used to determine the knowledge, attitudes and practices of T2DM patients in the Eden District. A cross-sectional design was employed to describe and compare T2DM in the Eden District and the subgroups within the population (Varkevisser, Pathmanathan, Brownlee, 2003). Knowing that a problem exists but knowing little about its characteristics or possible causes requires further investigations to determine who is affected, how the affected behave and what do they know, believe or think about the problem and its causes.

The main objective of this study was to establish factors associated with knowledge, attitudes and practices related to T2DM patients in the Eden District.

3.4.2 The Study Design

Cross-sectional study designs are employed to estimate the prevalence and investigate causal relationships among multivariates (Reichenheim & Coutinho, 2010). A cross-sectional design was employed as it involves collecting data at a certain point in time. This study design was ideal for the research question. Moreover, a study of this nature has not been done in this setting. The researcher chose this study design because it allows one to make inferences about the population in Eden District and the various subgroups created through the questionnaire to determine if problems were causing or contributing to the burden of disease of T2DM. This design assisted in obtaining the results and inferences required to meet the objectives previously stated.

3.5 Study Population

The study population comprised people diagnosed with Diabetes Mellitus Type II (T2DM) in the Eden District.

3.6 Sample Size and Sampling Technique

3.6.1 Sample Size

CLINICOM is a health information system used for retrieving patient data attendances, billing, diagnoses through ICD 10 coding and procedures performed through ICD 11 coding International Classification of Diseases, Tenth Revision, Clinical Modification (ICD 10) and Enterprise Content Management (ECM) were used to obtain headcounts of T2DM patients who attended the facility for 2016/2017. These information systems use ICD10 codes for diagnostic purposes. The sample size was calculated using Roasoft Calculator with a 95% confidence interval yielded 235 participants; the number is based on a patient population of 600 seen at GRH for 2017. The final sample of participants employed in this study was 117. The original population size obtained from CLINICOM records an attendance to the facility as a headcount on not a visit per individual. This means that the same patient may have had multiple visits to the facility, and each time they attended, it was recorded as a headcount. This, therefore, had a major impact on the original population size at which the sample was calculated.

3.6.2 Sampling Technique

The participants were selected using a stratified convenience sampling method. All T2DM participants who met the study criteria received services at the George Provincial hospital during data collection were included in the study. A stratified convenience sampling method was employed using the previously mentioned health information system, CLINICOM. Statistics gathered from head counts for the year 2017 for patients with an appointment attending the MOPD and SOPD clinics at GRH, bearing an ICD 10 code reflecting T2DM as a condition, were considered as part of the total study population for which a suitable sample size would later be calculated. This technique was employed to exclude conditions, using CLINICOM and ICD10 coding, superfluous to the relevance of the study.

3.6.2.1 Inclusion Criteria

- Patients who have been diagnosed with T2DM for more than one year
- Non-traumatic amputees, resulting from PVD
- Older than 18 years
- In-patients and Outpatients attending GRH

3.6.2.2 Exclusion Criteria

The exclusion criteria for the study included:

- Participants who are Retroviral Disease (RVD) exposed
- Patients who have T2DM for less than one year
- Participants with a previous Transient Ischaemic Attack (TIA) or Cerebral Vascular Accident (CVA).
  - TIA and CVA share similarities to DM in terms of its effects on the vascular system, contributing to vascular insufficiency resulting in amputations, peripheral neuropathies and Peripheral Vascular Disease (PVD).(Arboix, 2015)

3.7 Data Collection Procedure

The questionnaire developed for this study was formulated using various other validated questionnaires. Some of the questions were adapted so that they are applicable to the population of people in the Eden District of the Western Cape, South Africa. This was needed to provide guidance and direction in order to achieve the aims and objectives of this study.

Data was collected using a self-formulated Knowledge, Attitudes and Practices (KAP) questionnaire, developed by the researcher as previously stated, the research tool was amended to suit this study, and parts of its content were used in previous studies by Niroomand et al., (2016)(Abbasi et al., 2018)(Izham, Hartayu, & Sri, 2012). Knowledge and Awareness of Diabetes Questionnaire developed for Chennai Urban Rural Epidemiology and the AusDiab Health Knowledge, Attitudes and Practices Questionnaire (Islam et al., 2014). Recommendations regarding foot care were sourced from the American College of Foot and Ankle Surgeons and Diabetes UK and were used in previous studies (Al-Hariri et al., 2017). A questionnaire used in the knowledge, attitudes and practice of Iranian patients were designed by the researcher and validated by endocrinologists (Niroomand et al., 2016). Questions about self-care regarding diabetes were from the Diabetes Self-Care Knowledge Questionnaire (DSCKQ-30) (Adibe, Aguwa, & Ukwe, 2011)

The questionnaire was made available in two of the three main languages communicated in the area: Afrikaans and English. Participants, whose primary and only language of communication was isiXhosa, were excluded from the study. Due to resource limitations, the researcher was unable to employ a translator to assist in collecting data from the isiXhosa speaking participants. As the only primary researcher with a restrictive language barrier, distribution and explanation of the questionnaire would not be accurate. In doing so, this excluded the possibilities of answers being skewed, misinterpreted or being forced through leading questions due to communication barriers.

The questionnaire that was used in this study consisted of demographic and socioeconomic questions. Ten questions for the different sections, namely knowledge, attitudes and practices related to T2DM, were asked. Five contingency questions were used for certain parts to form subgroups for comparing T2DM patients with amputations versus those without amputations. Contingency questions were explicitly developed and only to participants that had undergone an amputation or multiple amputations to create a subgroup when performing data analysis for statistical relevance and significance. The subgroup was created to understand attitudes and practices as a reflective measure for those who received a non-traumatic amputation due to their T2DM disease.

The questionnaire included an assessment of patients' knowledge of diabetes employed questions related to definitions, symptoms, causes and complications of T2DM. An

assessment of attitudes included a series of questions related to their approach to the disease and the ability to self-manage diabetes. Furthermore, an assessment regarding the patients' practices was included reviewing their self-care techniques, dietary modification, compliance with medications, exercise regime, and regular follow up attendances with health care professionals.

The questionnaire comprised of close-ended questions that answered either "yes" or "no" and made use of Lickert scales (Frequency, agreement or importance). The advantage of this is that the participants were restricted to a finite set and therefore made it more manageable. An advantage is that it was easier to code when capturing the data.

Each questionnaire was entirely anonymous and was to be logged as a study number, not using names or file numbers. The questionnaire was administered to the participants in the outpatient facility of the Medical Out-Patient Department (MOPD) and Surgical Out-Patient Department (SOPD), and the in-patient wards of Medico-Surgical and Surgical Wards of the George Provincial Hospital. A separate consultation room in the outpatient area, and bedside curtains in the wards, were used to ensure privacy. It also allowed patients to take their time in completing the questionnaire and gave the administrator a quiet space to translate or read the questionnaire or for participants to ask any questions. The researcher administered the questionnaires.

3.8 Data Analysis

Data were analysed using SPSS 27. Data were analyzed through descriptive analysis to determine respondents' socio-demographic characteristics. Mean, mode, median and standard deviation were used to label the overall features of the sample.
A scoring framework was developed and employed to categorize responses. The knowledge aspect of the questionnaire pertained to aetiology, nature, progression and complications related to T2DM. A correct answer rewarded a respondent with 1 point.
The attitude and practices portions of the questionnaire looked at respondents' behaviour, compliance and practical activities of daily living with T2DM. Scoring rewarded respondents with one point for a positive or a good behavioural response and zero points for a negative behavioural response.
Analytical statistics were used to describe the socio-demographic and socioeconomic

variables of the respondents, using two-by-two tables. A p-value of <0.05 was regarded as statistically significant.

3.9 Validity and Reliability

3.9.1 Validity

Selection bias was reduced by using a booking system (CLINICOM). Admissions clerks responsible for booking patients on the information system are not aware of patient diagnosis when creating an episode or booking these participants at the clinics used in this study. These clinics assess, treat and manage patients with varying conditions pertaining to the specific discipline under which they operate. The patients were given the next available date for clinics. Clinic dates are created annually for the subsequent year and cannot be pre-empted. These dates and the number of patients booked are subject to change due to staff allocation and availability. There is an allotted amount of slots available for these clinics, and appointments were made on a first-come, first-serve basis.

Upon discharge from the surgical ward, post-amputation, all patients receive a follow-up appointment at the Surgical Out-Patient Department (SOPD) or their local clinic in the periphery for wound inspection and further management. It was therefore ideal to approach this subgroup at their outpatient follow-up appointment, two-three weeks after the operation, as they may be more attentive and forthcoming when questioned about their diagnoses. Measurement bias was eliminated by using one interviewer and, in this case, the primary researcher.

3.9.2 Reliability

The data collection tool was piloted on five patients to screen the questionnaire and determine trends, address possible ambiguity and omit leading questions. These patients were not included in the final sample. In addition, reliability was further improved by checking discrepancies in data collection and collation during the pilot run. Reliability in data collection was strengthened by using an answer-marking sheet to validate correct and favourable answers, ensuring consistency in responses by participants and ensuring the research instrument was administered only by the researcher.

3.10 Generalisability

Regarding external generalisability, due to the location, method of data collection, and use of convenient sampling, the inferences made cannot be generalised. Urban lifestyle differs from rural lifestyle in terms of access to resources, habits and behaviour. Accessibility to medical and PHC resources may not be as easy for participants in rural areas compared to their urban counterparts. Urban participants may adopt more sedentary habits than their rural counterparts due to technology and living in close proximity to amenities.

3.11 Ethical Considerations

Ethics clearance to conduct the study was obtained from the University of the Western Cape's Bio-Medical Research Ethics Committee before starting. (Reference Number: BM19/1/31) The researcher also sought approval from the Western Cape Department of Health's (WCDOH) Research Ethics Division. On approval, permission to conduct the study was submitted to the George Provincial Hospital for record-keeping. An information sheet containing information about the study's relevance accompanied each questionnaire and informed consent documents. Each consent form has a corresponding study number linked to a questionnaire so that at any point after the completion that the patient wishes to retract, the data will be excluded from the study (Appendix B). Participant autonomy was respected throughout the duration of the study by ensuring that informed consent was understood and adhered to upon agreeing to participate in the research project.

Data obtained during the study was kept solely for the purposes of this study in a safe and secure storage drive on a password-protected computer to which only the researcher had access. Disposal of data will occur five years after data collection is completed. The researcher, supervisor and other persons related to the study have access to the data for analysis purposes only. Hard copies of the questionnaires will be stored in a remote location, known only to the researcher, and disposed of once data has been captured and checked by separate capturers to ensure continuity.

This research project sought to do good by ensuring that data collected from participants for use was done so solely for the purpose of this study so as not to cause anxiety, prejudice or harm to participants.

All participants who consented to the study were treated with fairness and equality. Each individual was afforded the opportunity to be counselled, by the researcher, regarding information exchange pertaining to the data collection tool should they have required it.

3.12 Study Limitations

A cross-sectional study design was used, therefore limiting the ability to prove causality but can help generate causal hypotheses. Additionally, there may have been limitations to sampling accuracy as the diagnostic coding system, required to trace T2DM patients, requires entry by staff members and could have been incorrectly entered into the system. Thus, influencing the population size of T2DM and potentially missing headcounts. Additionally, the booking system records patient attendance by headcounts per clinic, and therefore the initial sampling size was flawed. The same patient may have been counted more than once, thus influencing the total population size as more than it truly reflected, resulting in a large sample size than what was eventually achieved. Additionally, because of ethical considerations, collecting data from post-operative amputation patients were inconsistent, as most patients from the George area followed up at the SOPD wound clinic. Patients from the surrounding health care facilities, who had amputations, followed up at their local clinics, thus losing amputation headcounts.
Additionally, IsiXhosa speaking individuals were excluded from the study, which in itself may have caused limitations due to the influence of culture, religion and community influence on individual's disease and their management thereof.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter describes the results of the analysis, which is based on the relating to type 2 diabetes mellitus (T2DM) respondents obtained by questionnaires fabricated and structured to meet the aims and objectives of this study. These results reflect the responses from the study participants. The results look at several topics such as socio-demographic characteristics, knowledge, attitudes and practices and the associations and correlation between certain variables.

4.2 Demographic Characteristics of Respondents

Participating respondents who met the inclusion criteria from the Eden District of South Africa were issued a Knowledge, Attitudes and Practices (KAP) questionnaire. This undertaking yielded 117 completed responses used in the analysis of the results. The tables below illustrate the distribution of respondents by age, gender and ethnicity.

4.2.1 Gender, age and race

The following table shows that females made up most of the respondents in this study at 69.2%, with males at 30.8%. The majority of respondents were over 50 years, making up 69.2% of total respondents participating in the study. The second highest group of respondents were in the age category of 40-49 years, at 17.9%.

As shown in Table 1, the distribution of respondents by race varied. The coloured population was the most represented in this study at 54.7%, followed by white (26.5%) and black people (15.4%). The category labelled as 'other' is defined as a racial class not indicated in the questionnaire, which the respondent would closest identify.

Table 1: Presents the demographics information of respondents (n=117)

VARIABLE	FREQUENCY	PERCENT
Gender		
Female	81	69.2
Male	36	30.8
Age of Respondents (in years)		
18-29	5	4.3
30-39	7	6.0
40-49	21	17.9
>50	81	69.2
Did Not Answer	3	2.6
Race		
Coloured	64	54.7
White	31	26.5
Black	18	15.4
Other	2	1.7
Did not answer	2	1.7

4.2.2 Education, income employment and household size

The table below illustrates the socio-economic characteristics of the respondents that participated in the study. The majority of respondents (47%) received secondary education, but only 27.4% completed grade 12. Only 3.4% of the respondents had no schooling.

Looking at the respondents' employment status, most of them were not active participants of the working class. Approximately 42.7% of the respondents were retired, and 33.3% were unemployed. Informal employment is described as participants who do not receive a fixed salary on a month-to-month basis, usually described as having odd jobs to make ends meet. The number of occupants per household ranged from two people per household to more than four people. Many respondents reported a household occupancy of two people (30.8%), with other respondents indicating four people and more than four people at 28.5% and 25.6%, respectively.

The monthly income per household shown in Table 2 reflects that most respondents' (51.3%) households had a monthly income of R 0-4000. Interestingly 12.8% of the respondents did not state their monthly income.

Table 2: Distribution of respondents by education level, income, employment and household size (n=117)

VARIABLES	FREQUENCY	PERCENT
Level of Education		
None	4	3.4
Primary (Grade 1-7)	24	20.5
Secondary (Grade 8-11)	55	47.0
Secondary completed (Completed Grade 12)	32	27.4
Did not answer	2	1.7
Type of employment		
Unemployed	39	33.3
Informally employed	12	10.3
Employed	14	12.2
Retired	50	42.7
Did not answer	2	1.7
Monthly household income (R)		
0 - 4000	60	51.3
4001 - 8000	20	17.1
8001 - 12000	10	8.5
> 12000	12	10.3
Did not answer	15	12.8
Number of occupants		
2 people	36	30.8
3 people	16	13.7
4 people	33	28.2
> 4 people	30	25.6
Did not answer	2	1.7

4.3 Referrals, Information Sharing and Materials Issued to Respondents

The following frequency tables illustrate the number of respondents that were referred to Dietetics, Physiotherapy and Podiatry services. Moreover, the results show the services that patients received after they were referred to other health care professionals.

4.3.1 Dietician Referrals

The table below shows the distribution of respondents who received a referral to dietetic services for their Diabetes Mellitus II. The doctor referred approximately 65.8% of respondents to the dietician.

Table 3: Respondents referred to Dietetics Services (n=117)

	FREQUENCY	PERCENT
Referral to dietician		
Yes	77	65.8
No	38	32.5
Did not answer	2	1.7

4.3.1.1 Diet and Eating Plan Consultation

The figure below illustrates the percentage of respondents who received a referral to the dietician and subsequently had a diet consultation explained to them. About 72.7% of respondents reported receiving a verbal consultation explaining their dietary requirements and expectations.

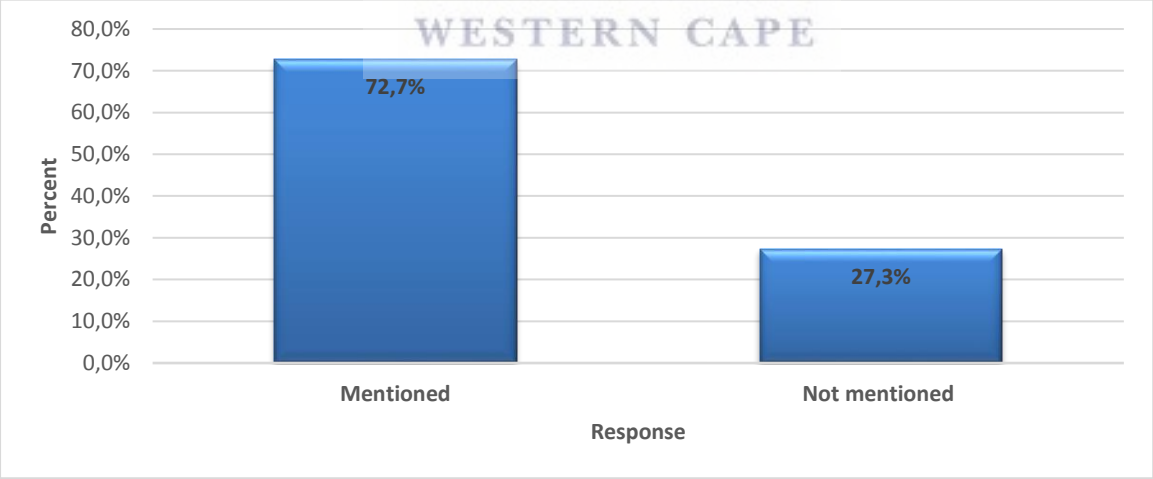

Figure 1: Dietary and Eating plan consultation of Respondents who received referrals to Dietetic Services (n=77)

4.3.1.2 Diet and Eating Plan Information Material

The figure below illustrates the percentage of respondents who received a referral to the dietician and subsequently received a diet and eating plan handout or pamphlet issued with the consultation. About 37.7% of respondents mentioned having received a form of an educational tool from the dietician.

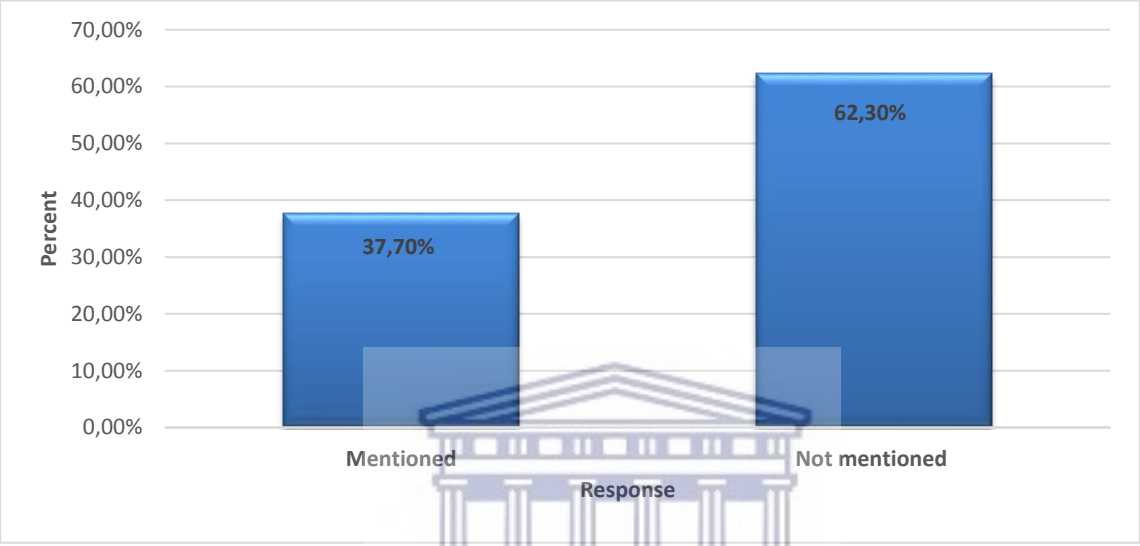

Figure 2: Diet and eating plan material issued to respondents who received referrals to Dietetic Services (n=77)

The following graph represents the adherence respondents with T2DM had regarding their compliance and adherence to following dietary recommendations given during their consultation with a Dietician.

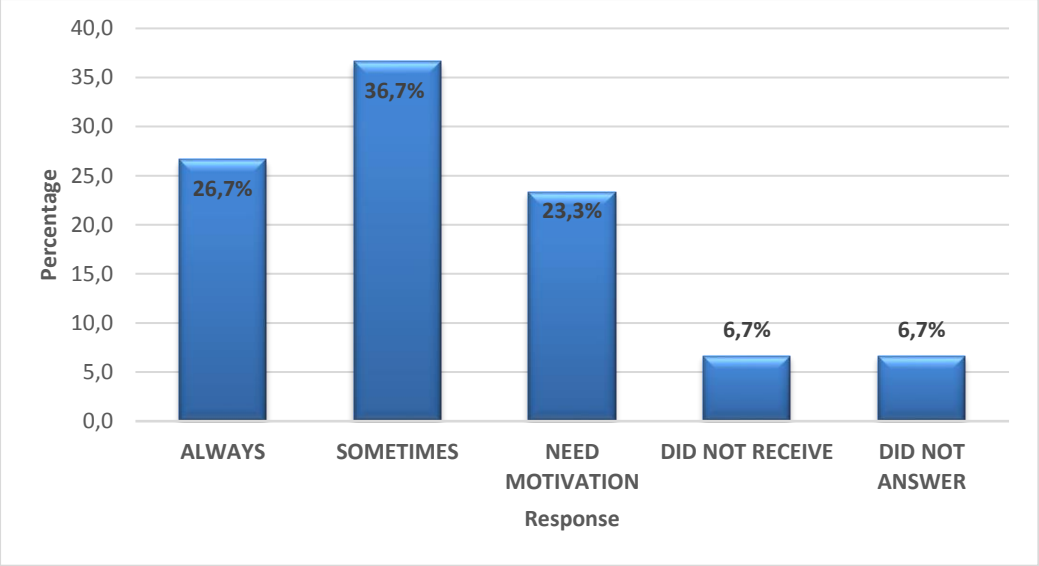

Figure 3: Respondents' adherence towards the dietary changes suggested through dietetic services (n=30)

4.3.2 Physiotherapy Referrals

The table below shows the distribution of respondents who received a referral to see a physiotherapist for their type two diabetes mellitus. The majority of respondents, constituting 78.6% of the study sample, did not receive a referral to a physiotherapist.

Table 4: Respondents referred to Physiotherapy Services (n=117)

	FREQUENCY	PERCENT
Referral To Physiotherapist		
Yes	23	19.7
No	92	78.6
Did Not Answer	2	1.7

4.3.2.1 Exercise Consultation

Of the respondents referred to physiotherapy services, 60.9% reported not receiving an explanation or counselling regarding the importance of exercise and physical activity in the treatment of Diabetes Mellitus II.

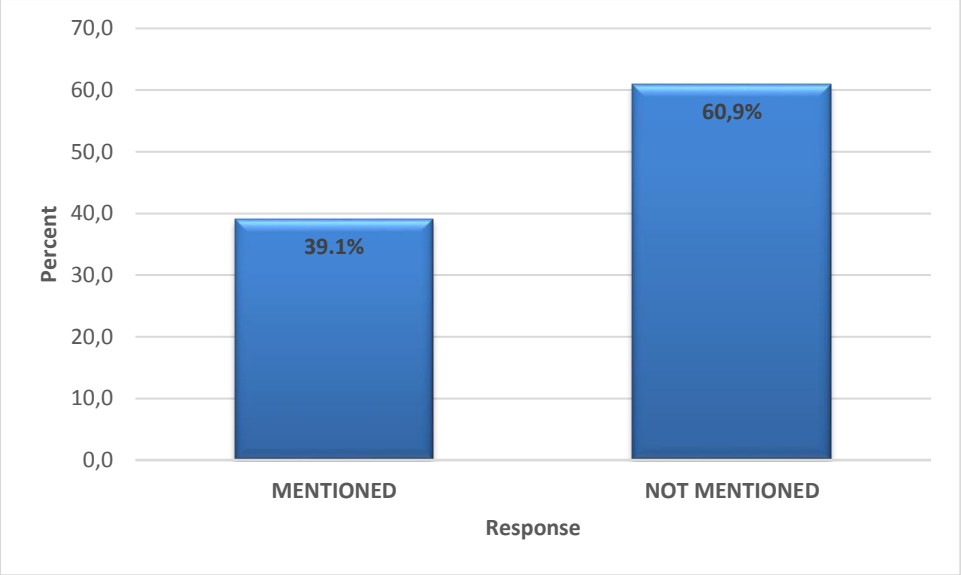

Figure 4: Physiotherapy Consultation regarding exercise and DMII (n=23)

4.3.2.2 Exercise Information Material

Of the respondents referred for physiotherapy, 91.3% were not issued an exercise program or brochure as an education tool as part of their treatment.

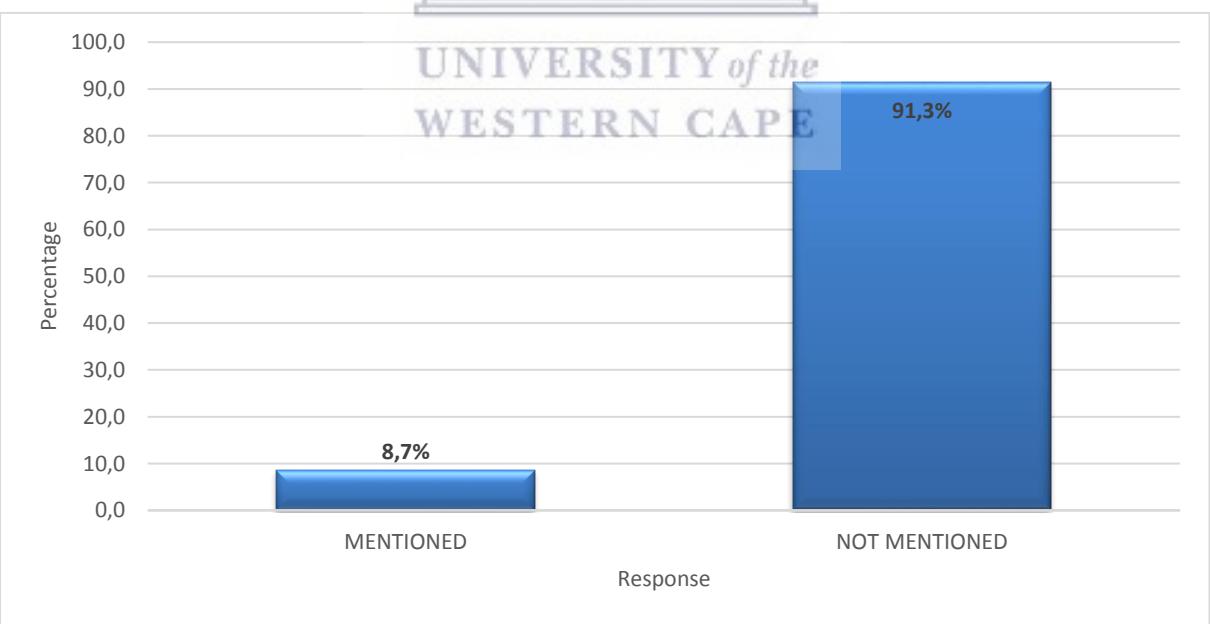

Figure 5: Physiotherapy and exercise educational material issued (n=23)

4.3.3 Podiatry/ Foot Care Services

The table below shows the distribution of respondents who received a referral to Podiatry Services. Only 6.8% of respondents indicated that they were referred to a Podiatrist.

Table 5: Respondents referred to Podiatry services (n=117)

	FREQUENCY	PERCENT
Referral To Podiatrist		
Yes	8	6.8
No	107	91.5
Did not answer	2	1.7

4.3.3.1 Podiatry/ Foot Care Consultation

Of the eight respondents, six reported that they did not receive a demonstration of foot care and foot hygiene on their consultation with the said health professional.

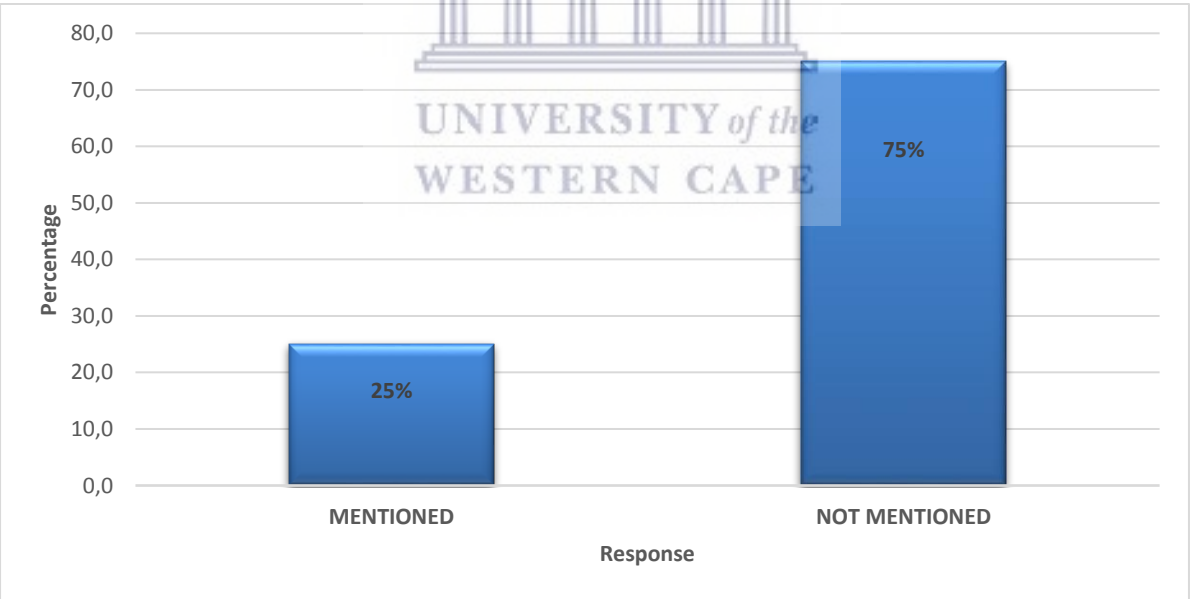

Figure 6: Podiatry services consultation and demonstration regarding foot care and foot hygiene (n=8)

4.3.3.2 Podiatry/ Foot Care Information Material

All eight respondents referred to a Podiatrist reported that they did not receive any form of educational material regarding foot care or foot hygiene.

4.4 Hospitalisation and Surgical Intervention

The following tables and figures represent the hospitalisation needs of respondents and further interrogate the reasons for hospitalisation and the escalation of treatment and interventions required in the medical management of T2DM.

Table 6 illustrates that 31.6% of respondents required hospital admission to treat their T2DM.

Table 6: Respondents requiring admission for T2DM related treatment (n=117)

	FREQUENCY	PERCENTAGE
Hospitalisation required		
Yes	37	31.6
No	73	62.4
Did not answer	7	6

4.4.1 Hospitalisation for Delayed Wound Healing

Of the 37 respondents requiring hospitalisation to treat their T2DM, 32.4% reported admission to hospital because of delayed wound healing resulting from their DMII.

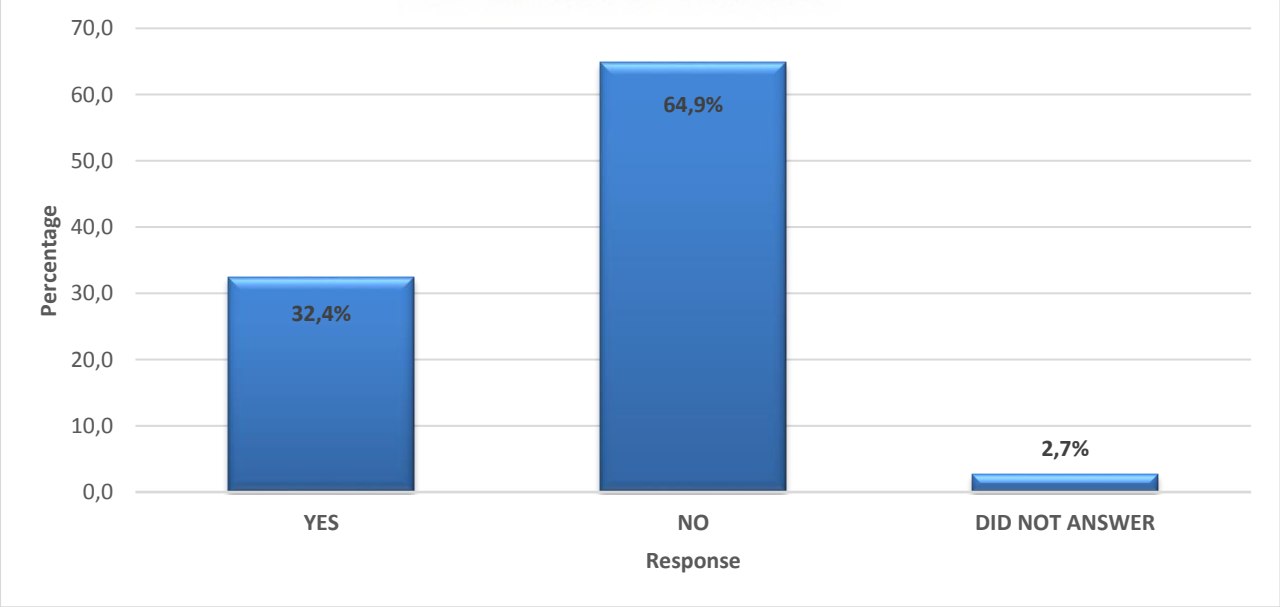

Figure 7: Respondents hospitalised for delayed wound healing (n=37)

4.4.2 Surgical Intervention

Figure 8 illustrates the percentage of respondents that required surgical intervention to treat their delayed wound healing. Of the respondents hospitalised for delayed wound healing, 84.6% required surgical intervention as part of their management.

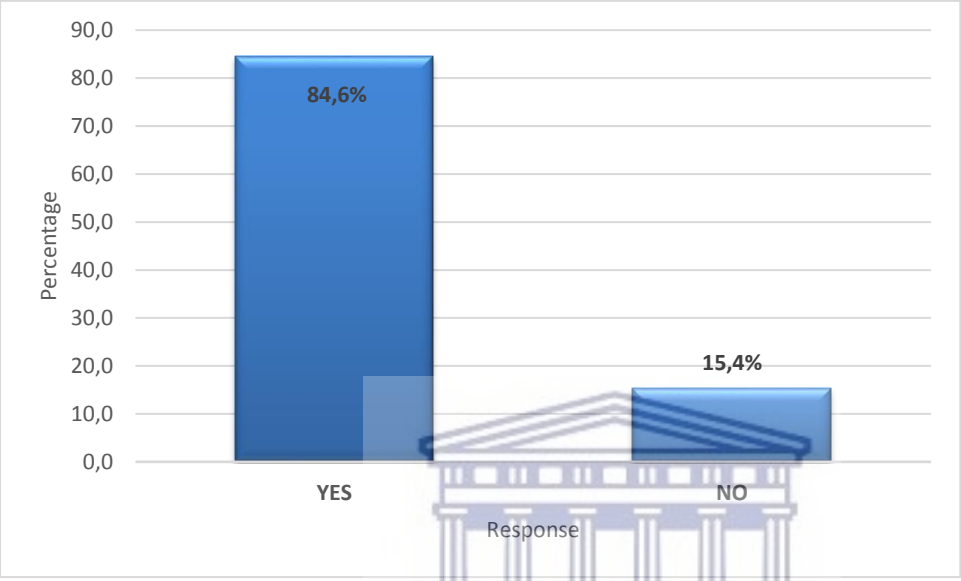

Figure 8: Respondents requiring surgical intervention for T2DM related complications (n=11)

4.4.3 Type of Surgical Intervention Required

The bar graph below shows that 61.9% of the respondents requiring surgical intervention to treat and manage their T2DM had amputations. However, 23.8% and 14.3% required a femoral-popliteal bypass and debridement, respectively.

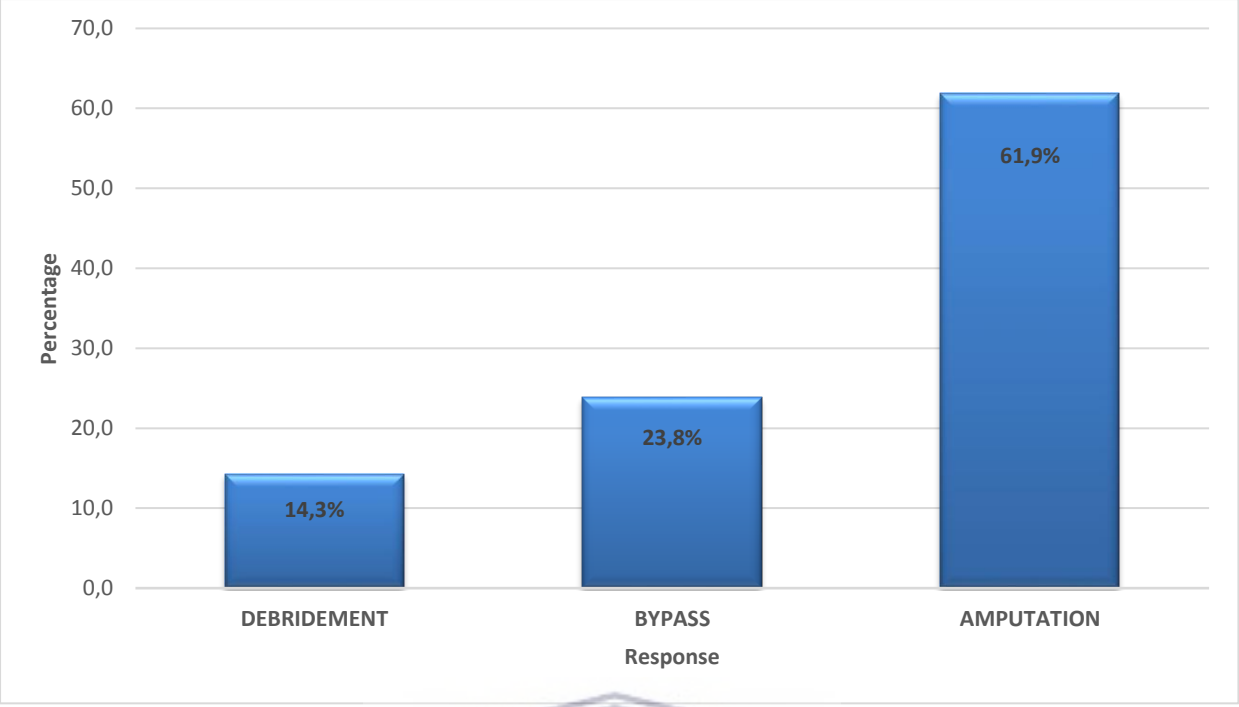

Figure 9: Type of Surgical Intervention required (n=21)

4.4.4 Amputation Resulting From Type II Diabetes Mellitus

Of the respondents requiring surgical intervention from delayed wound healing resulting in an amputation, 84.6% (11 participants) primarily resulted from T2DM; the remaining two participants had an amputation unrelated to T2DM

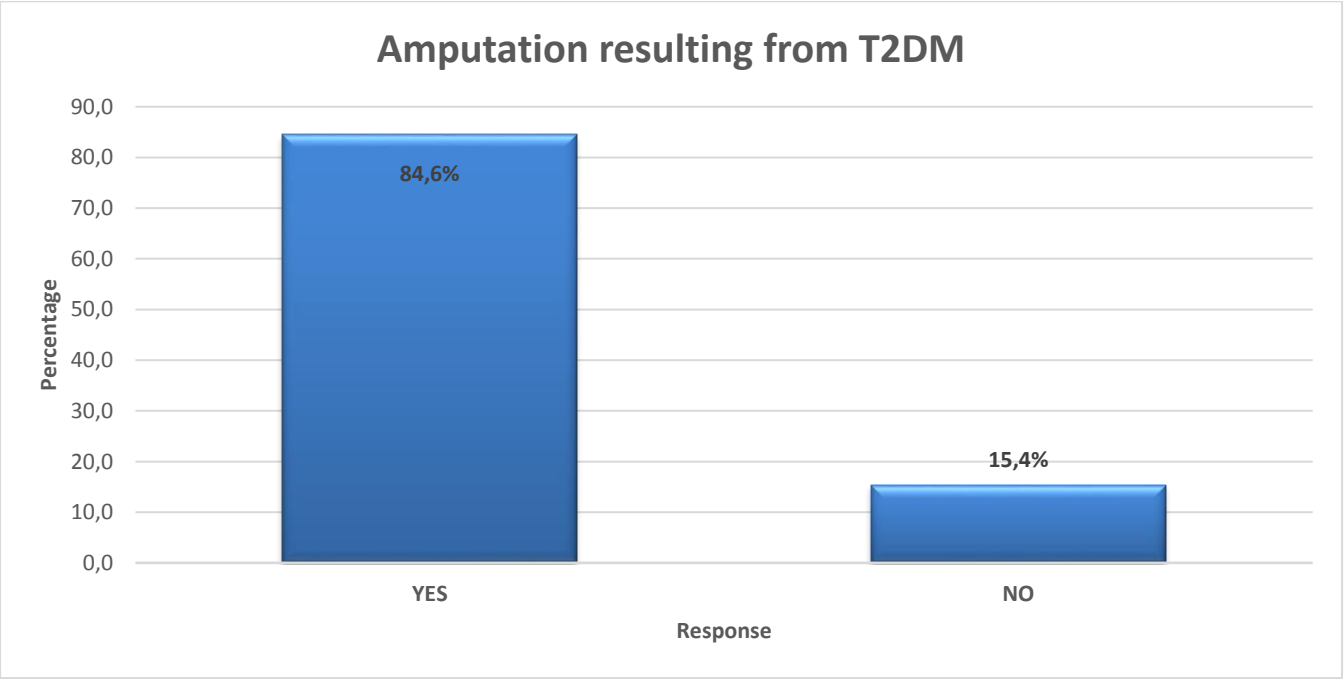

Figure 10: Respondents requiring an amputation because of T2DM (n=13)

4.5 KNOWLEDGE REGARDING DIABETES MELLITUS TYPE II (T2DM)

The researcher used ten questions in the questionnaire to test respondents' knowledge of T2DM. The assessment of the respondent's knowledge was marked as correct if the answers provided were in line with scientific evidence regarding the disease and essential information required to comply with the management of the disease.

Table 7 below demonstrate the spread of responses regarding the knowledge section of the questionnaire. Table 8 shows the distribution of total knowledge scores against socio-demographic characteristics. Figure 11 represents the overall knowledge score among respondents to the ten questions posed. "Good Knowledge" was awarded to respondents scoring more than 50% of the questions asked.

There is no definitive significance among any variable tested against the knowledge scores.

Although the female respondents show better knowledge than their male counterparts, the proportion of knowledge to its gender would suggest equal knowledge. "Good Knowledge" for females within the female group was 81.5%, and "Good Knowledge" of males within the male group was 80.6%

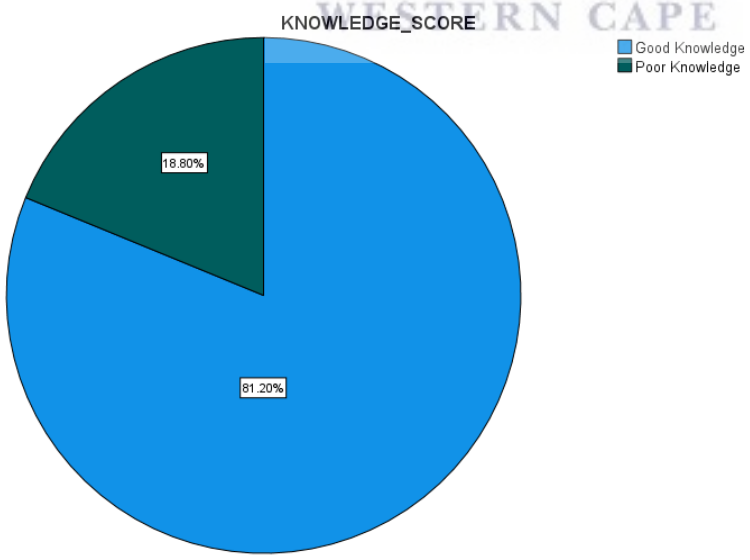

Figure 11: Diabetes Mellitus type II (T2DM) knowledge among respondents (n=117)

Table 7: Responses generated from the questions regarding knowledge about T2DM (n=117)

	KNOW		DON'T KNOW	
QUESTIONS	**n**	**%**	**n**	**%**
1. Knowledge regarding the definition of Diabetes Mellitus	80	68.4	22	18.8
2. Knowledge curability	41	35.0	33	28.2
3. Knowledge regarding the normal glucose levels	58	49.6	21	17.9
4. Knowledge regarding the frequency of self-monitoring and measurements	80	68.4	13	11.1
5. Knowledge regarding natural nutritional properties	57	48.7	12	10.3
6. Knowledge regarding dietary requirements as a diabetic	75	64.1	9	7.7
7. Knowledge regarding delayed wound healing	94	80.3	13	11.1
8. Knowledge regarding the frequency of checking their feet	76	65.0	22	18.8
9. Knowledge on secondary complications from wounds	94	80.3	13	11.1
10. The correct way to dry their feet	102	87.2	-	-

Table 7 shows that the majority of respondents knew about the correct way to dry their feet (87.2%), secondary complications from wounds (80.3%) and delayed wound healing (80.3%). The table above depicts participants who either knew or did not know the correct answers to the knowledge questions. It did not take into account participants who failed to and refrained from answering.

Table 8: Association between knowledge scores and socio-demographic characteristic (n=117)

	No of Respondents (n=117)	Good Knowledge n	Poor Knowledge n	P-VALUE
GENDER				0.906
Male	36	29	7	
Female	81	66	15	
AGE				0.627
18-29	5	4	1	
30-39	7	6	1	
40-49	21	19	2	
>50	81	63	18	
Did not answer	3	3	0	
RACE				0.866
White	31	24	7	
Coloured	64	52	12	
Black	18	15	3	
Other	2	2	0	
Did not answer	2	2	0	
EDUCATION				0.580
None	4	4	0	
Primary	24	21	3	
Secondary	55	44	11	
Secondary Completed	32	24	8	
Did not answer	2	2	0	
INCOME (rand)				0.608
0-4000	60	50	10	
4001-8000	20	14	6	
8001-12000	10	8	2	
>12000	12	11	1	
Did not answer	15	12	3	

There was no significant association between gender, age, race, education status, income and knowledge as indicated by the P-values in table 8.

Table 9: The relationship between respondents who received an amputation resulting from T2DM and their knowledge regarding the disease. (n=117)

	No of Respondents (n=117)	**Good Knowledge n**	**Poor Knowledge n**	**P-VALUE**
AMPUTATION FROM DM				**0.02**
Yes	11	9	2	
No	2	2	0	
Not Applicable	98	82	16	
Did not answer	6	2	4	

Table 9 shows a significant association between respondents' knowledge and amputations.

4.5.1 DISEASE PROGRESSION KNOWLEDGE AND ATTITUDES RELATED TO DIABETES

The following graphs represent a retrospective view of respondents' attitudes and responses to their medical management outcome following an amputation. About 63.6% of respondents agreed that they did not know how to manage their illness to prevent complications requiring hospitalisation, as shown in figure 12.

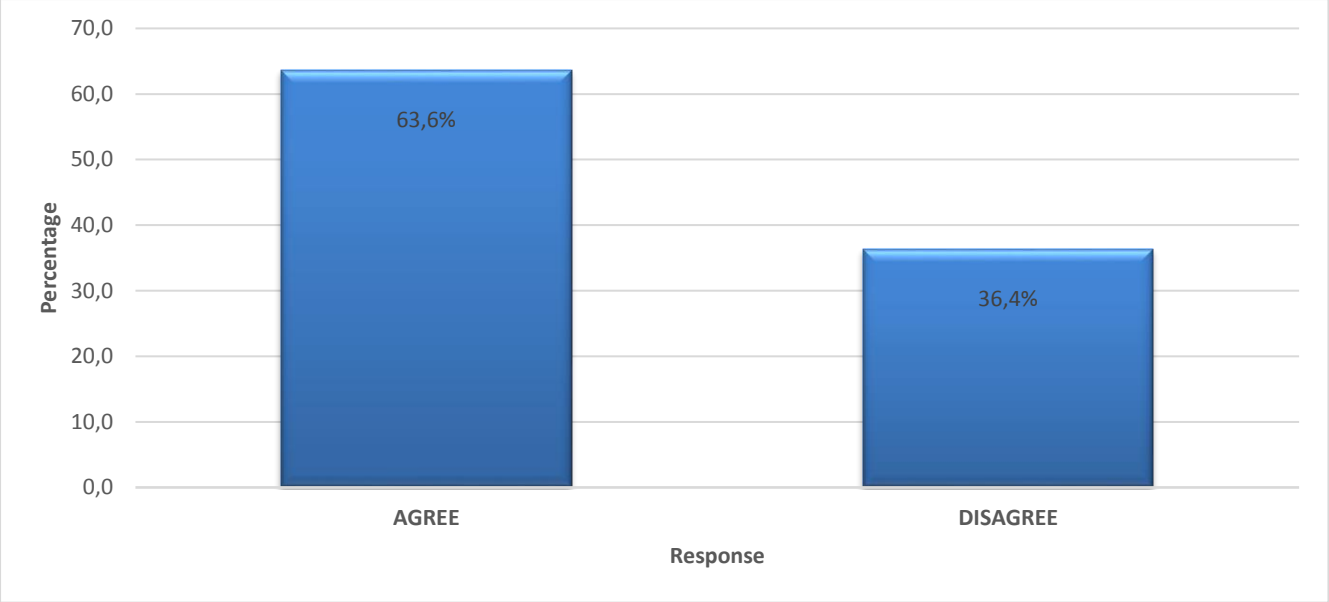

Figure 12: Respondents' Attitudes in retrospect to the management of their T2DM (n=11)

About 72.7% of participants who received amputations resulting from T2DM revealed that they did not know that the disease complications they experienced from their illness were possible.

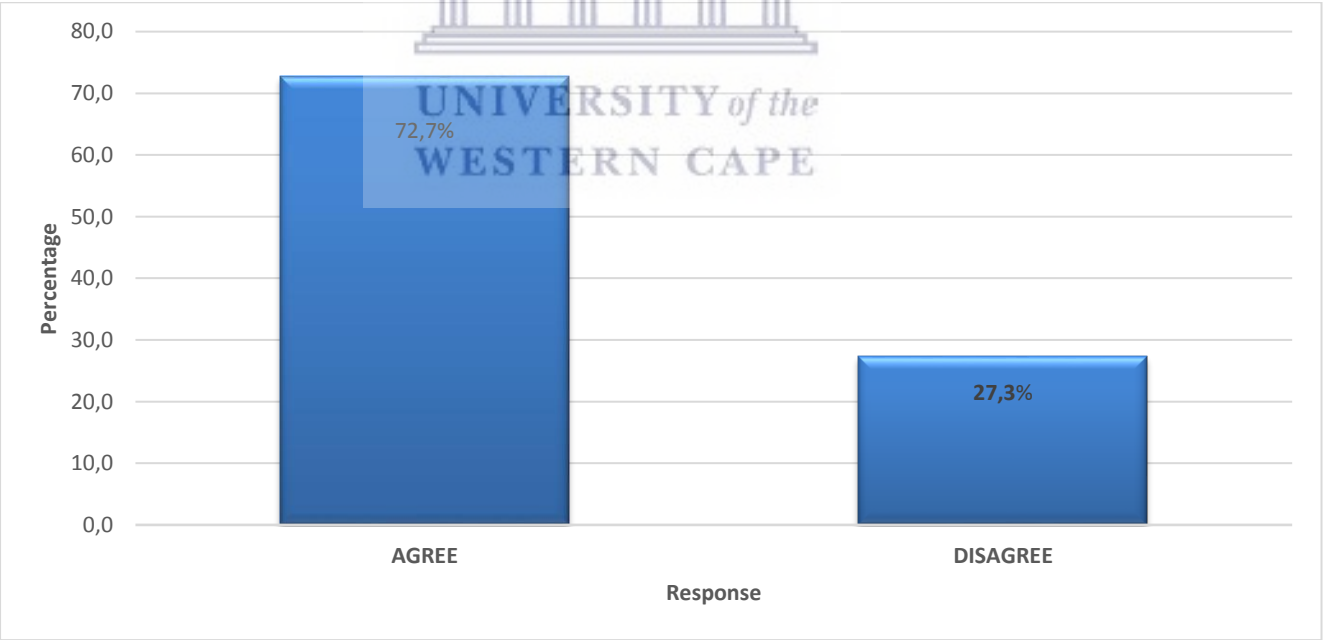

Figure 13: Respondents' Attitudes in retrospect to knowledge on complications of their T2DM (n=11)

Table 10 and Figure 14 below illustrates the association between the knowledge and attitude scores of respondents to T2DM. The association between the two was significant. The

respondents who showed to be more knowledgeable were more likely to have a better attitude in their approach to their disease management.

Table 10: The table below shows the association between knowledge and attitudes toward T2DM (n=117)

		ATTITUDE SCORE		
		Good Attitude	Poor Attitude	P-VALUE
KNOWLEDGE SCORE	Good Knowledge	54	41	**0.001**
	Poor Knowledge	4	18	

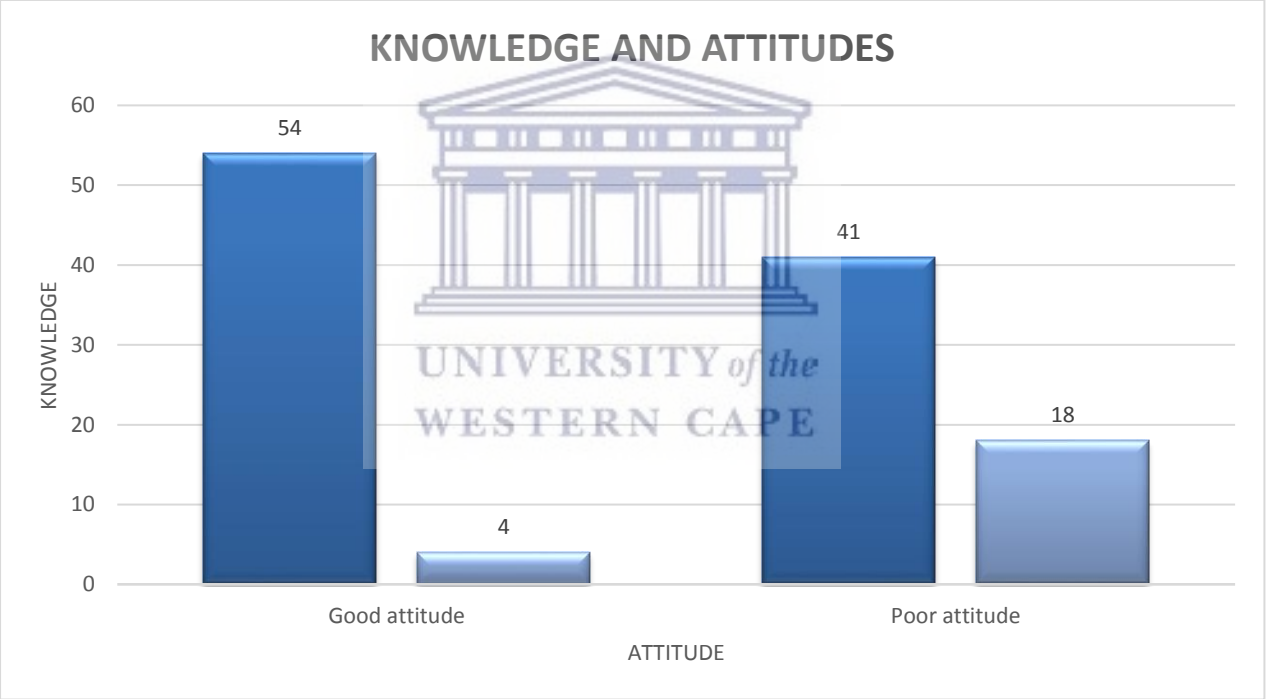

Table 11 represents the attitude scores of respondents against the socio-demographic characteristics. There was no significant relationship between the socio-demographic variables and attitudes.

Table 11: A representation of Attitude scores on socio-demographic characteristics of respondents. (n=117)

	No of Respondents (n=117)	Good Attitudes n	Poor Attitudes n	P-VALUE
GENDER				0.735
Male	36	17	19	
Female	81	41	40	
AGE				0.467
18-29	5	1	4	
30-39	7	3	4	
40-49	21	13	8	
>50	81	39	42	
Did not answer	3	2	1	
RACE				0.271
White	31	11	20	
Coloured	64	35	29	
Black	18	9	9	
Other	2	1	1	
Did not answer	2	2	0	
EDUCATION				0.509
None	4	2	2	
Primary	24	13	11	
Secondary	55	28	27	
Secondary Completed	32	13	19	
Did not answer	2	2	0	

4.5.2 DISEASE KNOWLEDGE AND PRACTICES RELATED TO DIABETES

The practice score was calculated by answering favourably by individual applications to their disease management. A total of eleven practical questions were asked. Respondents who scored five or more were regarded as having "Good Practices". The pie chart below represents the spread of responses. A greater number of respondents showed that most showed excellent practice scores.

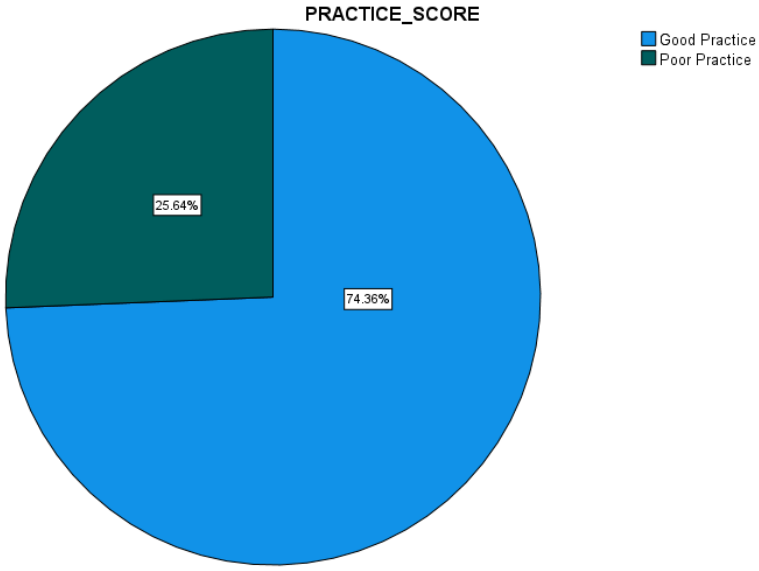

Figure 14: A pie chart representing respondents' total practice scores to T2DM (n=117)

Table 12 below illustrates an association between respondents' knowledge and their practices regarding their T2DM management.

Table 12: A table representing knowledge scores and practice scores of respondents

		PRACTICE SCORES		
		Good Practice	Poor Practice	P-VALUE
KNOWLEDGE SCORE	Good Knowledge	73	22	0.201
	Poor Knowledge	14	8	

There was no significant association between the good practices and socio-demographic variables except for gender, which yielded a p-value of less than 0.05.

Table 13: A table representing total practice scores and socio-demographic characteristics.

	No of Respondents (n=117)	Good Practices n	Poor Practices n	P-VALUE
GENDER				**0.008**
Male	36	21	15	
Female	81	66	15	
AGE				0.745
18-29	5	4	1	
30-39	7	5	2	
40-49	21	18	3	
>50	81	58	23	
Did not answer	3	2	1	
RACE				0.701
White	31	24	7	
Coloured	64	45	9	
Black	18	14	4	
Other	2	2	0	
Did not answer	2	2	0	
EDUCATION				0.318
None	4	4	0	
Primary	24	15	9	
Secondary	55	40	15	
Secondary Completed	32	26	6	
Did not answer	2	2	0	

The table below and subsequent demonstrates an association between respondents' interactions with health care professionals and their practice scores. Exposure to these health care professionals plays a vital role in the application of good practices toward disease management through nutritional, physical or hygienic care.

There was no significance noted between the total practice scores and the referrals of the respondents to the three specified health care professionals.

Table 14: A table representing total practice scores of respondents and referrals to health professionals.

Health Referrals	No of Respondents (n=117)	Good Practices n	Poor Practices n	P-VALUE
DIETICIAN				0.483
Mentioned	77	55	22	
Not Mentioned	38	30	8	
Did not answer	2	2	0	
PODIATRIST				0.464
Mentioned	8	7	1	
Not Mentioned	107	78	29	
Did not answer	2	2	0	
PHYSIOTHERAPIST				0.704
Mentioned	23	17	6	
Not Mentioned	92	68	24	
Did not answer	2	2	0	

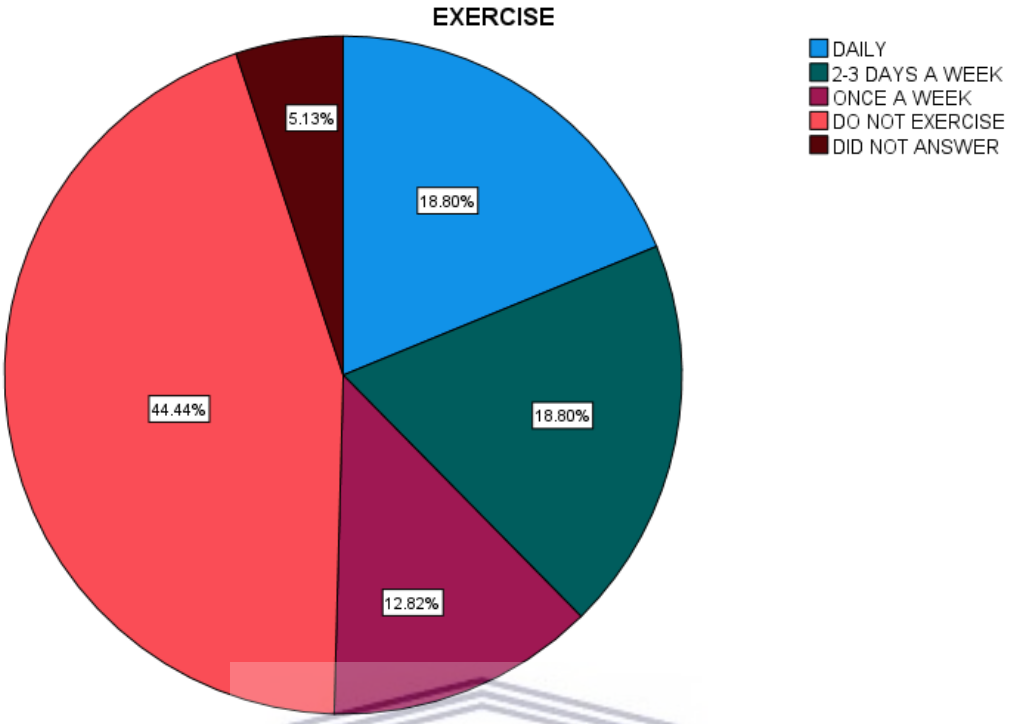

Figure 16: A pie chart representing the distribution of respondents with T2DM to exercise (n=117)

As shown in figure 16 majority of the respondents were inactive (44.44%), with only 18% exercising daily. However, upon further investigation, a significant association was noted between physiotherapy intervention and exercise (Table 15) with a p-value of <0.05.

Table 15: A table representing the association between respondents referred to physiotherapy services and their exercise practices (n=117)

	EXERCISE					
	DAILY	**2-3 DAYS A WEEK**	**ONCE A WEEK**	**DO NOT EXERCISE**	**DID NOT ANSWER**	**P-VALUE**
PHYSIOTHERAPIST						**0.000**
Mentioned	8	6	6	3	0	
Not Mentioned	14	16	9	49	4	
Did not answer	0	0	0	0	2	

4.6 SMOKING HABITS

The bar graphs below show the participants who indicated they smoked; only one stopped after receiving smoking cessation advice, sixteen admitted to smoking less than they did before. Seven respondents made no change to their smoking habits (figure 17). These graphs about smoking look at the relationship between the knowledge gained through education regarding smoking cessation and the attitudes and practices adopted, which lead to secondary complications.

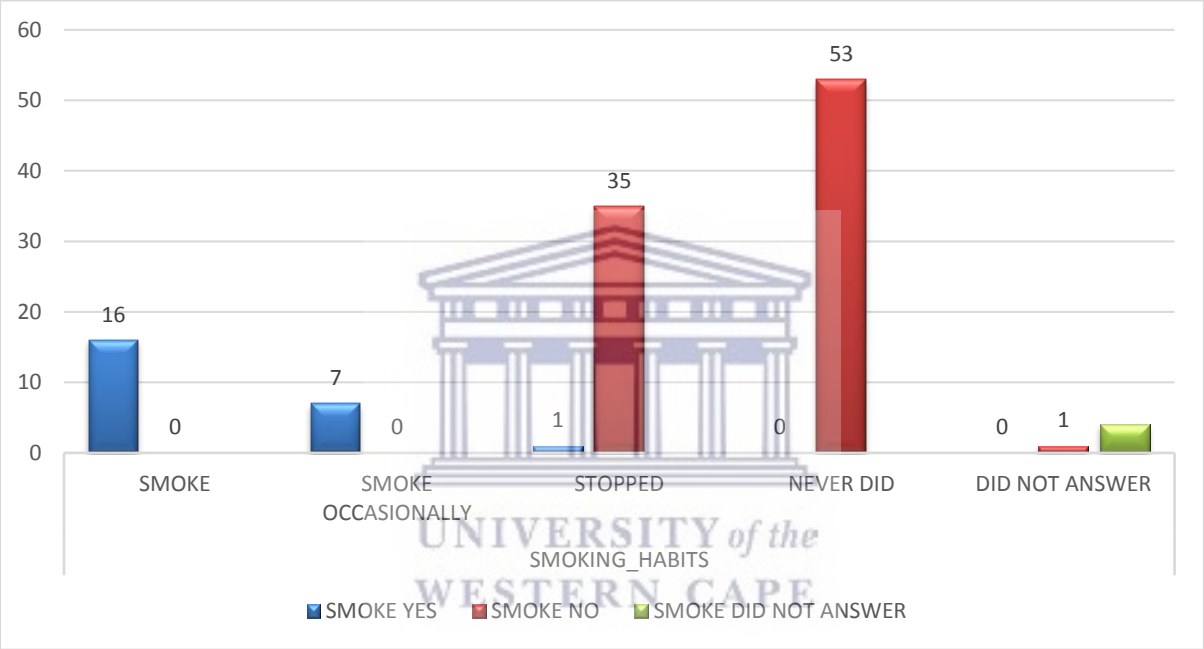

Figure 17: A representation of smoking habits of smokers who received smoking cessation advice (n=117)

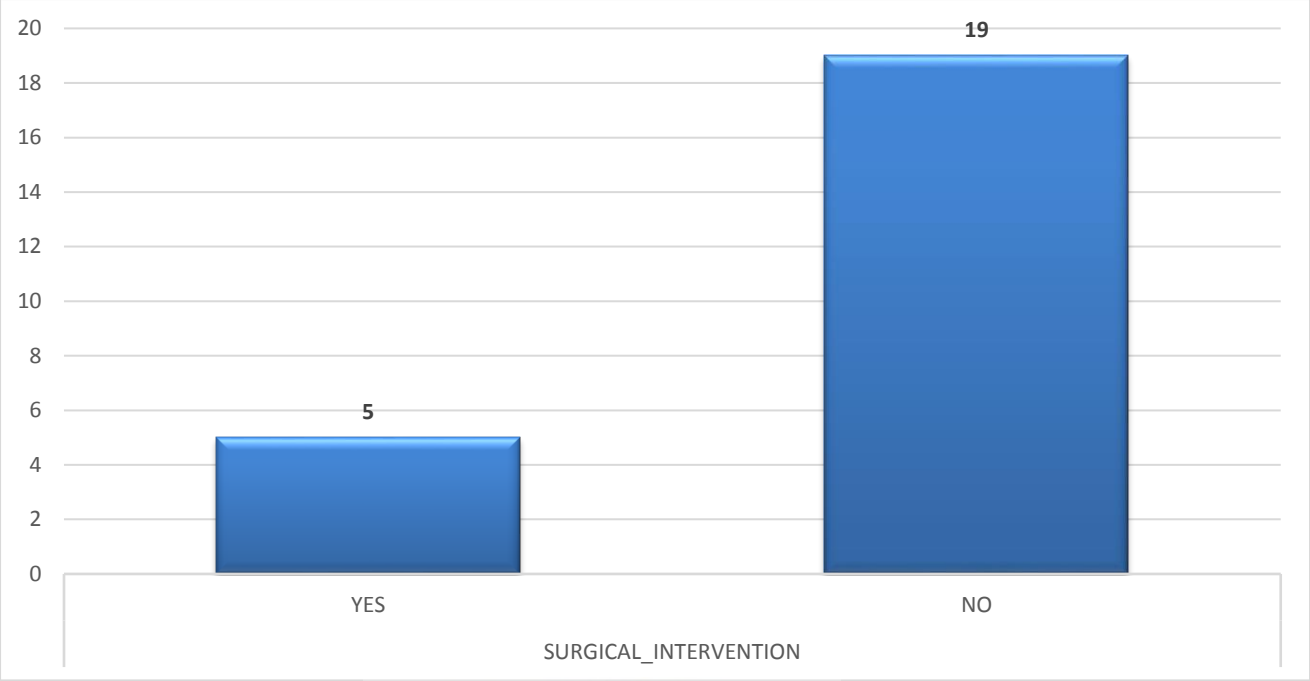

Figure 18: Smokers admitted to hospital requiring surgical intervention (n=24)

Of the respondents who were admitted to the hospital for T2DM related complications, five required surgical intervention. Of those five, four respondents received an amputation.

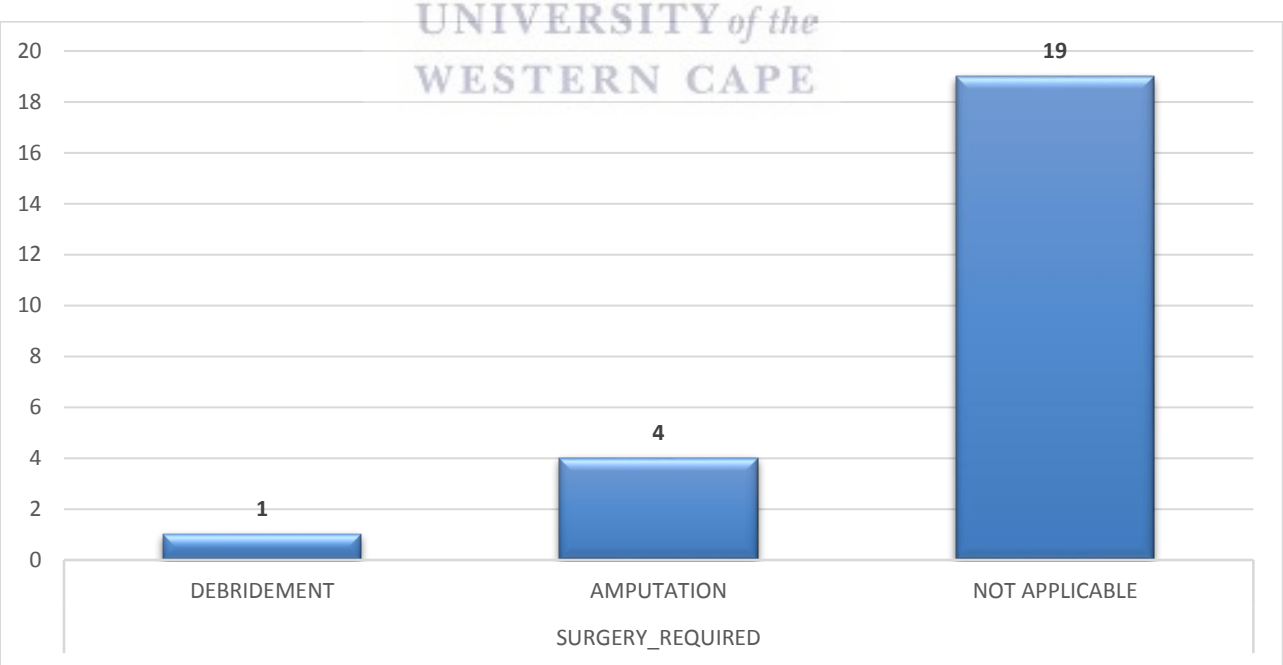

Figure 19: A representation of the type of surgery required when T2DM smokers were admitted to the hospital (n=24)

It should be noted that there is a significant association between smoking and amputation resulting from T2DM (Table 16), as represented by the p-value <0.05

Table 16: A table representing smoking and amputations resulting from T2DM (n=117)

	AMPUTATION FROM T2DM				
	YES	**NO**	**NOT APPLICABLE**	**DID NOT ANSWER**	**P-VALUE**
SMOKE	4	0	20	0	**0.000**
Yes	6	2	78	3	
No	1	0	0	3	
Did Not Answer	11	2	98	6	

CHAPTER FIVE: DISCUSSION

The findings gathered in this study concur with the research question and literature obtained and reviewed surrounding this topic. Whilst there is a vast amount of literature available regarding KAP associated with T2DM, there have been very few studies done in South Africa. The findings of these d research studies cannot be generalised to South African people.

This study was conducted at the George regional hospital servicing many sub-districts that make up the Eden District, a peri-urban region of the Western Cape in South Africa. The findings of this study specific to this region could potentially assist with the design, model, structure, and implementation of strategies to help its people and health care services with the treatment and management of T2DM. As previously mentioned, the hospital where the study was conducted is a pilot site for the NHI project.

Sociodemographic results revealed that the highest number of respondents in this study were females (69.2%), over the age of 50 years old (69.2%) and coloured ethnicity (54.7%). The highest level of education amongst respondents was secondary education, but not having completed grade twelve, at 47%. The highest number of respondents reported being retired (42.7%) with a monthly household income of between R0 to R4000. Results obtained from Boakye et al. (2018) reported patients with T2DM were inclined to engage in some form of self-management if they were younger, a female, having completed a schooling education and or had a higher annual household income. This finding concurs with that of Gutiérrez et al. (2021), who found that low socioeconomic status has an unfavourable influence on disease progression and an increased risk for vascular risks for amputations.

The findings of this study showed the population to have good knowledge of where T2DM is concerned. The responses generated from the knowledge aspect of the questionnaire revealed despite respondents reflecting overall good knowledge across all ten questions (80.2%), less than 50% knew about T2DM curability, the normal ranges for blood glucose levels and natural nutritional properties of their dietary intake. There was no significant association between gender, age, race, education status, income and knowledge. The results showed that the majority of respondents were more than 50 years old (69.2%), concurring with Kyrou et al., who stated that ageing increased the risk of developing T2DM by both weakening the body's ability to produce insulin and regulating it. This allows for the control

of blood glucose levels and insulin production. Simultaneously ageing also constitutes to low physical activity or physical inactivity.

However, there was statistical significance in the association between respondents' knowledge and amputations. Diabetes knowledge has been recognized as an important element in the adherence of diabetes self-care techniques. The more patients are informed about their disease, the better they will practice self-management and self-care (Kugbey, Oppong Asante, & Adulai, 2017).

Studies have shown that disease prevention and health education programs and strategies improve disease knowledge and self-care management. It is therefore evident that a lack of or poor knowledge will affect self-care and disease management, increasing risks for secondary complications and amputations. (Hadden, Martin, Prince, & Lowry Barnes, 2019)

A retrospective reflective question was posed to respondents regarding their management of their T2DM, whereby 63.6% of respondents agreed that they did not know how to manage their illness to prevent secondary complications, which lead to hospitalisation resulting from T2DM. Respondents who had an amputation revealed that they did not know that the complications they experienced were possible. Such findings are disturbing and illustrate that diabetes education might be insufficient, and therefore, there is a need for interventions that supplement the health education provided in clinical settings.

Results yielded through cross-tabulation of respondents' knowledge and attitudes showed a statistically significant association between the two. The more knowledgeable the respondents were, the more likely they were to have good attitudes toward T2DM.

The referral pathways play an essential role in expanding the knowledge and spreading information about T2DM, its treatment and self-management. The most successful program for lasting effects combines dietary changes, increased physical activity and behavioural modification. (Colberg et al., 2010). Where T2DM is concerned, the natural course of referral is to dietetic services. In this study, only 65.8% of respondents were referred to the dietician upon diagnosis of T2DM. Approximately 19.2% of respondents received a referral to physiotherapy services for a consultation regarding T2DM management. There was a significant association found between physiotherapy intervention and exercises. The majority of respondents (44.44%) were physically inactive, and a mere 18% partook in daily physical activity. Considering the age of most respondents in this study, it is no surprise that many were inactive. Increasing age has also been shown to independently predict lower daily physical activity levels (Kyrou et al., 2020).

A meta-analysis done by Liu, Zhang, Yan, & Yuan, 2018 concluded that there was a clear association between smoking and an increased risk of diabetic foot amputation. Our study revealed that smoking cessation advice was ineffective in that only one respondent stopped after education and advice was offered. Upon further scrutiny, results showed a significant association between smoking and amputations. In such settings where smoking is a norm, smoking cessation interventions might be necessary to reduce the disease burden that results from smoking.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study revealed that there was generally good knowledge amongst respondents regarding T2DM in the Eden District. Although good knowledge was shown, there was still an association between knowledge scores and amputations, which is a cause for concern. As previously stated, good knowledge is found to improve self-care management and thereby lower risks for secondary complications and risk for amputations. This may result from the inability to measure daily blood glucose levels adequately. The higher number of respondents were not able to identify the correct levels. It could also suggest inadequate knowledge regarding diet and nutrition, as the higher number of respondents were unable to identify the natural nutritional properties of their diet. Another association was found between physiotherapy referrals and exercise. This warrants the need for referrals to physiotherapy and dietetic services. A total of 6.8% of respondents referred to podiatry services upon T2DM diagnosis. As previously mentioned, there are no podiatry services in the government sector. Although the respondents reported good foot knowledge, foot care and hygiene, 53% revealed they always wear tight-fitting shoes. Thus risk developing foot ulcers, leading to wound sepsis and possibly amputation.

Although the respondents displayed good knowledge regarding T2DM, they also displayed a poor application of their knowledge in certain practices to manage their disease, such as maintaining a physically active lifestyle and refraining from smoking.

6.2 Recommendations

The observations and findings of the study inspired the following recommendations in the management of T2DM.

6.2.1 Health Promotion and Education

i. A comprehensive initiative needs to be adequately structured to address T2DM awareness. This strategy needs to educate individuals on prevention, risk factors, disease management, treatment and support of T2DM. The support could encompass the provision of general information or training by health care professionals to family members and caregivers assisting individuals with T2DM.

ii. It is recommended that patients diagnosed with T2DM be referred to the necessary health professionals for a consultation. A patient-specific needs analysis would determine which treatment options are viable, practical and imperative to the holistic management of each individual.

iii. Education and health promotion should be made available to the general population to encourage a healthier lifestyle, thereby reducing the risk of developing T2DM and delaying the onset of diabetes. These tools will aid in reducing disease progression and possibly reduce the likelihood of secondary complications.

6.2.2 Mandates and Policies

i. It is recommended that the necessary stakeholders in the Departments of Health and Education, at the provincial level, be informed of the need to alter guidelines pertaining to the approach of T2DM education and management.
   a. Department of Health to include a guideline for mandatory referral to allied health professionals upon diagnosis.
   b. Department of Health to encourage annual training and continuous professional development skills to keep abreast of new developments in T2DM.
   c. Department of Education to implement education programmes in schools to promote healthy living.
   d. Department of Education in partnership with Department of Agriculture to encourage healthy dietary intake through garden projects at schools.

6.2.3 Financial implications

i. There are so many national and international projects dedicated to research and awareness surrounding other diseases that T2DM does not gain the same amount of exposure as it should. There should be a yearly fund ring-fenced for the education, awareness and training of T2DM for health care professionals.

ii. The Department of Health should investigate reasons for the lack of podiatry services in the government sector in order to expand these services to the general population, especially in light of the advancement toward the NHI.

iii. With the added sugar taxes implemented in recent years, funds could be ring-fenced to assist with resource allocations to the necessary departments involved in T2DM prevention and education programs.

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APPENDIX A

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2809, Fax: 27 21-959 2872

E-mail: soph-comm@uwc.ac.za

INFORMATION SHEET

Project Title: Knowledge, Attitudes and Practices of People Living with Diabetes Mellitus Type 2 (DMII) from the Eden District region of South Africa.

What is this study about?

This is a research project being conducted by Maxine van Reenen at the University of the Western Cape. We are inviting you to participate in this research project because you attend the George Provincial Hospital for the treatment and management of Diabetes Mellitus II. The purpose of this research project is to assist with determining the knowledge, attitudes and practices of diabetic patients in the management of the disease and addressing barriers identified.

What will I be asked to do if I agree to participate?

You will be asked to complete a questionnaire pertaining to your social circumstances, your knowledge regarding your illness, your attitude toward it and your management thereof. You may either complete the questionnaire on your own or assistance will be provided if and when needed. The study will take place at the George Provincial Hospital during your scheduled visit or stay at this institution. The questionnaire has 31 questions, with various options to answer.

Would my participation in this study be kept confidential?

The researchers undertake to protect your identity and the nature of your contribution. For anonymous surveys, state that the questionnaire is anonymous and will not contain information that may personally identify you.

To ensure your confidentiality, each questionnaire has a data number and does not require names, folder or identity numbers. The questionnaires will be collected, filed and stored in a safe location only known to the researcher.

Identification codes will be used on data forms during collection and collation and stored on a password-protected computer only accessible to the researcher.

If we write a report or article about this research project, your identity will be protected.

What are the risks of this research?

All human interactions and talking about self or others carry some amount of risks. We will nevertheless minimise such risks and act promptly to assist you if you experience any discomfort, psychological or otherwise during the process of your participation in this study. Where necessary, an appropriate referral will be made to a suitable professional for further assistance or intervention.

What are the benefits of this research?

This research is not designed to help you personally, but the results may help the investigator learn more about Diabetes Mellitus. We hope that, in the future, other people might benefit from this study through an improved understanding of the disease and assist with further prevention strategies to combat this disease.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify.

What if I have questions?

This research is being conducted by Maxine van Reenen, School of Public Health, at the University of the Western Cape. If you have any questions about the research study itself, please contact:

Maxine van Reenen

Rehabilitation Department

George Provincial Hospital

c/o C.J Langenhoven and Davidson Roads

George

6529

+27 44 8024410/4389

2450141@myuwc.ac.za

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Prof Uta Lehmann

School of Public Health

Head of Department

University of the Western Cape

Private Bag X17

Bellville 7535

soph-comm@uwc.ac.za

Prof Anthea Rhoda

Dean of the Faculty of Community and Health Sciences

University of the Western Cape

Private Bag X17

Bellville 7535

chs-deansoffice@uwc.ac.za

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office

University of the Western Cape

Private Bag X17

Bellville 7535

research-ethics@uwc.ac.za

Tel: +27 21 959 2988

This research has been approved by the University of the Western Cape's Research Ethics Committee. (REFERENCE NUMBER: BM19/1/31)

APPENDIX B

UNIVERSITEIT VAN DIE WESKAAPLAND

Privaatsak X 17, Bellville 7535, Suid-Afrika

Tel: +27 21-959 2809, Faks: 27 21-959 2872

E-pos: soph-comm@uwc.ac.za

INLIGTINGSBLAD

Projektitel: Kennis, houdings en praktyke van mense met Diabetes Mellitus Tipe 2 (DMII) van die Eden Distrik-streek van Suid-Afrika.

Waaroor gaan die studie?

Hierdie is n navorsingsprojek wat deur Maxine van Reenen uitgevoer word by die Universiteit van die Weskaapland. Ons nooi jou uit om deel te neem aan hierdie navorsingsprojek omdat u by die George Provinsiale Hospitaal, vir diabetes mellitus behandel word. Die doel van hierdie navorsingsprojek is om die kennis, houdings en praktyke van diabetiese pasiënte in die bestuur van die siekte te bepaal en die geïdentifiseerde hindernisse aan te spreek.

Wat sal daar van my gevra word om te doen as ek instem om deel te neem?

U sal gevra word om deur ‘n inligtingsbladsy te lees wat die navorsingsonderwerp aan u sal verduidelik. U sal ‘n toestemmingsvorm ontvang waarin u geskrewe toestemming gee om aan die studie deel te neem. U mag weier om toestemming te gee en nie aan die studie deel te neem nie. U sal nie op enige manier gepenaliseer word as jy weier om deel te neem

uitgevoer word by van u keuse nie. Daar sal van u verwag word om ‘n vraelys te voltooi, bestaan uit 31 vrae. Dit sal u kennis, van houdings en hanteringvan u siekte. U kan ‘n vraelys slef voltooi of die hulp raadpleeg wat aangebied sal word. Die navorsingsprojek sal by die George Hospitaal geskied tydens u besoek.

Sal my deelname aan hierdie studie konfidensieel gehou word?

Die navorser onderneem om u identiteit en die aard van u bydrae te beskerm. Vir anonieme opnames, meld dat die vraelys anoniem is en sal nie inligting bevat wat u persoonlik kan identifiseer nie.

Om jou vertroulikheid te verseker, het elke vraelys 'n data nommer en benodig nie name, gids of identiteitsnommers nie. Die vraelyste sal versamel, geliasseer en gestoor word op 'n veilige plek wat slegs aan die navorser bekend is.

Identifikasiekodes sal tydens data-invordering en versameling gebruik word op data-vorms en gestoor word op 'n wagwoord beskermde rekenaar wat slegs vir die navorser toeganklik is.

As ons 'n verslag of artikel oor hierdie navorsingsprojek skryf, sal u identiteit beskerm word.

Wat is die risikos met hierdie navorsing?

Alle menslike interaksies en praat oor self of ander dra 'n mate van risiko's. Ons sal egter sulke risiko's verminder en dadelik optree om u te help as u enige ongemak, sielkundige of andersins ervaar tydens die proses van u deelname aan hierdie studie. Waar nodig, sal 'n gepaste verwysing na 'n geskikte professionele vir verdere bystand of ingryping gedoen word.

Wat is die voordele van die navorsing?

Hierdie navorsing is nie ontwerp om u persoonlik te help nie, maar die resultate kan die ondersoeker help om meer oor Diabetes Mellitus te leer. Ons hoop dat ander mense in die toekoms dalk voordeel kan trek uit hierdie studie deur 'n beter begrip van die siekte en help met verdere voorkomingstrategieë om hierdie siekte te bestry.

Moet ek deel wees van hierdie navorsing en mag ek my deelname stop op enige gegewe tyd?

Jou deelname aan hierdie navorsing is heeltemal vrywillig. Jy mag kies om glad nie deel te neem nie. As jy besluit om aan die navorsing deel te neem, mag jy enige gegewe tyd jou deelname stop. As jy besluit om nie aan die navorsing deel te neem nie of as jy op enige gegewe tyd deelname staak, sal jy nie gepenaliseer word of uitmis op enige voordele waarvoor jy andersins kwalifiseer nie.

Wat as ek vrae het?

Die navorsing word deur *Maxine van Reenen, Skool van Publieke Gesondheid by die Universiteit van die Weskaapland* uitgevoer. As jy enige vrae het oor die navorsingstudie, kontak gerus vir Maxine van Reenen by:

George Provinsiale Hospitaal

h/v C.J Langenhoven en Davidson Strate

George

6529

+27 44 8024410/4389

2450141@myuwc.ac.za

As jy enige vrae rakende die studie en jou regte as navorsingsdeelnemer het of as jy enige probleme wat jy in die studie ervaar het wil rapporteer, kontak asseblief:

Prof Uta Lehmann

Skool van Publieke Gesondheid

Hoof van Departement

Universiteit van die Weskaapland

Privaatsak X17

Bellville 7535

soph-comm@uwc.ac.za

Prof Anthea Rhoda

Dekaan van die Fakulteit van Gemeenskap en Gesondheidswetenskappe

Universiteit van die Weskaapland

Privaatsak X17

Bellville 7535

chs-deansoffice@uwc.ac.za

Hierdie navorsing is goedgekeer deur die Universiteit van die Weskaapland se Navorsingsetiekkommitee. (VERWYSINGSNOMMER: BM19/1/31)

APPENDIX C

CONSENT FORM

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 21-959 2809, Fax: 27 21-959 2872

E-mail: soph-comm@uwc.ac.za

Informed Consent

Project Title: Knowledge, Attitudes and Practices of People Living with Diabetes Mellitus Type 2 (DMII) from the Eden District region of South Africa.

The abovementioned study has been described and explained to me in a language I am able to understand. I understand that my participation in his study is completely voluntary and of my free will. I understand that my identity will be kept strictly confidential throughout the duration and with completion of this study. I understand that I may withdraw myself from this study at any time without any negative consequences or loss of benefits incurred.

I hereby give consent to use my information in the above research project.

Participants Initial and Surname:_____

Signature:_____

Date:_____

APPENDIX D

TOESTEMMINGSVORM

UNIVERSITEIT VAN DIE WESKAAPLAND

Privaatsak X 17, Bellville 7535, Suid-Afrika

Tel: +27 21-959 2809, Faks: 27 21-959 2872

E-pos: soph-comm@uwc.ac.za

TOESTEMMINGSVORM

Titel van die Navorsingsprojek: Kennis, houdings en praktyke van mense met Diabetes Mellitus Tipe 2 (DMII) van die Eden Distrik-streek van Suid-Afrika.

Die navorsingsprojek was aan my verduidelik in 'n taal wat ek verstaan. My vrae oor die navorsingsprojek was beantwoord. Ek verstaan dat my deelname uit vrye wil is. Ek verstaan dat my identiteit geensins openbaar sal word nie. Ek verstaan dat ek ten enige gegewe tyd van die navorsingsprojek mag onttrek, sonder vrees vir negatiewe gevolge of verlore voordele.

Hiermee gee ek toestemming om my inligting in bogenoemde navorsingsprojek te gebruik.

Deelnemer se naam……..

Deelnemer se handtekening…….

Datum……

APPENDIX E

___

KAP QUESTIONNAIRE

PLEASE COMPLETE ALL THE QUESTIONS

DEMOGRAPHIC INFORMATION

1. Sex

Male	Female

2. Age

18-29	30-39	40-49	>50

3. Race

W	C	B	O

4. Where do you currently stay?

George	Knysna	Plett	Mosselbay	Riversdale
Oudtshoorn	Beaufort	Herald	Haarlem	Uniondale

SOCIO-ECONOMIC STATUS

5. State your highest education level

None	Primary Grade 1-7	Secondary Grade 8-12	Secondary completed Passed Grade 12

6. Employment

Unemployed	Informally Employed	Employed/Self Employed	Retired

7. How many people live in the home?

2	3	4	>4

8. State the household income a month (combined and all that contribute to household income)

0-4000	4001-8000	8001-12000	>12000

9. Type of housing?

Boarding	Renting	Home owner

10. Housing Structure?

Brick House	Apartment	Shack	Wendy House

HEALTH CARE REFERRALS (Tick multiple if applicable)

11. Have you been referred to the following people

Dietician	Yes	No
Foot care specialist	Yes	No
Physiotherapist	Yes	No

HEALTH CARE INTERVENTIONS RECEIVED (Tick multiple if applicable)

12. State the kind of health interventions you received?

Intervention	Explained	Handout
Diet and eating plan		
Foot care demonstration		
Exercise program		
Self-exam and medicate		
Education DMII		

KNOWLEDGE

Answer the following questions regarding your knowledge of diabetes.(Do not read out the response)

1. Diabetes Mellitus is a disease that prevents the body from regulating its own glucose (sugar) levels?

Yes	No	Don't know

2. Diabetes Mellitus can be cured?

Yes	No	Don't know

3. Do you know what the normal range for your glucose (sugar) levels?

4-7 mmol/L	7.1-10 mmol/L	>10mmol/L	Don't know

4. How often should you measure your glucose (sugar) levels? (Not referring to clinic visits)

Daily	Weekly	Monthly	Don't know

5. Sugar is not found in fruit and vegetables

Yes	No	Don't know

6. Food products with sugar should be avoided when you have diabetes

Always	Sometimes	Never	Don't know

7. Diabetes Mellitus patients experience delayed wound healing?

Yes	No	Don't know

8. How often should you check your feet for cuts, sores and blisters?

Daily	Weekly	Monthly	Don't know

9. Cuts, sores and blisters can cause secondary complications?

Yes	No	Don't know

10. When washing feet how should you dry them?

Air dry	Yes	No
Towel dry on top	Yes	No
In between toes and each individually	Yes	No

ATTITUDES

11. I visit a health care professional for regular checks

Weekly	Monthly	Every second month	Twice a year	I do not visit a health care professional

12. I have my sugar levels checked regularly

Daily	Weekly	Every two weeks	Once a month	I do not check my sugar levels

13. I have been advised by a health professional to stop smoking

Yes	No	Don't smoke

14. I have adjusted my smoking habits after being given this advice

Yes but smoking less	No I smoke the same amount as before	Stopped smoking	Never smoked

15. I follow the diet plan explained and given to me

Always	Sometimes	Tried but need motivation/assistance

16. I inform family and friends of my dietary requirements when attending gatherings

Always	Sometimes	I enjoy what the rest is having

17. I exercise as often as I can.

Daily	2-3 days a week	Once a week	No exercise

18. If you exercise, for how long do you exercise at a given time?

< 1 hour	1-2 hours	> 2 hours	No exercise

19. When I have a health problem, I visit my clinic/hospital as soon as possible.

Always	Sometimes	I need assistance/motivation

20. I have changed my lifestyle habits to fit my diagnosis

Dietary changes (low fat and salt intake)	Yes	No	I need assistance/motivation
Physical activity changes (exercise)	Yes	No	I need assistance/motivation

21. I encourage my family to adopt healthy lifestyle habits.

Always	Sometimes	I have not thought to do so

PRACTICES

22. Do you smoke?

Yes	No

23. Smoking Habits?

I smoke	Smoke occasionally	Stopped	Never did

24. Do you soak your feet?

Yes	No

25. Do you walk barefoot?

Always	Sometimes	Never

26. Do you check your feet for cuts, sores or blisters?

Always	Sometimes	Never

27. Do you wear tight fitting shoes?

Always	Sometimes	Never

28. Do you follow a diet plan?

Always	Sometimes	I need assistance/ motivation	Did not receive a plan

29. Do you take your medication as prescribed?

Always	Sometimes	I do not need medication

30. In the past year I have been hospitalized as a result of my DMII

Yes	No

31. I have been hospitalized for poor or delayed wound healing.

Yes	No

32. I required surgical intervention to treat my complications (if yes go to question 30)

Yes	No

33. The surgery I required

Debridement (removal of dead skin)	Bypass (repairing blocked arteries)	Amputation

If you answered "amputation" above, please continue

34. My amputation was a result of my diabetes

Yes	No

35. I have had more than one amputation

Yes	No

36. I believe I did not know how to manage my DMII effectively

Strongly Agree	Agree	Disagree	Strongly Disagree

37. I was informed of my illness but did not think I would develop a severe complication requiring surgery.

Strongly Agree	Agree	Disagree	Strongly Disagree

38. I will change my habits so as to not develop further complications

Strongly Agree	Agree	Disagree	Strongly Disagree

THANK YOU

APPENDIX F

#___

KHP VRAELYS

VOLTOOI ASSEBLIEF AL DIE VRAE

DEMOGRAFIESE INLIGTING

1. Sex

Manlik	Vroulik

2. Oudedom

18-29	30-39	40-49	>50

3. Ras

W	C	B	O

4. Waar is u huidiglik woonagtig

George	Knysna	Plett	Mosselbaai	Riversdal
Oudtshoorn	Beaufort	Herald	Haarlem	Uniondale

SOSIO-EKONOMIESE STATUS

5. Dui op u hoogste vlak van opvoeding

Geen	Primêre Graad 1-7	Sekondêr Graad 8-12	Matriek Voltooi

6. Beroep

Werklose	Informeel Werknemende	Werknemer / Selfstandige Werknemer	Afgetree

7. Hoeveel mense woon in die huis?

2	3	4	>4

8. Wat is u gesamentlike huishoudelike inkomste?

0-4000	4001-8000	8001-12000	>12000

9. Tipe behuising

Blyhuur	Huur	Huiseienaar

10. Behuising Struktuur

Baksteen huis	Woonstel	Informele wooning	Wendy huis

11. Rook u?

Ja	Nee

12. Rookgewoontes?

Ek rook	Rook soms	Opeghou	Nooit gerook nie

GESONDHEIDSORGVERWYSINGS (Merk veelvoudig indien van toepassing)

13. Het u verwysings na die volgende persone ontvang

Dieetkundige	Ja	Nee
Voetsorg spesialis	Ja	Nee
Fisioterapeut	Ja	Nee

GESONDHEIDSORG INTERVENSIES ONTVANG (Merk veelvuldige indien van toepassing)

14. Noem die soort gesondheidsintervensies wat u ontvang het?

Ingryping	Verduidelik	Opdragstuk
Dieet en eetplan		
Voetsorg demonstrasie		
Oefenprogram		

Self-eksamen en medikasie		
Onderwys DMII		

KENNIS

1. Diabetes Mellitus is 'n siekte wat verhoed dat die liggaam sy eie glukose (suiker) vlakke reguleer?

Ja	Nee	Weet nie

2. Diabetes Mellitus kan genees word?

Ja	Nee	Weet nie

3. Weet jy wat die normale omvang vir jou glukose (suiker) vlakke is?

4-7 mmol/L	7.1-10 mmol/L	>10mmol/L	Weet nie

4. Hoe gereeld moet jy jou glukose (suiker) vlakke meet?

Daagliks	Weekliks	Maandeliks	Weet nie

5. Suiker word nie in vrugte en groente aangetref nie

Ja	Nee	Weet nie

6. Voedselprodukte met suiker moet vermy word as jy Diabetes het.

Altyd	Soms	Nooit	Weet nie

7. Diabetes Mellitus pasiënte ervaar vertraagde wondgenesing?

Ja	Nee	Weet nie

8. Hoe gereeld moet jy jou voete kyk vir snitte, sere en blaas?

Daagliks	Weekliks	Maandeliks	Weet nie

9. Snitte, sere en blase kan sekondêre komplikasies veroorsaak

Ja	Nee	Weet nie

10. Wanneer jy voete was, hoe moet jy dit droog?

Lugdroog	Ja	Nee
Handdoek droog bo-op	Ja	Nee
In tussen tone en elk individueel	Ja	Nee

HOUDINGS

11. Ek besoek 'n gesondheidswerker vir gereelde tjeks

Weekliks	Maandeliks	Elke twee maande	Twee keer per jaar	Ek besoek nie 'n gesondheidswerker nie

12. Ek het my suikervlakke gereeld nagegaan

Daagliks	Weekliks	Elke twee weke	Een keer per maand	Ek kyk nie na my

				suikervlakke nie

13. Ek is aangeraai deur 'n gesondheidswerker om op te hou rook

Ja	Nee	Rook nie

14. Ek het my rookgewoonte aangepas nadat ek hierdie raad gegee he

Ja, maar rook minder	Ja, maar rook dieselfde as voorheen	Gestop rook	Nooit gerook nie

15. Ek volg die dieetplan verduidelik en aan my gegee

Altyd	Soms	Probeer, maar benodig motivering / hulp

16. Ek gee familie en vriende kennis van my dieetvereistes by die bywoning van byeenkomste

Altyd	Soms	Ek geniet wat die res het

17. Ek oefen so dikwels as wat ek kan

Daagliks	2-3 dae per week	Een keer per week	Geen oefening

18. As jy oefen, hoe lank oefen jy op 'n gegewe tydstip?

< 1uur	1-2 ure	>2 ure	Geen oefening

19. As ek 'n gesondheidsprobleem het, besoek ek my kliniek / hospitaal so gou as moontlik.

Altyd	Soms	Ek benodig hulp / motivering

20. Ek het my leefstylgewoontes verander om my diagnose te pas

Dieet veranderinge (lae vet en soutinname)	Altyd	Soms	Ek benodig hulp / motivering
Fisiese aktiwiteit veranderinge (oefening)	Altyd	Soms	Ek benodig hulp / motivering

21. Ek moedig my gesin aan om gesonde leefstylgewoontes aan te neem.

Altyd	Soms	Ek het nie daaraan gedink nie

PRAKTYKE

22. Rook u?

Ja	Nee

23. Rookgewoontes?

Ek rook	Rook soms	Opeghou	Nooit gerook nie

24. Week jy jou voete?

Ja	Nee

25. Loop jy kaalvoet?

Altyd	Soms	Nooit

26. Kontroleer jy jou voete vir snye, sere of blase?

Altyd	Soms	Nooit

27. Gee jou skoene gemak en ondersteuning?

Altyd	Soms	Nooit

28. Volg jy 'n dieetplan?

Altyd	Soms	Ek benodig hulp / motivering	Het nie 'n plan ontvang nie

29. Neem u medikasie soos voorgeskryf?

Altyd	Soms	Ek het nie medikasie nodig nie

30. In die afgelope jaar is ek gehospitaliseerd as gevolg van my diabetes

Ja	Nee

31. Ek is in die hospitaal opgeneem vir swak of vertraagde wondgenesing.

Ja	Nee

32. Ek het chirurgiese ingryping benodig om my komplikasies te behandel (Indien Ja, gaan voort na vraag 31)

Ja	Nee

33. Die operasie wat ek benodig het

Debridement (verwydering van dooie vel)	Bypass (herstel van geblokkeerde arteries)	Amputasie

As u "amputasie" hierbo beantwoord het, gaan asseblief voort

34. My amputasie was 'n gevolg van my diabetes

Ja	Nee

35. Ek het meer as een amputasie gehad

Ja	Nee

36. Ek glo ek het nie geweet hoe om my diabetes effektief te bestuur nie

Stem heeltemal saam	Stem saam	Stem nie saam nie	Stem heeltemal nie saam nie

37. Ek is van my siekte in kennis gestel, maar het nie gedink ek sal 'n ernstige komplikasie wat chirurgie vereis, ontwikkel nie.

Stem heeltemal saam	Stem saam	Stem nie saam nie	Stem heeltemal nie saam nie

38. Ek sal my gewoontes verander om nie verdere komplikasies te ontwikkel nie

Stem heeltemal saam	Stem saam	Stem nie saam nie	Stem heeltemal nie saam nie

DANKIE

Western Cape Government
Health

HEALTH IMPACT ASSESSMENT
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REFERENCE: WC_201904_010
ENQUIRIES: Dr Sabela Petros

University of Western Cape

Robert Sobukwe Road

Bellville

Cape Town

7305

For attention: Ms Maxine van Reenen

Re: **Knowledge, Attitudes and Practices of People Living with Diabetes Mellitus Type 2 (DMII) from the Eden District region of South Africa.**

Thank you for submitting your proposal to undertake the above mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact following people to assist you with any further enquiries in accessing the following sites:

George Hospital	**Mr Michael Vonk**	**044 802 4534**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.
2. By being granted access to provincial health facilities, you are expressing consent to provide the department with an electronic copy of the final feedback (**annexure 9**) within six months of completion of your project. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

3. In the event where the research project goes beyond the *estimated completion* date which was submitted, researchers are expected to complete and submit a progress report (**Annexure 8**) to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

4. The reference number above should be quoted in all future correspondence.

Yours sincerely

DR M MOODLEY

DIRECTOR: HEALTH IMPACT ASSESSMENT

DATE: 13-05-2015