KNOWLEDGE, ATTITUDES AND PRACTICE OF PATIENTS DIAGNOSED WITH DIABETES REGARDING DIABETIC SELF-CARE MANAGEMENT IN INTERMEDIATE RUNDU HOSPITAL, KAVANGO EAST REGION

A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF NURSING SCIENCE OF THE UNIVERSITY OF NAMIBIA

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OCTOBER 2022

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ABSTRACT

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. The majority of people with diabetes have type 2 diabetes. The study aimed to assess the level of knowledge, attitudes and practice of self-care management among patients diagnosed with diabetes at Rundu Intermediate Hospital. A quantitative, cross-sectional and analytic study was conducted among patients diagnosed with diabetes. Self-reporting questionnaires were used to collect data from 198 participants diagnosed with diabetes mellitus at Rundu Intermediate hospital. The data were analysed using SPSS version 25. Chi-squared test was used to analyse the possible associations among variables. The study findings indicated that the majority of respondents were female 125 (63%) and belonged to the age group of 60 and above 76 (38.4%). Most, 91 (47%), of the patients were uneducated, 115 (58.5%) on oral medications. 79 (39.9%), were on insulin and only 4 (2%) were on both oral medication and insulin. Almost half, 97 (49%) of patients had adequate knowledge regarding self-care management mainly on domains such as meal plan 184 (92.9%), medication-taking 195 (98.5%), and physical exercise 112 (56.6%). However, 154 (77.8%) had inadequate knowledge of diabetic foot care. The study revealed average attitudes 113 (57.4%) toward self-care management. Poor practice was observed in glucose monitoring 111 (59%). The study found a highly significant association knowledge among participants with university and secondary education levels. Finally, he study found a significant association between age, education level and employment status with the practice of self-care management of diabetes p-<0.05. Awareness creation to the community through health education should be emphasised on lifestyle changes, physical exercise, and foot care, cessation of smoking and healthy dietary habits.

Keywords: Knowledge, Attitudes, Self-care, Practice, Diabetes Mellitus

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ABBREVIATIONS AND ACRONYMS

AADE- American Association of Diabetes Educators

ADA- American Diabetes Association

CDC- Centre for Disease Control and Prevention

DM- Diabetic Mellitus

IDF- International Diabetic Federation

KAP- Knowledge Attitudes and Practice

MOHSS- Ministry of Health and Social Services

OPD- Outpatient Department

UNAM- University of Namibia

WHO- World Health Organisation

ACKNOWLEDGEMENT

Completing this study would not be possible without the assistance and contributions of other people. Therefore, I would like to sincerely thank all those who contributed directly and indirectly. First and foremost, I would like to thank God Almighty for granting me the opportunity to study for a Master of Nursing Science at the University of Namibia. I would like to express my sincere gratitude to the Ministry of Health and Social Services, the Rundu Intermediate hospital management team for their support and for allowing me to conduct my study in their facility. I thank all the patients who took their time despite waiting long in queues to fill the questionnaire. The research was made possible through the generous support and guidance of my supervisor Mrs Hileni N. Niikondo, who despite her busy schedule patiently gave me guidance and attended to my inquiries, gave me timely constructive feedback and encouraged me when I felt like giving up. Furthermore, I would like to thank my mother Emmilian N. Namwandi for the support and motivation throughout my study. I would like to extend my appreciation to David Bernadino, Dr Takaedza Munangatire, Aina Namene and Hilma Nengola for their help and support throughout my study. Finally, I extend my humble gratitude to the respondents involved in the study.

DECLARATION

I, Jacobina Sakeus hereby declare that “knowledge, attitudes and practice of patients diagnosed with diabetes regarding diabetic self-care management in Intermediate Rundu hospital, Kavango East Region” is my own work, and has not been submitted for any degree in any other institution of higher learning or to the University of Namibia. All sources that have been used or quoted have been indicated and acknowledged by means of reference. This thesis may not be reproduced, stored in any retrieved system, transmitted in any form or by means of electronic mechanical, photocopying and recording without prior permission of the author and the University of Namibia.

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Jacobina Sakeus

DEDICATION

I, dedicate this work to all the students, training institutions, Ministry of health and social services and to all patients diagnosed with diabetes and their caretakers.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

The chapter gives an overview of the introduction and background of the study, including the problem statement, the research purposes and objectives, the significance of the study, limitation and delimitation of the study and a definition of concepts.

1.1 INTRODUCTION

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces (World Health Organization, 2018). Hyperglycemia or raised blood sugar is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body systems, especially the nerves and blood vessels. The majority of people with diabetes have type 2 diabetes, with modifiable risk factors such as a sedentary lifestyle, unhealthy diet, being obese or overweight and smoking. These factors can be modified through behavior changes (World Health Organization, 2018). Adequate self-care practices in terms of diet, medication and exercise help in maintaining the normal level of blood glucose in patients with diabetes. According to Baral and Baral (2021), diabetes mellitus is a “silent disease” with minimal symptoms at the beginning and rapid progression until target organ damage. Because of its serious consequences, diabetes mellitus has become an important public health concern. In order to achieve and maintain optimum blood glucose levels, patients diagnosed with diabetes need good self-care management.

Diabetes is a major health concern in the world and its growing rapidly. In Africa, the number of patients diagnosed with diabetes remains uncertain, although International Diabetes Federation (IDF) atlas 8th edition (2017), estimated that 15.9 million adults aged

20 to 79 years were living with diabetes in 2017. The top five countries with diabetes are Ethiopia, South Africa, the Democratic Republic of Congo, Nigeria and the United State of Tanzania. Self-care "monitoring" blood glucose level is the ability of individuals, families and communities to promote, maintain health, prevent disease and cope with illness with or without the support of a health care provider (World Health Organization, 2017).

Kassa, Hailemarian, Habte and Gebresillasie (2021), cautioned that diabetes self-management is a cornerstone of care for all individuals with diabetes to achieve health-related outcomes for controlling diabetes and preventing complications. Diabetes is a chronic disease for which control of the condition demand patient's self-care management. Helping patients achieve their best possible level of glycemic control will require the utilization of appropriate therapy, monitoring and comprehensive instruction for diabetes self-management (Kakade et al., 2016).

1.2 BACKGROUND

Diabetes is recognized as one of the leading causes of death and disability worldwide. People with diabetes have risen from 25 million in 1985 to about 250 million to date with an estimated, 2.9 million people dying of the condition every year (World Health Organization, 2017). World Health Organization (WHO) (2017), illustrated that in 2014 8.5% of adults aged 18 years and older had diabetes, in 2012 diabetes mellitus was the direct cause of 1.5 million death and high blood glucose was the cause of another 2.2 million death. In a recent estimate by the International Diabetes Foundation (IDF, 2017), it was mentioned that worldwide, 15.9 million people had diabetes and it was estimated to reach 41.1 million in the year 2045.

Self-care is an active and practical process guided by the patient and aims for improved physical conditions or maintaining health care through actions such as a healthy diet, physical exercise, monitoring of blood glucose and searching for preventative health care or therapeutic services and applying the prescribed therapies to control blood sugar (Karimi, Abedini & Mohsen, 2017; Shrestha, Basnet, Parajuli, Baral & Badhu, 2018). According to Orem, the role of nurses is to support, teach, guide, and provide an environment that supports personal development (Rosman, Eriksson, Martinell, Olinder & Leksell, 2022). Orem's ontological assumption is that human beings are unique individuals with a shared basic needs to maintain their living condition (Rosman et al., 2022).

Self-care practice includes self-monitoring of the blood sugar level, diet management, physical exercise, adherence to medications and foot care which are the cornerstone of diabetes management, however very little is known about self-care in developing countries (Tewahido & Berhane, 2017). Patients' knowledge and practice of diabetes self-care have been reported to significantly reduce hospitalization and prevent the acute and chronic side effects of the disease or delayed complications (Karimi, Abedini & Mohsen, 2017). Low health literacy leads to poor self-management, knowledge, ability, and poor level of glycaemic control. Furthermore, it is linked to the declining health status and results in low compliance with disease prevention programs (Rachmawati, Sahar, & Wati, 2017).

American Association of Diabetes Educators (2014), pointed out seven essential self-care behaviors in people with diabetes which predict good outcomes in glycaemia control. These are healthy eating, being physically active, monitoring of blood sugar, compliance

with medications, good problem-solving skills, healthy coping skills and risk reduction behaviors.

Mufunda, Ernerson and Hjelm (2018), reported that the prevalence of diabetes in the African community is on the increase with the ageing of the population and lifestyle changes from a traditional healthy and active life to a modern sedentary stressful life associated with rapid urbanization. Knowledge about diabetes mellitus is a prerequisite for individuals and communities to act for the control of diabetes. A study in Eastern Nepal by Shrestha et al., (2018), indicates that successful self-management in diabetes helps the patient feel better. Moreover, education is an important aspect of self-management and teaching the client on self-administration of insulin gives confidence and pride in contributing to their management. Furthermore, the management of diabetes mellitus mainly depends on the ability of the patients to do self-care in their daily lives. However, patients with diabetes in some African countries have limited knowledge about the disease, its management and patient self-care (Mufunda, Ernerson & Hjelm, 2018). Inadequate diabetes self-management remains a significant problem facing health care providers and populations in all settings. In contrast, patients who have adequate self-management knowledge have better outcomes and enjoy a high quality of life with fewer symptoms and complications (Kassa, Hailemariam, Habte, & Gebresillassie, 2021). A study done in Ethiopia by Mekonnen and Hussien (2021), shows that more than half of their participants (63.3%) had good knowledge about diabetes self-care.

Poor awareness, negative attitudes and inadequate self-care practice among patients diagnosed with diabetes are some of the important variables influencing the progression of diabetes complications (Kakade, Mohanty & Rai, 2016). However, good self-care practices improve glycemic control and lower the severity or incidence of complication

(Missiriya, 2016; Onuoha et al., 2017). Although a number of internal and external factors affect glycemic control, it is widely accepted that good self-care practice and positive attitudes translate into improved glycaemia control. In addition, many studies have shown that poor disease awareness and negative attitudes toward self-care practice influence the progression of diabetes and its complication (Kakade et al., 2016).

A study done in Pakistan, by Ahmed et al., (2016), shows that most participants had a negative attitude and very little knowledge regarding diabetes, and there is a need for increased diabetes-related education for the development of positive attitudes toward the reduction of diabetes-related complications

In 2017, diabetes death in Namibia reached 615 or (3.98 %) of total death and it's a public health concern which is growing rapidly. The prevalence of diabetes mellitus in Namibia showed that males have a (5.0 %) which is lower compared to females at (5.8%) (Center for Disease Control and Prevention Namibia, 2021). International Diabetes Foundation (2017), indicated that 46458 people in Namibia had diabetes, and diabetes-related deaths were 973.

Rundu is situated in the northeast of Namibia and is reported to have a largely rural population with limited formal employment and a literacy rate of (74.4%) which is below the national average of (89%) (Ministry of Land and Resettlements, 2015). With no exception, the number of patients with diabetes in Rundu is increasing yearly from 1031 in 2014 to 1828 in 2018 (Rundu hospital health information system register, 2014-2018). Information on how to engage in self-care management comes from different sources including healthcare providers. It seems there is no study on the content of self-care management that has been reported in Rundu. The lack of such evidence might hinder efforts to address self-care management concerns and the designing of interventions to

improve self-care management. Moreover, identification of knowledge, attitudes and practice related to diabetes mellitus in the general public would provide better insight for the development of preventative strategies specific to the Namibian context.

1.3 PROBLEM STATEMENT

Ideally, patients diagnosed with diabetes should be knowledgeable, have positive attitudes and adopt good self-care practices. In doing so, there will be limited complications among patients diagnosed with diabetes (Missiriya, 2016: Onuoha et al., 2017). However, currently, there is no known information available on knowledge, attitudes and practice of patients diagnosed with diabetes regarding diabetic self-care management in Rundu. Globally, patients diagnosed with diabetes are experiencing several complications associated with poor self-care and diabetes is identified as the main cause of premature death and disability (WHO, 2016: Belsti et al., 2020: Rahaman, Raza, & Majdzadeh, 2017).

The Rundu hospital health information system register (2014-2018), showed that there is an increase in the number of patients with diabetes being admitted from 108 in 2014 to 163 in 2018. According to the Out-Patient Department (OPD) register (2014-2018), the number of patients being reviewed as follow up in OPD increased from 1031 in 2014 to 1828 in 2018 so as did the number of deaths from diabetes, from 11 in 2014 to 21 in 2018 (Rundu hospital health information system register, 2014-2018). Most reasons for admissions were complications such as gangrene, renal failure and sepsis that may lead to amputation and possibly premature death. The presence of complications is an indication of poor self-care management, poor blood glucose level control and poor adherence which contributes to the development of complications. Due to poor socioeconomic and lower education levels, most patients cannot afford to buy glucose monitoring machines to test their sugar daily as recommended and this may contribute to

poor glucose level control, inability to adhere to medication taking and increase hospitalization (Berhe, Gebru, Kahsay, & Kahsay, 2017). The above phenomena has led to the formulation of research questions of this study: what are the knowledge of patient diagnosed with diabetes on self-care management domains? How patient diagnosed with diabetes practice self-care for?

Therefore, this study aims to determine the knowledge, attitudes and practice of self-care management among patients diagnosed with diabetes at Rundu intermediate hospital.

1.4 AIM OF THE STUDY

The aim of the study was to determine the level of knowledge, attitudes and practice of self-care management among patients diagnosed with diabetes at Rundu Intermediate Hospital.

1.5 OBJECTIVES OF THE STUDY

The objectives of the study were to:

a) Assess the knowledge of self-care management among patients diagnosed with diabetes in b) Rundu Intermediate Hospital, Kavango East region.

c) Assess the attitudes towards self-care management among patients diagnosed with diabetes in Rundu Intermediate Hospital, Kavango East region.

d) Assess the practice of self-care management among patients diagnosed with diabetes in Rundu Intermediate Hospital, Kavango East region.

e) Analyse the relationship between knowledge and attitudes on the practice of self-care management among patients diagnosed with diabetes in Rundu Intermediate Hospital, Kavango East region.

1.5 SIGNIFICANCE OF THE STUDY

Rundu hospital is an intermediate hospital in the northeast region of Namibia so it is a strategic focus area that would greatly impact other feeder hospitals and clinics in the region in terms of improving diabetic care. The study findings will help in identifying the knowledge, attitudes and practice of patients diagnosed with diabetes on self-care management of diabetes therefore they are aimed at informing the Ministry of Health and Social Services management team to emphasize educational programs for both prevention and management of the disease. Finally the study will provide some types of baseline information necessary for further study on diabetes in Namibia.

1.6 LIMITATION

The limitation of the study was that the study was confined to Rundu intermediate hospital only. Therefore, the results are not a true reflect of a national phenomenon and this cannot be generalized.

1.7 DELIMITATION

a hospital in the northeast region of Namibia so it is a strategic focus area that would greatly impact other feeder hospitals and clinic in the region.

1.8 DEFINITION OF CONCEPTS

Attitudes: A feeling or opinion about something or someone or a way of behaving (Cambridge advanced learner's dictionary, 2013). It can reflect favourable, unfavourable or neutral judgement. It's a way of thinking or feeling about something (Hamdan, 2012). In this study, attitudes refers to the opinions, feelings and behaviours of patients diagnosed with diabetes towards diabetes and its care. Attitudes of patients will be assessed by asking questions using questionnaire to determine if patients have good, average or bad attitudes

Diabetes mellitus: A chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces (World Health Organisation, 2018).

Knowledge: The range of one's information or understanding (The Merriam-Webster dictionary, 2016). The study, knowledge refers to the information that a person diagnosed with diabetes possess regarding the disease and its care. In the study the patients knowledge will be assessed by asking questions using questionnaire to test their knowledge on diabetes self-care.

Practice: The act of doing something regularly or repeatedly to improve your skills at doing it (Cambridge advanced learner's dictionary, 2013). In the study, practice refer to a set of behaviours practiced by people diagnosed with diabetes in order to successfully manage and survive the disease on their own. The study will assess the patients practicing using a questionnaire in this regard.

Self-care: Personal and medical care performed by the patient usually in collaboration with and after instruction by health care professionals (Blackwell's nursing dictionary,

2012). This are actions or role taken by patients diagnosed with diabetes to improve their care. tn the study the self-care will be assessed by asking question on diabetes self-care.

1.9 Theoretical frame work of the study

The study was guided by Orem self-care theory. Orem self-care theory was developed in 1959 by Dorothea Elizaberth Orem in United State of America. Orem believed that human being have ability to take care of themselves and whenever this ability id distorted in a person, nurses helps individuals to regain this ability by providing direct care and compensating educational support (Borji, Otaghi & Kazembeigi, 2017). Orem suggested attending to health deviation self-care requisites. So the person diagnosed with diabetes need to regulate medical nutrition treatment and physical activity, if necessary using drug and blood glucose monitoring to evaluate the outcome of self-care activities. The person diagnosed with diabetes must learn how to evaluate themselves, decide what actions need to be taken to attend to their needs and perform those actions and this action will become possible with education on diabetes (Surucu, 2020). Diabetes self-management education is the effective method used in improving the health status and quality of life. Diabetes self-management is an ongoing process carried out to facilitate knowledge, skills and ability of diabetes mellitus patients to perform self-care (Fadli, 2022).

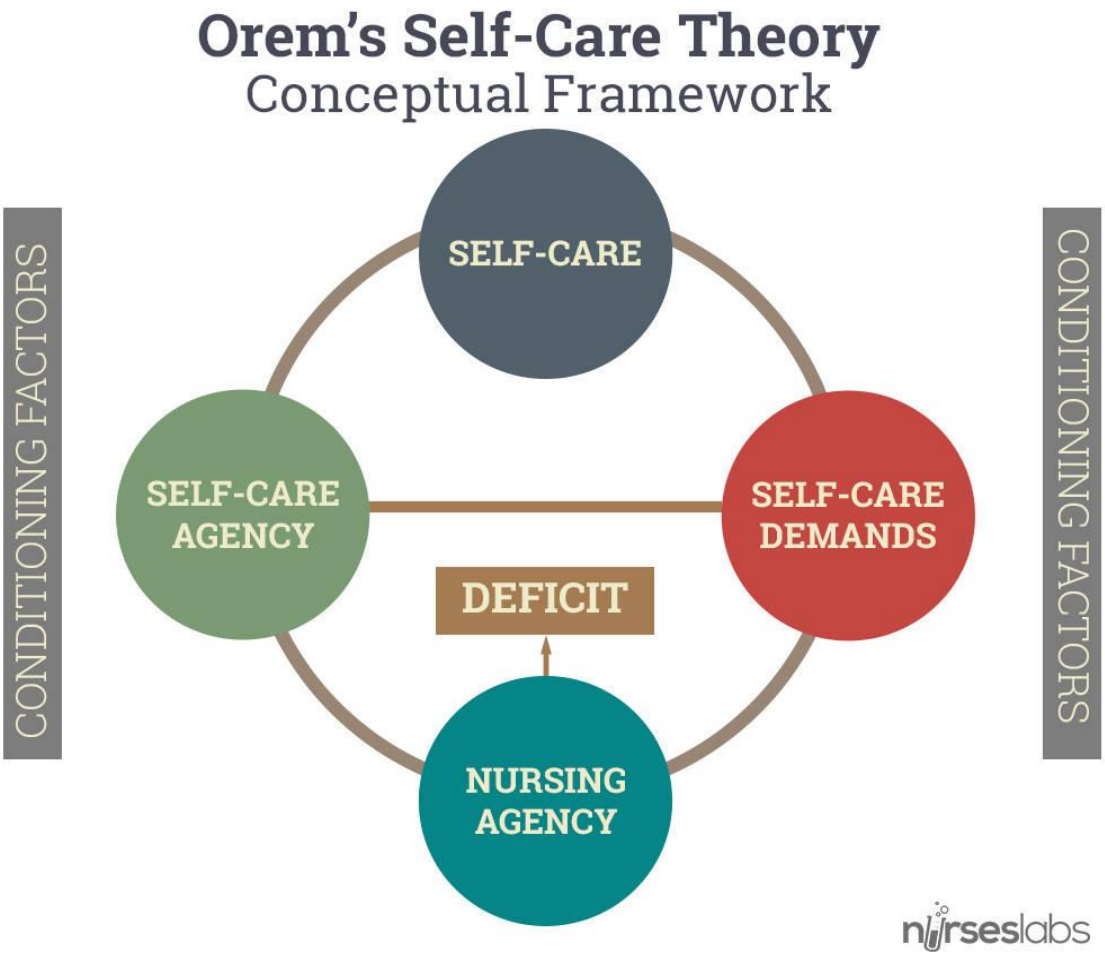

Figure 1: Orem Self-Care Theory.

1.10 SUMMARY

The chapter dealt with the introduction and background of the study. The study problem, aim, objectives, significance, limitations and delimitations were explained. The key concepts were defined to provide the reader with some insight into the study and the theoretical framework. The next chapter will deal with local and global literature about diabetic self-care practice.

CHAPTER TWO

LITERATURE REVIEW

The previous chapter provided a general overview and the rationale of the study, including the research problem, the research aim, the objectives, the significance of the study, limitations and delimitations and the key concepts. In this chapter, a review will be conducted on the current literature on knowledge, attitudes and practices of patients diagnosed with diabetes towards diabetes self-care management from different studies conducted previously.

2.1 INTRODUCTION

The literature review covers a theoretical review of the knowledge, attitudes and practice of patients regarding self-care for diabetes. The researcher conducted an extensive literature review on concepts such as diabetes mellitus, the prevalence of diabetes, risk factors of diabetes, complications, management of diabetes mellitus and self-care behaviours. The review also summarises the findings of previous studies on the subject and identifies gaps that this study aims to fill

2.2 DIABETES MELLITUS

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces (World Health organization, 2018). Hyperglycemia or raised blood sugar is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body systems, especially the nerves and blood vessels. The majority of people with diabetes have type 2 diabetes, with modifiable risk factors such as a sedentary lifestyle, unhealthy diet, being obese or overweight and smoking. These factors can be modified through behavior changes (World Health Organization, 2018). Diabetes is recognised as one of the leading

causes of death and disability worldwide and because of high mortality and morbidity, patients with diabetes require more support to perform self-care practices for diabetes management (World Health Organisation, 2017).

2.3 PREVALENCE OF DIABETES MELLITUS

International Diabetes Foundation (2017), mentioned that worldwide, 15.9 million people had diabetes and it was estimated to rise to 41.4 million in the year 2045. The same report showed that the top 5 countries with diabetes are Ethiopia, South Africa, the Democratic Republic of Congo, Nigeria, and Tanzania. Africa is the region with the highest percentage of un diagnosed people as (70%) of people with diabetes do not know that they have it. In Africa, the number of diabetes remains uncertain and the (International Diabetes Federation atlas 8th edition 2017), estimated that 15.9 million adults aged 29-79 years were living with diabetes in 2017.

According to the Centre of Diseases Control and Prevention Namibia (2021), diabetes is the top ten class cause of death in the country. In 2017 diabetes death in Namibia reached 615 or (3.98%) of total deaths and it is a public health concern which is growing rapidly. The prevalence of diabetes mellitus in Namibia showed that males have (5.0%) which is lower compared to females at (5.8%) (Center of Disease Control and Prevention Namibia, 2021). International Diabetes Foundation (2017), indicated that 46458 people in Namibia have diabetes and that diabetes-related deaths stand at 973.

The majority of the people with diabetes in developing countries are within the productive age of 45-64 years and in Namibia, the peak occurrence of type 2 diabetes is even in younger ages between 20-44 years (Kambinda, 2017). These are the same individuals who are expected to drive the economy of these countries in order to achieve the agreed international development goals. Besides their reduced productivity, diabetes further

imposes a high economic burden in terms of health care expenditure, lost productivity and foregone economic growth (Kambinda, 2017).

Diabetes mellitus accounted for (4%) of all mortality in Namibia in 2012. Type 2 diabetes mellitus is increasingly occurring among young children. Moreover, complications from diabetes mellitus such as amputations and blindness are also increasing. About (6%) of women and (7%) of men have diabetes. Women in the Kavango region have the lowest prevalence of diabetes of (1%) (Ministry of health and social services, 2017).

Rundu is situated in the northeast of Namibia and is reported to have a largely rural population with limited formal employment and a literacy rate of (74.4%) which is below the national average of (89%) (Ministry of Land and Resettlement, 2015). With no exception, the number of patients with diabetes in Rundu is increasing yearly from 1031 in 2014 to 1828 in 2018 (Health Information system data, 2014-2018).

2.4 RISK FACTORS ASSOCIATED WITH DIABETES MELLITUS

According to Salleh, Rahman and Haque (2019), in Malaysia, the major factors for diabetes mellitus are obesity, an unbalanced diet, and unhealthy lifestyles. Additionally, poor awareness and poor practices are the most important factors that lead to diabetes mellitus. Alaofe, Hounkpatin, Djrolo, Ehiri and Rosales (2021), study in Cotonou, southern Benin, confirmed that participants stated that overweight or obesity (60.3%), family history (60.3%), and poor dietary habits (55.6%) could predispose them to develop diabetes. Inactivity and being overweight go hand in hand toward a diagnosis of type 2 diabetic mellitus. It should be noted that all risk factors for obesity serve as risk factors for type 2 diabetes. Other risk factors include ethnicity, low social-economic status and low education. Moreover, age is a major risk factor for diabetes (Kambinda, 2017).

In a speech by Hon Minister of Health Dr Kamwi (2014), Namibians live an unhealthy lifestyle with many people abusing alcohol from an early age and this is one of the factors that might give the country a high rate of diabetes. Moreover, she noticed that her patients who are blacks suffer from diabetes and it can be related to both diet and genetics but diet and lifestyle are more often the cause. These lifestyles have contributed to a rise in the level of obesity and overweight in the population, increasing the risk of diabetes.

A study done in Namibia by Kambinda (2017), reveals that there was almost an equal proportion of respondents with a good (50.3%) and poor (49.7%) level of knowledge about diabetic risk factors. However, the small difference in knowledge could be attributed to the high number of respondents who did not know much about diabetes. It is of concern that (45%) of the 973 402 912 population in sub-Saharan Africa will live in urban areas by 2025. Currently, (68%) of people with diabetes in sub-Saharan Africa live in urban areas and the number was expected to increase to (78%) by 2020. In addition, dietary control is the most important controlling factor for diabetes mellitus. Diet for diabetes should be planned individually to achieve normal body glucose and ideal body weight (American Diabetes Association, 2019).

2.5 COMPLICATIONS OF DIABETES MELLITUS

Diabetes, if not well controlled, may cause blindness, kidney failure, lower limb amputation and several other long-term consequences that impact significantly on the quality of life. There are no global estimates of diabetes-related end-stage renal disease, cardiovascular events, lower-extremity amputations or pregnancy complications, though these conditions affect many people living with diabetes (WHO, 2016). Diabetic foot complications are the most common cause of hospitalization in patients with diabetes mellitus and the risk of foot ulceration and limb amputation increases with older age and long duration of disease (Tuha, Faris, Andualem & Mohammed, 2021) done in Ethiopia.

According to Rahaman, Majdzadeh, Naieni, and Raza (2017), done in Dhaka, nearly (81%) of respondents knew diabetes could cause certain complications if remain uncontrolled. On the other hand, the study done in Ethiopia (66%) and (79%) of respondents agreed that they could prevent diabetes complications (Belsti et al., 2020: Rahaman et al., 2017). Most deaths and disabilities are caused by diabetic complications that damage the heart, blood vessels, eye, kidneys and nerves. Such damage increases the chances of foot ulcer, infection and eventually limb amputation. One of the main complications of diabetes is diabetic retinopathy which is a cause of blindness. Moreover, diabetes also causes kidney failure. All major complications of diabetes are preventable by good control of blood glucose level, blood pressure and cholesterol level. Unfavourable attitudes and psychological problems are common among patients diagnosed with diabetes and can lead to poor diabetes care provoking complications (Belsti, Akalu, & Aminut, 2020).

Moreover, educating patients is an effective strategy to reduce diabetes complications and improve glucose control. Additionally, high knowledge improves the attitudes and practices of patients regarding the disease (Shawahna, Samaro, & Ahmad, 2021).

Belsti et al., (2020), in Ethiopia, disclosed that participants had a good attitudes level while less than half (48.8%) of participants had a good practice on diabetes mellitus complications. Moreover, (79.9%) of participants believed that regular exercise, dietary modification (91.8%) and weight reduction (46.3%) prevents further complications. The study in Ethiopia by, Rahaman, Majdzadeh, Naieni, and Raza (2017), revealed that cardiovascular (91.8%), cerebrovascular (94.6%), and renal complications (98.6%) were known by most participants while eye complications (18%) were less known. Meanwhile, study in Cotonou, southern Benin by Alaofe et al., (2021), reported kidney failure, eye

problems, and amputation of limbs are significant complications of diabetes identified (87%).

Another study in Namibia by Kambinda (2017), shows that there was poor knowledge about diabetes complications among participants in the study areas. The findings imply that households were unable to identify the ramifications of diabetes in relation to other illnesses affecting them. Understanding the complications of diabetes could assist people to be more concerned about prevention and modification of their own lifestyle and they will know the negative repercussions of the disease when not controlled. Furthermore, knowledge could encourage people to be more curious about screening and this will help in early detection and prevent the early onset of diabetes. Poor glycaemic and blood pressure control commonly found in the sub-Saharan region are the main contributors to the high prevalence of micro-vascular complications (Kambinda, 2017).

2.6 KNOWLEDGE, ATTITUDES AND PRACTICE ON DIABETES SELF-CARE

Self-care refers to personal and medical care performed by the patient, usually in collaboration with and after instruction by a healthcare professional (Blackwell's nursing dictionary, 2012).

People with diabetes should participate in diabetes self-management education to facilitate the knowledge, skills and ability necessary for diabetes self-care. Orem theory indicates that the person diagnosed with diabetes must learn to evaluate themselves, decide what action need to be taken to attend to their needs and perform those actions and this action will become possible with education (Surucu, 2020). Self-care management education should be self-centred and may be given in groups or individual settings or using technology and should be communicated with the entire diabetes care team (American Diabetic Association, 2019). Therefore successful diabetes self-management

depends on individuals self-care activities to control symptoms present (Fadli, 2022). Patients diagnosed with diabetes should perform specific activities according to (American Diabetic Association, 2019), such as dietary control, exercise, stress management, medication and perform hygiene. For effective management and in order to have good glycaemic control, patients need to have an adequate level of knowledge of diabetes regarding self-care, a concept that foster adherence to medications good dietary pattern and physical activities (Kassahun, Gesesew, Mwanri & Eshetie, 2016).

The study done in Lebanon indicated that there is a low level of knowledge on diabetes management where half of the participants reported the knowledge that quitting smoking and controlling their diet would benefit their diabetes management (Karaoui, Deeb, Nasser & Hallit, 2018). Moreover, adults aged more than 30 years in rural Bangladesh showed an extremely low level of knowledge of the symptoms (55%) and of complications (37.5%) (Fottrel et al., 2018).

In comparison, Kambinda (2017), in Namibia it showed that knowledge about diabetes was generally good despite the small difference between those with good and poor knowledge pertaining to complications, symptoms and treatment.

Orem believed that each individual initiates and performs and maintains self life health and well-being. Nursing agency is a complex property or attribute of people educated and trained as nurses that enables them to act, to know, and to help others meet their therapeutic self-care demand by exercising or developing their own self-care agency (Fadli, 2022). Information can help people assess their risk of diabetes, motivate them to seek proper treatment, and care and inspire them to take control of the disease. By increasing their diabetic knowledge people with diabetes may learn to maintain good control of their blood glucose level which can prevent other complications. Patients who

are regularly involved in self-care practices such as dietary control and glucose management achieve high glycaemic control, therefore self-management education among patients is crucial (Kakade, Mohanty, & Rai, 2016). More importantly, Tewahido and Berhane (2017), reported that diabetes self-care is poor mainly due to insufficient guidance and support provided to persons with diabetes.

Study in Australia, Kueh, Morris, Barkoles, and Shee (2015), confirmed that by increasing their diabetic knowledge people with diabetes may learn to maintain good control of their blood glucose level which can prevent other complications. In addition, knowledge affects the quality of life indirectly through attitudes toward living with diabetes and self-management in terms of blood glucose testing. More positive attitudes led to more regular diet self-management. There is a possibility that attitudes can be affected by certain symptoms of depression influencing self-management behaviours such as diet. Studies show evidence that people with diabetes who had more positive attitudes about living with diabetes were more likely to have a high level of quality of life than those with negative attitudes. Therefore, this provides important insight to health care workers that enhancing positive attitudes among patients diagnosed with diabetes has the potential to increase the quality of life. Moreover, people with insufficient funds had significantly fewer positive attitudes towards the treatment of diabetes. Therefore, it was speculated that family income is a major contributing factor to attitude change toward diabetic treatment. Poor awareness, negative attitudes and inadequate self-care practice among patients diagnosed with diabetes are some of the important variables influencing the progression of diabetes and it is complications which are largely preventable through education and involvement of patients (Kueh et al., 2015).

Alsous, Abdel Jalil, Odeh, Al Kurdi and Alnan (2019), conducted a study in Jordan reported that about (46.3%) had positive attitudes toward the disease. One-third of

participants (34.7%) believed that the use of insulin is harmful to the body while (40%) believed that glucose can be controlled by having the right diet better than using medications, (16%) believed that using therapy, herbal remedies, alternative medicines were better in controlling blood glucose level than using medications and diet.

Missiriya (2016), conducted a study in Tamilnadu India and concluded that diabetes self-care knowledge was generally high and encouraged the need to improve diabetic knowledge among patients which can be motivated by community health nurses and achieved through community health centres by bringing awareness among people and extending the diabetic health program in the mass campaign. Another study in Bandar Abbas Iran, by Karimi, Abedini and Mohsen (2017), agreed with him by emphasising that education programs increase the level of self-care capability among patients.

2.7 OVERALL MANAGEMENT OF DIABETES AND SELF-CARE

According to the Orem theory, the patient is passive and not just receipt of the health service, but should be strong reliable and responsible with a power of decision making that can provide self-health care responsibility and good performance to increase the knowledge about diabetes and diabetes self-care principles (Zareban, Niknami, Hidarnia, Rakhshani, Shamsi , Karimy, 2014). Application of self-care is one of the aspect that play an important role in the management of diabetes mellitus including diet management, physical exercise, blood sugar monitoring, medication adherence and foot care (Fadli, 2022). Diabetes management involves constant assessment and modification of the treatment plan by health professionals and daily adjustment in therapy by the patients. Although the health care team directs the treatment, it is the individual patient who must manage the complex therapeutic regimen. For this reason, patients and family education are essential components of diabetes treatment and are as important as all other components of the regimen. Diabetes management has main five components.

2.7.1 Medication compliance

Taking medication helps to keep patients' blood sugar level steady and these medications should be taken at right time every day as prescribed. For those using insulin, the site of insulin injection must be rotated every day to prevent lipohypertrophy (American Diabetic Association, 2019). Furthermore, ADA (2019), urged that proper insulin injection techniques include injecting into appropriate body areas such as the abdomen, thigh, and upper arm.

A study in East Trinidad by Onuoha et al., (2017), reported there was a high level of medication compliance (66.7%) and those with a medium level were (31.8%) while those with a low level were (1.5%), which shows participants had knowledge. Additionally, Belsti et al., (2020), in Ethiopia demonstrated that more than two-thirds of the patients (69.7%) never forgot to take their medications, similar to (Roux et al., 2018), in South Africa who said the majority of participants (83%) never forgot to take their medications.

Although some studies indicated a high level of compliance, other study findings revealed a high level of non-compliance to the anti-diabetic regimen with the prevalence of low adherence to anti-diabetic medications at (61.67%), medium adherence at (28.89%) and high adherence at (9.44%), (Asheq, Ashames, Al-Tabakha, Hassan & Jairoun, 2021). Also, Algarni, Alrahbeni, Quarni, and Quarni (2018), indicated that more than half (54.4%) of patients forgot to take their medication which implies poor compliance even though medications were available with a high level of health care access.

2.7.2 Nutritional management and alcohol

The goal is to achieve and maintain blood glucose level and blood pressure level in the normal range and lipid and lipoprotein profile that the risk for vascular disease prevents or at least slow the rate of development of chronic complications. American Diabetes Association (2018), recommended that energy intake for an adult with diabetes should take into consideration physical activity level and nutritional status. Nutritional therapy has an integral role in overall diabetes management and each person with diabetes should be actively engaged in education. Self-management and treatment planning with his or her health care team including the collaborative development of a plan.

American Association of Diabetes Educators (2014), stated that being diabetic does not mean you have to give up your favourite food, however your need to know the food you eat affects your blood sugar. A diabetic patient should eat regular food that contains carbohydrates, fats, and protein, and eat more vegetables and fibre. They must be cautious to prevent high or low blood sugar. Too high sugar means your diabetes is out of control and you may have blurry vision, a headache or feel tired. When it is too low you feel shaky, sweaty, weak and light-headed or fast hear-beat. Evidence suggests that there are no ideal percentages of calories from the carbohydrate, protein and fat for people with diabetes. Therefore, the macro nutrient distribution should be based on an individualized assessment of current eating patterns, personal preferences, culture, religion, health beliefs and economic and metabolic goals. Moreover, all patients diagnosed with diabetes should be referred to a registered dietitian for diet plans and recommendations (American Diabetic Association, 2018).

The majority of patients (86.6%) change their diet according to the recommendations of their physicians. Almost all respondents in Ethiopia, reported to have avoided taking table sugar and minimized intake of sweet drinks and food (Belsti et al., 2020: Tewahido &

Berhane, 2017). However, some participants in Addis Ababa Ethiopia reported that adhering strictly to diabetes dietary recommendations is boring and practically impossible as food restrictions make life more stressful (Tewahido & Berhane, 2017).

For women, not more than one alcoholic drink per day and not more than two for men is recommended. Moderate intake of alcohol does not have major detrimental effects on long-term blood glucose control, however, the risk associated include weight gain and hyperglycaemia. People are encouraged to decrease both sweetened and non-nutritive-sweetened beverages and use other aliments with an emphasis on water intake (American Diabetic Association, 2018).

2.7.3 Physical exercise

Kueh et al., (2015), in Australia, revealed that regular self-management exercise led to a higher level of satisfaction with treatment. American Diabetic Association (2018), emphasised that exercise is important because it burns calories and helps to control weight gain, eases stress and tension and maintains a feeling of well-being. In addition, regular exercise improves the body's response to insulin and may make oral anti-diabetic drugs and insulin more effective. Moreover, it promotes circulation and lowers cholesterol and triglyceride levels thus reducing the risk of cardiovascular disease. Blood glucose should be checked before exerting exercise to prevent hypoglycaemia.

Study findings in South Africa, by Roux et al., (2018), reported that nearly all participants (83%) considered physical exercise important and as it helps with blood glucose control, of which (64.6%) exercised every day for more than 30 minutes. In contrast, Tewahido and Berhane (2017), showed that nearly all participants admitted that they don’t exercise regularly.

Adults with type 2 diabetes should engage in 150 minutes or more of moderate to vigorous-intensity aerobic activity per week at least three days/week with flexibility training and balance training (American Diabetes Association, 2019).

A study in Poland by Abramczyk (2018), demonstrated that compared to less active patients, more active patients who take physical activit y also in their free time are more often in a better health condition and have fewer accompanying diseases and complications.

2.7.4 Foot care

One of the major complications associated with diabetes mellitus is diabetic foot disease. The complication almost affects (50%) of patients and accounts for nearly (80%) of all non-traumatic amputations of the lower limb. Diabetic foot complications are the most common cause of hospital admission. Diabetic foot complication is the major cause of significant loss of quality and years of the life of patients diagnosed with diabetes (Solan, Kheir, Mahfouz, Al-faify, Hakami, Al faifi, Hakami, Hakami, & Sharif, 2016: Tuha et al., 2021: Shawahna et al., 2021).

The study in Saudi Arabia, revealed that (53.6%) had good foot care knowledge (Solan et al., 2016). In another study in East Trinidad, Onuoha et al., (2017), showed that (60.6%) had a medium knowledge level, and (39.4%) had a high level of knowledge on self-care regarding foot care. On the other hand, in Addis Ababa Ethiopia, foot care was the least practised of diabetes self-care (Tewahido & Berhane, 2017).

Patients should be provided with adequate information to aid in the selection of appropriate footwear including Broad Square to box laced with ¾ eye per side padded langue quality lightweight material, sufficient size to accommodate a cushioned insole (ADA, 2018).

2.7.5 Glucose monitoring

Self-monitoring blood glucose is the preferred method for assessing day to day glycaemic control for patients with type 1 diabetes. However, self-monitoring is considered appropriate for type 2 diabetes that requires insulin. Finger-stick device must be issued for individual use only. Glucose should be checked before each meal and at bedtime (Federal Bureau of Prison clinical guidance, 2017).

Though glucose monitoring is a cornerstone of diabetes care, a study done in Eat Trinidad by (Onuoha et al., 2017), showed that participants with high knowledge of glucose monitoring were less (48.55%) compared to those with medium average knowledge (51.5%).

According to the American Association of Diabetic Educators (2014), checking your blood sugar level regularly, helps you know when your blood sugar level is on target, prepare for actions to be taken and it helps you make food and activity adjustments so that your body can perform at its best. Self-monitoring of blood glucose helps with self-management and medication adjustment, particularly in individuals taking insulin. Moreover, it has an important role in assessing the effectiveness and safety of treatment among patients (American Association of Diabetic Educators, 2019).

Tewahido and Berhane (2017), in Addis Ababa Ethiopia, showed that participants do not check their blood glucose level and those who had a glucometer machine test their blood glucose every 4-6 weeks. This indicated irregular blood glucose monitoring which leads to high risks of developing long term diabetes complications due to poor glycaemic control.

2.8 SUMMARY

This chapter dealt with relevant literature studied to provide an overview of the study problem. Definition of diabetes mellitus, management of diabetes mellitus and self-care behaviours, and the prevalence of diabetes mellitus, risk factors and complications were discussed. The next chapter will be focused on research methodology and study design.

CHAPTER THREE

RESEARCH METHODOLOGY AND STUDY DESIGN

3.1 INTRODUCTION

This chapter outlines the research method and design employed to conduct this study as well as the research setting. The population under the study is also defined. The chapter further deals with the sampling method, pilot study, data collection and data analysis. Furthermore, the validity and reliability of the data collection tool as well as the research ethics are also discussed.

3.2 RESEARCH APPROACH AND DESIGN

Quantitative research is fundamentally about gathering numerical data to explain a particular phenomenon (Brink et al., 2018). A quantitative approach was employed to assess the level of knowledge, and attitudes and identify practices on self-care management among patients diagnosed with diabetes. The approach was used because it quantify and measure the knowledge, attitudes and practice of patient diagnosed with diabetes on self-care management. A quantitative approach was used as it helps to examine and describe the variable concerned namely knowledge, attitudes and practice of patients with diabetes. A cross-sectional and analytical design was applied in the study among patients diagnosed with diabetes who attended the outpatient department at Rundu Intermediate Hospital. The analytical design was used because it look at and collect data from different individuals at one point in time and provide useful insight into a population characteristics (Brink, Van der Walt & Rensberg, 2018). Moreover, the analytical design was applied to ascertain the association between the independent variables and dependent variables. Moreover, study findings were generalised to a large population about with information is required after completion.

3.3 RESEARCH SETTING

The study was conducted in Rundu Intermediate Hospital which is located in the Kavango East Region in the northeast part of Namibia. Rundu Intermediate Hospital is a public hospital owned by the Namibian government and it is a referral hospital which caters for referrals from the Kavango East, Kavango West and the Zambezi region (Muyamba, 2020).

3.4 STUDY POPULATION

In this study, the population was all patients who are diabetic, male and female aged 18 and above who attended the outpatient department at RIH, within the study period of two months in March and April 2021.

3.5 INCLUSION CRITERIA

This study focused on the following:

All patients diagnosed with diabetes mellitus, male and female aged 18 and above who consented to partake in the study.

3.6 EXCLUSION CRITERIA

Patients who were not willing to participate, were mentally ill, and unable to communicate and consent.

3.7 SAMPLING AND SAMPLE

The participants were recruited through the purposive non-probability sampling technique. Purposive sampling is a technique based on the researcher's judgement regarding knowledgeable participants (Brinks et al., 2018). Purposive sampling was used to allow the researcher to select a sample based on the knowledge of the phenomena being studied. The researcher deliberately selected participants who met the inclusion criteria

and were willing to participate because they had knowledge of diabetic self-care management based on the purpose of the study.

3.8 SAMPLE SIZE

Participants were selected from the patient register as the sample frame. The sample size was calculated using Yamane's formula (Uniproject Material, 2022).

*n=N/ (1+N*e^2)*

n=Sample size

N= Entire population

e= Confidence error=0.05

*n=1828/ (1+1828*0.05^2)*

n=328

Due to the covid-19 pandemic situation and lockdown, it was challenging to reach the targeted sample of 328. A total number of 198 participants was achieved, representing a 60% response rate.

3.9 DATA COLLECTION PROCEDURE

Upon receipt of the approval from the appropriate authorities, such as the UNAM research committee, MoHSS, and Rundu Intermediate Hospital management (superintendent), the researcher introduced herself to the participants, and explained the aim and the objectives of the study and obtained informed consent. Data were collected during the day, Monday to Friday, from 08:00 to 17:00 at the OPD as the patients came for their routine follow-ups. The questionnaire was completed in not more than 30 minutes and the researcher was present during the time of completion of the questionnaire. The researcher did not make use of a researcher assistant. The questionnaire was developed in English by the researcher and tested in a pilot study with 10 patients at the OPD of Rundu Intermediate Hospital and data was collected over a period of two months in March and April.

3.10 RESEARCH INSTRUMENTS

A self-reported questionnaire developed based on the literature review and the previous studies was used to collect data from the participants. Questions evaluating attitudes were categorised as strongly agree, agree, neutral, strongly disagree, and disagree using a 5-point Likert scale for assessing attitudes. The score of 5 and the score of 1 were applied based on the expected correct or right response. The knowledge was scored as adequate and inadequate and practice was scored as good and bad based on the correct answers focusing mainly on the five domains of self-care management such as glucose monitoring, medication taking, meal plan, physical exercise, and foot care. Pearson chi square test was used to compare categorical variable at 0.05 p-value for statistical significant.

The questionnaire consisted of both multiple-choice questions, close-ended and open-ended questions. The questionnaire was made up of three sections:

Section A: Demographic data.

Section B: Knowledge, on self-care management and source of information.

Section C: Attitudes of self-care management

Section D: The practice of self-care management

Operational Indicators/ Variables

This study considered knowledge, attitudes, and practice as the dependent variables to answer the study objectives. They are explained below:

Knowledge: In this study, the knowledge question was asked as follows: "*How do you rate your knowledge on self-care management of diabetes*?" For adequate knowledge, the study considered the following "*well informed and know something"*, whereas for

inadequate knowledge the study considered *"less informed, know very little and know something*".

"*Where did you learn about diabetes?"* for adequate knowledge the responses were *doctor, nurse, internet, television, radio, diabetic group* and for inadequate the responses were *I have no knowledge.*

Is diabetes curable with treatment? The responses were *yes* for inadequate knowledge, *No* for adequate knowledge.

Do you know the complications of diabetes? For adequate knowledge, the responses were *kidney damage, cardiovascular, diabetic foot,* while responses like *others and do not* know were for inadequate knowledge.

What are the risk factors? Age, overweight, and family history were, considered adequate knowledge while responses like *others and do not know* were inadequate knowledge.

Which of the followings are symptoms of diabetes? The responses were *increased thirst, frequent urination and palpitation and slow healing of cut and wound* for adequate knowledge and for inadequate knowledge was *poor appetite and abdominal pain*.

Hence the new categories for knowledge were adequate knowledge and inadequate knowledge.

Furthermore, the study assessed the knowledge of patients with regards to glucose monitoring, meal plan, medication taking, foot care and physical activities.

Glucose monitoring: the following statements were asked,

Do you know how to use a glucose machine?

I need my own glucose machine

Checking glucose daily is important

Glucose should be monitored on a daily basis

Glucose monitoring can be done home

The response *agree and strongly agree*, were considered as adequate knowledge and *strongly disagree, disagree and neutral* were inadequate knowledge.

Meal plan: the following statements were asked,

Diet adjustment plan is important

Weight monitoring is important

Alcohol and smoking cause poor glucose control

Frequent and small amount of food is necessary

Drinking plenty of water is important

The response *agree and strongly agree*, were considered as adequate knowledge and *strongly disagree, disagree and neutral* were inadequate knowledge.

Medication taking: the following statements were asked,

Taking medication is important

Medication should be taken daily as prescribed

Medication should be taken with water only

Medication should be stored in a safe place

The response *agree and strongly agree*, were considered as adequate knowledge and *strongly disagree, disagree and neutral* were inadequate knowledge.

Foot care: the following statements were asked,

Foot inspection should be done daily

Always wear comfortable shoes and socks

Dry your foot after a shower and moisturised

The response *agree and strongly agree,* were considered as adequate knowledge and *strongly disagree, disagree and neutral* were inadequate knowledge.

Physical exercise: the following statements were asked,

Regular exercise prevents complications,

Sugar level can be controlled with exercise,

Being physically active is important,

The response *agree and strongly agree,* were considered as adequate knowledge and *strongly disagree, disagree and neutral* were inadequate knowledge.

Attitudes: Under the attitudes theme, a series of questions were asked (see the questionnaire) on the attitudes of the patients. Questions on discrimination, control glucose, harmful effect, therapies, rich or poor, traditional healers, clinics only, respondents who disagree, or strongly disagree have good attitudes and those who agree or strongly agree have poor attitudes.

On the other hand, for questions on prevention of complications, regular exercise, diabetes is treatable, poor glucose control and blood pressure, the respondent who agrees or strongly agrees has good attitudes while those indicating disagree and strongly disagree has poor attitudes.

Practice: the study assessed the practice of patients with regard to glucose monitoring, medication taking, meal plan and physical activities. The following were considered for these categories.

Glucose monitoring: The following questions were asked "*Do you check your sugar level*?" the responses were *"yes and no"*.

"*When do you check your sugar level*" responses were "*Morning, Afternoon, Bedtime, never/ rarely*"?

"How often do you check your sugar level" the responses were "*Once a day, 2 or more /day, 1or more/week, Occasionally, Never"*?

For this indicator, good practice was for the "*Yes, Bedtime and Morning, evening and Two or more time*" response to the questions, whereas bad practice was for all other responses. In the end, the categories were good practice and bad practice

Medication Taking: The following questions were asked "Have you ever forgotten to take your medication", and "Do you ever reuse the syringe" the responses to these questions were "Yes and No". Good practice was for the No response while bad was for the Yes response.

The other questions were "*Do you take your medication as prescribed", and "Do you inject Insulin*?" The responses were "*Yes and No*" The good practice was for a No response.

"Where do you keep the insulin?" good practice was for the response *fridge,*

"Where do you keep the syringe after use?" good practice was for the response *safety box.*

In the end, an aggregate of the good practice was compiled, to form only good and bad practices for medication taking.

Meal Plan: The following question was asked: *"Do you strictly follow your diet plan?"* Good practice was for those who said yes and bad practice was for those who said no.

Furthermore, *how do you prepare your food?* Those who indicated *less salt and less sugar* had a good practice.

Physical exercises: The following questions were asked: "*How often do you exercise?*" Good practice was for the "*regularly and sometimes*" responses, and bad practice was for the "*don't know, and not really*" responses.

Another question was "*How long do you exercise?"* Bad practice was for those who exercised for less than 30 minutes, while good practice was for those who exercised for 30 minutes or more.

An aggregate of all good and bad practices was compiled for both questions in order to form one variable with good practice and bad practice.

3.11 VALIDITY

The study enhanced validity through the face and content validity. Face validity means an instrument appears to measure what it was supposed to measure while content validity refers to an assessment of how well the instrument represents all the components of the variable to be measured (Brink et al., 2018). In the study, the researcher used knowledge and practice questions adapted from previous similar studies done elsewhere. Information collected in relation to the questions and objectives of the study was examined to ensure the accuracy and completeness of the data collected. The researcher supervisor also evaluated the instrument for clarity, relevance and simplicity of the content. The

instrument was piloted on 10 patients before the actual study to ensure that all the important arrears of concerns were reflected in it.

3.12 RELIABILITY

The reliability of an instrument is the degree to which the instrument remains stable in its measurements over a number of measures (Brink et al., 2018). The questionnaire was pre-tested prior to actual data collection is done. A pilot study was conducted to eliminate possible ambiguity and assess the relevance, appropriateness and comprehensiveness of the study instrument.

3.13 PILOT STUDY

A pilot study was undertaken prior to the actual collection of data. This was done to ensure content validity and reliability. Data for the pilot study were collected from subjects with the same characteristics as those under study, at Rundu Intermediate Hospital OPD on patients with diabetes who met the inclusion criteria but did not partake in the main study. The participants completed a self-reported questionnaire to assess knowledge, attitudes and practice of self-care for diabetes mellitus. Data were collected for one week for the pilot study. After the pilot study, amendments to the questionnaire were done on the spacing of questions and numbering.

3.14 DATA ANALYSIS

Grove and Gray (2018), data analysis is a mechanism for reducing and organising data to produce findings that require interpretation by the researcher. Completed questionnaires were coded and data entered on a computer for analysis using Statistic Package for Social Sciences (SPSS) version 25. Demographic data were represented as percentages. The descriptive measures were presented as frequency tables and graphs for easy interpretation. The researcher made use of a professional statistician to analyse and

summarise the data. The set level of statistical significance was a p-value of less than 0.05 at 95% confidence intervals. Descriptive statistics is important because it allows the data to be easily visualized in a meaningful and understandable way. Visualisation of data comprises frequency distribution and measure of central tendency. In this study, frequency distribution in the form of tables was used to describe the socio-demographic characteristics of the population. Frequency tables were used to present the knowledge of self-care management among patients diagnosed with diabetes, and factors that influence knowledge of self-care management. Additionally, it was used to assess the attitudes toward self-care management and assess the practice of self-care management among patients diagnosed with diabetes. This study further used descriptive statistics to present descriptive results on medication taking, and meal plans. In the end, physical exercise and practice of self-care management were also presented using frequency tables.

Inferential statistics allow the researcher to reach a conclusion about an association between variables of interest. Unlike descriptive statistics, inferential statistics are explicitly designed to test hypotheses. In this study, the Pearson chi-squared test for association was used to assess the association between variables as follows. Firstly, the study used cross-tabulation with chi-square for the association to examine the relationship between the socio-economic and demographic factors with attitudes toward self-care management among patients diagnosed with diabetes. Since all the socio-economic and demographic factors, were categorical in nature, a chi-square test for association was appropriate to explore associations. Secondly, the study used cross-tabulation with chi-square for the association to examine the relationship between the socio-economic and demographic factors with knowledge of self-care management among patients diagnosed with diabetes. In the end, a cross-tabulation with chi-square for the association to examine

the relationship between the socio-economic and demographic factors with the practice of self-care management among patients diagnosed with diabetes was used.

3.15 ETHICAL ASPECTS

The ethical aspects are concerned with principles aimed at ensuring the right, safety, and well-being of participants which are underpinned by the respect for human dignity protecting individual interests and guiding research planning and conduct (Le May & Holmes, 2012). `Approval was obtained from UNAM Faculty of Health Science Ethical committee. Ethical clearance letter was obtained from the school of nursing under faculty of health science postgraduate studies committee of the University of Namibia. Further approval was obtained from the MoHSS and Rundu Intermediate Hospital management (superintendent). Informed consent was obtained from each participants after the purpose, benefits and the rights of the participants were explained. A cover letter consisting of researcher information, the introduction of the topic, purpose and benefits of the research was included.

The researcher applied ethical principles namely:

3.15.1 RESPECT OF PERSON

Participants were informed that they can only take part in the study if they are willing to and no one will be discriminated against or forced to participate and assured that their decision was respected. Additionally, participants were informed of their right to withdraw from the study at any time, to refuse to give information or to ask for clarification about the purpose of the study and the researcher respect their opinion. Privacy of participants was ensured by keeping participants information undisclosed by not requesting for names or personal details of the participants on the questionnaire. Questionnaires were kept in a locked cupboard until the research report was completed and disposed according to the protocol of the University of Namibia. To ensure

anonymity participants were informed not to include their names on the questionnaires. Finally questionnaires were only accessible to the researcher, supervisor and the statistician and the information collected from the participants was used strictly only for academic purposes.

3.15.2 BENEFICENCE

The researcher purpose was to assess the knowledge, attitudes and practice of patients diagnosed with diabetes that might be helpful to patients, health care workers, and institution. The researcher refrained from actions that could cause harm and discomfort to the participants by ensuring that no names were written on the questionnaires. Emotional harm was minimized by explaining the purpose of the study. The researcher adhered to the duration time during data collection and appropriate referrals were made for those who were anxious or afraid.

3.15.3 JUSTICES

In the study, participants were treated equally irrespective of their race, colour, religious and social status. The researcher kept the data collected safe and confidential by locking them in a locked cabinet. Participants who partake in the study were not exposed and the questionnaires were not linked to any name. Anonymity was assured by avoiding the usage of names.

3.16 SUMMARY

The discussion in this chapter focused on research methodology, design, study population, sampling and sample, pilot study, data collection procedure and instruments, data analysis as well as research ethics. The next chapter will deal with the results of the analysis of the data and findings from the research.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION RESEARCH FINDINGS

1.1 INTRODUCTION

In the previous chapter, presented information on the research methodology was presented. The discussion covered the research design and the motivation for selecting that particular design. The study population, the sample and the sampling methods used to obtain the sample were presented, as well as the research instruments used for data collection. Finally, a discussion on the data analysis was highlighted.

This chapter focused on the presentation of the research results of the study. The results are based on data collected by means of a questionnaire to assess knowledge, attitudes and practice of patients diagnosed with diabetes on diabetes self-care management at Rundu Intermediate Hospital.

4.2 RESULTS

The findings are discussed according to the study objectives.

4.2.1 Socio-demographic characteristics

Table 1: Socio-economic and demographic characteristics

Socio-demographic characteristics		**Frequency**	**Percentage (%)**
Age group	15-29	12	6.1
	30-44	45	22.7
	45-59	65	32.8
	60 and above	76	38.4
	Total	**198**	**100**
Sex	Female	125	63
	Male	72	37
	Total	**197**	**100**

Education Level	Primary	54	28
	Secondary	35	18
	Uneducated	91	47
	University	14	7
	Total	**194**	**100**
Marital Status	Married	60	31
	Single	133	69
	Total	**193**	**100**
Employment Status	Employed	31	16
	Retired	5	3
	Student	3	2
	Unemployed	151	79
	Total	**190**	**100**
Current Treatment	Insulin	79	39.9
	Oral Medication	115	58.5
	Oral medication and Insulin	4	2
	Total	**198**	**100**

A total of 198 participants were involved in the study. The mean age was 52 (SD=13.65), the minimum age was 18 and the maximum age was 83. The majority, 76 (38.4%), of the respondents, represented the age group of 60 years and above, followed by 65 (32.8%) in the age group 45-59 years, those in the age group of 30-44 were 45(22.7%) and lowest 12 (6.1%) were in the age group of 15-29 years. The range of respondents' age was 65.

Above half, 125 (63%) were female while 72 (37%) were male. Study results indicated that 91 (47%) of the respondents were uneducated, followed by 54 (28%) who had some primary education, 35 (18%) had secondary education and 14 (7%) had university education level. It was also reported that 133 (69%) of the respondents were not married compared to 60 (31%) who were married. More than half of the respondents, 151 (79%),

were unemployed, 31(16%) were employed, while 5 (3%) were retired and 3 (2%) were students. About half 115 (58.5%) of the respondents stated that they were on oral medication, 79 (39.9%) were on insulin, and 4 (2%) were on both oral medication and insulin.

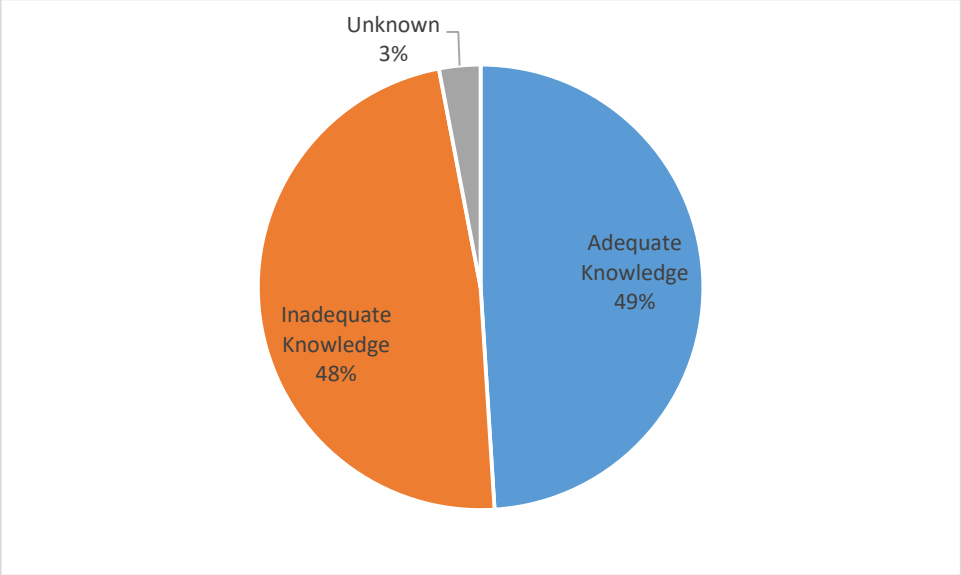

Figure 1: Prevalence of knowledge on diabetes.

Findings from the study indicated that almost half 97 (49%) of the respondents have adequate knowledge of diabetes, while 95 (48%) indicated that they had inadequate knowledge and 6 (3%) had no knowledge.

4.2.2 The knowledge of self-care management among patients diagnosed with diabetes

Table 2:Knowledge of self-care management

Knowledge of self-care management		**Frequency**	**Percentage (%)**
	Inadequate Knowledge	62	31.3
	Adequate Knowledge	136	68.7

Knowledge of self-care management of diabetes	**Total**	**198**	**100**
Diabetes is curable with treatment	No	76	69
	Yes	34	31
	Total	**110**	**100**
Symptoms of diabetes	Abdominal Pain	35	21
	Frequent Urination	47	28
	Increase Thirst	43	26
	Palpitation, slow-healing cut and wound	16	10
	Poor Appetite	27	16
	Total	**168**	**100**

Findings from this study revealed that more than half 136 (68.7%) of the respondents stated that they have adequate knowledge of self-care management of diabetes, as compared to 62 (31.3%) who had inadequate knowledge. About 76 (69%) of the respondents indicated that diabetes was not curable with treatment, and 34 (31%) testified that it was curable. Respondents reported frequent urination 47 (28%), increase thirst 43 (26%), abdominal pain 35 (21%), palpitation, slow healing cut and wound 16 (10%), and poor appetite 27 (16%) as the symptoms of diabetes.

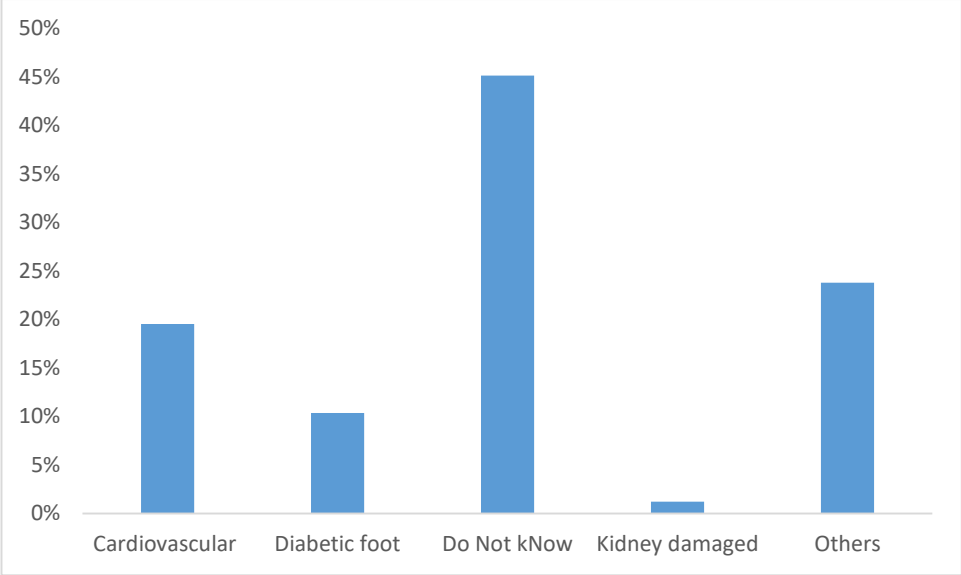

Figure 2: Complication of Diabetes.

Study results show that the majority of the patient did not know the complications of diabetes 74 (45%), however, 39 (25%) gave others as complications. In addition, 32 (20%) indicated cardiovascular, 17 (10%) diabetic foot and 2 (1%) kidney damage.

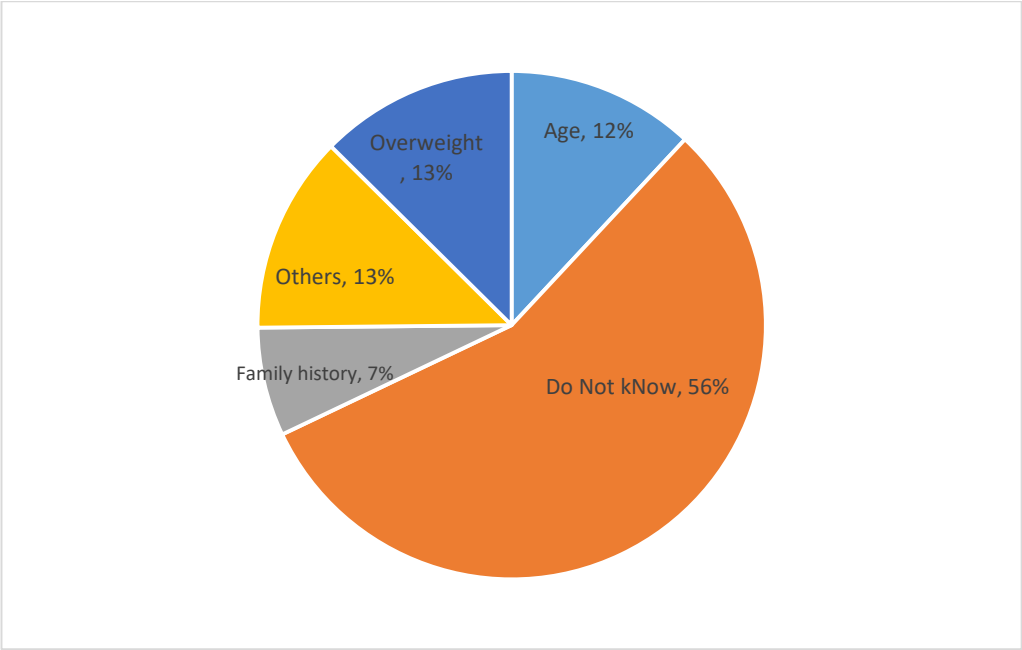

Figure 3: Risk Factors of Diabetes.

The findings showed that more than half of the patients do not know the risk factors for diabetes 89 (56%). However, some mentioned family history 12 (7%), overweight 20 (13%), age 19 (12%) and others 20 (13%) as risk factors.

Table 3: Sources of information about diabetes self-care management

Sources of information		**Frequency**	**Percentages (%)**
Learn about diabetes and its care	Diabetes group	1	1
	Doctor	155	79
	Internet	5	3
	Nurse	31	16
	Radio	4	2
	Total	**196**	**100**

The finding revealed that 155 (79%) of the respondents learned about diabetes from the Doctor, 31 (16%) from the nurse and less than five percentage of the respondents learn from the internet 5 (3%), radio 4 (2%) or diabetes group 1(1%).

Table 4: Knowledge of the factors on self-care management of Diabetes

		Frequency	**Percentage**
Glucose Knowledge	Unknown	5	2.5
	Adequate Knowledge	80	40.4
	Inadequate Knowledge	113	57.1
Meal Plan Knowledge	Unknown	1	0.5
	Adequate Knowledge	184	92.9
	Inadequate Knowledge	13	6.6
Foot Care Knowledge	Unknown	1	0.5

	Adequate Knowledge	43	21.7
	Inadequate Knowledge	154	77.8
Physical Exercise Knowledge	Unknown	6	3
	Adequate Knowledge	112	56.6
	Inadequate Knowledge	80	40.4
Medication Taking	Adequate Knowledge	195	98.5
	Inadequate Knowledge	3	1.5

Results from the study showed that more than half 113 (57%) of the respondents have inadequate knowledge on glucose monitoring, 5 (2.5%) have unknown knowledge and less than half 80 (40.4%) have adequate knowledge. Moreover, the majority 184 (92.9%) of the respondents have adequate knowledge of meal plans, 1 (0.5%) have unknown knowledge and only 13 (7%) reported having inadequate knowledge of meal plans. Furthermore, 154 (77.8%) of the respondents indicated inadequate knowledge of foot care, 1 (0.5%) have unknown knowledge, whereas 43 (21.7%) reported adequate knowledge. Additionally, 112 (56.6%) of the respondents show adequate knowledge of physical exercise, 6 (3%) have unknown knowledge, while 80 (40.4%) reported having inadequate knowledge. In the end, 195 (98.5%) of participants have adequate knowledge, 0 (0%) have unknown knowledge, and (1.5%) have inadequate knowledge on medication taking.

Table 5: Assess the attitudes of self-care management

Attitudes	**Good Attitudes (%)**	**Poor Attitudes (%)**	**Average attitudes (%)**
Do you think society discriminates against a person with diabetes?	91.3	4.1	4.6
Do you think controlling glucose with diet alone is superior to that controlling glucose with diet and medication?	37.9	54.9	7.2
Does insulin cause harmful effects on the body?	100	0	0
Do you think therapies such as exercise, yoga, and herbal are better than methods usually prescribed?	14.8	56.6	28.6
Do you think is important to control blood glucose well to prevent complications?	100.0	0	0
Diabetes is a disease for the rich not for poor	81.5	14.9	3.6
Diabetes can be cured by traditional healers	100.0	0	0
Self-glucose monitoring should be done at hospitals and clinics only	27.3	45.4	27.3
Diet adjustment and regular exercise help to control diabetes	100.0	0	0
Diabetes is treatable with medications, diet and regular exercise	1.5	24.6	73.8
Smoking and alcohol cause poor glucose control	100.0	0	0
Blood pressure control is good for sugar control	5	33.2	66.3

A series of questions were asked to assess the attitudes of the respondents towards diabetes. These questions included:

Do you think society discriminates against a person with diabetes society? Good attitudes was (91.3%), poor attitudes (4.1%), and average (4.6%). Do you think controlling glucose with diet alone is superior to that controlling glucose with diet and medication? Good attitudes (37.9%), poor attitudes (54.9%), and average attitudes (7.2%). Does insulin cause harmful effects on the body? Good attitudes (100%), poor attitudes (0%), and average attitudes (0%). Do you think therapies such as exercise, yoga, and herbal are better than methods usually prescribed? Good attitudes (14.8%), poor attitudes (56.6%), and average attitudes (28.6%). Do you think is important to control blood glucose well to prevent complications? Good attitudes (100. %), poor attitudes (0%), and average attitudes (0%). Diabetes is a disease for the rich not for poor? Good attitudes (81.5%), poor attitudes (14.9%), and average attitudes (3.6%). Diabetes can be cured by traditional healers? Good attitudes (100.0%), poor attitudes (0%), and average attitudes (0%). Self-glucose monitoring should be done at hospitals and clinics only, good attitudes (27.3%), poor attitudes (45.4%), and average attitudes (27.3%). Diet adjustment and regular exercise help to control diabetes, good attitudes (100.0%), poor attitudes (0%), and average attitudes (0%). Diabetes is treatable with medications, diet and regular exercise, good attitudes (1.5%), poor attitudes (24.6%), and average attitude (73.8%). Smoking and alcohol cause poor glucose control, good attitudes (100.0%), poor attitudes (0%), and average attitudes (0%). Blood pressure control is good for sugar control, good attitudes (5%), poor attitudes (33.2%) and average attitudes (66.3%).

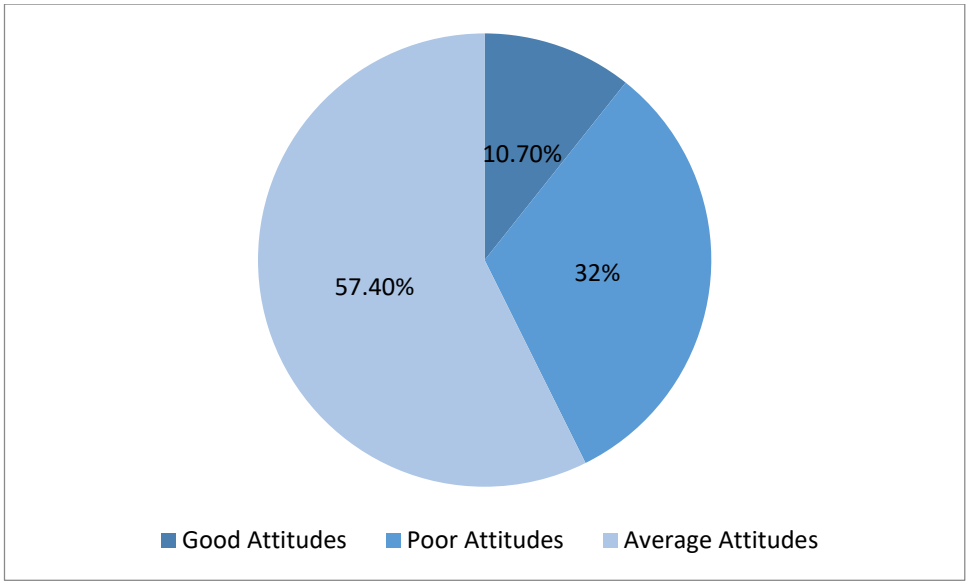

Figure 4: Assess the attitudes of self-care management

Findings revealed that more than half 113 (57.4%) of the respondents have average attitudes toward self-care management for diabetes. Furthermore, 63 (32%) had poor attitudes, and 21 (10.7%) reported having good attitudes towards self-care management.

4.2.3 Assess the practice of self-care management among patients diagnosed with diabetes in the Rundu Intermediate Hospital Kavango region.

Table 6: Glucose Monitoring

Glucose monitoring		**Frequency**	**Percentage (%)**
Do you check your sugar level	No	111	59
	Yes	77	41
	Total	**188**	**100**
When do you check your sugar level	Afternoon	6	3
	Bed Time	5	3
	Morning	41	22
	Never/Rarely	132	72
	Total	**184**	**100**
	Never	18	10

How often do you check your sugar level	Occasionally	127	68
	Once a day	11	6
	One or more/week	9	5
	Two/ more/day	23	12
	Total	**188**	100

Findings demonstrated that only 77 (41%) of the respondents checked their sugar level while 111 (59%) do not check their sugar level. Of the respondents who check their sugar level, 41 (22%) check their sugar level in the morning, while 6 (3%) in the afternoon and bedtime 5 (3%) and majority 132 (72%) of the respondents indicate that they never/rarely check their sugar level. It was also reported that of those that check their sugar level, 127 (68%) check it occasionally, 23 (12%) check it twice or more/day, while, 9 (5%) check one or more times per week and 18 (10%) never checked their sugar level.

Table 7: Medication Taking

Medication taking		**Frequency**	**Percentage (%)**
Do you take Pills	No	21	11
	Yes	174	89
	Total	**195**	**100**
Do you inject Insulin	No	120	61
	Yes	76	39
	Total	**196**	**100**
Do you take your medication as prescribed?	No	3	2
	Yes	193	98
	Total	**196**	**100**

Do you have any other medication that you take?	No	49	25
	Yes	147	75
	Total	**196**	**100**
Have you ever forgotten to take your medication	No	158	81
	Yes	36	19
	Total	**194**	**100**
Do you ever reuse the syringe	Do not Know	2	1
	No	179	90.4
	Yes	13	6.6
	Total	**198**	**100**

About 174 (89%) reported that they were taking pills, while 76 (39%) were taking Insulin injections. Additionally, 193 (98%) acknowledged that they take medication as prescribed, however 3 (2%) were not taking their medications as prescribed. Only 36 (19%) of the respondents stated that they forgot to take their medications at some point, and majority of respondents 158 (81%) reported that they do not forget. Out of the respondents 147 (75%) said they were taking other medications besides diabetes medications and 49 (25%) were not taking other medications. Moreover, 179 (90.4%) of the respondents indicated that they do not re-use the syringe and only 13 (6.6%) reuse syringes, while 2 (1%) did not know.

Table 8: Medication taking continue

Medication taking continue		**Frequency**	**Percentage (%)**
What time do you take your medication	Morning, afternoon and evening	133	69

	Afternoon	2	1
	Afternoon and Evening	3	2
	Evening	1	1
	Morning and Evening	47	24
	Morning	8	4
	Total	**194**	**100**
What do you do when you have side effects from medications	No side effects	111	86
	Seek medical attention from the health facility or Doctor	18	14
	Total	**129**	**100**
If you take insulin what site do you inject	Abdomen	9	12
	Thigh	49	64
	Upper arm	19	25
	Total	**77**	**100**
Do you rotate the site	No	8	10
	Yes	72	90
	Total	**80**	**100**
How often	After a month	4	5
	Monthly	2	3
	Mostly	26	36
	Not often	1	1
	Sometimes	38	52
	Weekly	2	3
	Total	**73**	**100**
Where do you keep the insulin	Bag	7	9
	Bottle	4	5
	Coke bottle	3	4
	Cooler box	3	4
	Fridge	47	58
	No insulin	4	5
	Safety box	13	16
	Total	**81**	**100**

Where do you keep the syringe after use	It is attached to the insulin	1	1
	Just on the table in my room	1	1
	None	4	5
	Plastic bag	1	1
	Safety Box	55	71
	Coke bottle	12	15
	Syringe dispenser	3	4
	Total	**77**	**100**

Findings from this study revealed that 133 (69%) of the respondents were taking their medication in the morning, afternoon and evening. Additionally, 47 (24%) were taking their medication in the morning and evening, while less than five percentages were either taking it in the afternoon 2 (1%), afternoon and evening 3 (2%), morning alone 8 (4%) and evening 1 (1%) alone. About 18 (14%) of the respondents reported that they seek medical attention from the health facility or doctor when they experience some side effects, while 111 (86%) indicated that they do not experience any side effects.

About 49 (64%) of the respondents that take insulin stated that they inject on the thigh, 19 (25%) inject on the upper arm, and 9 (12%) do it on their abdomen. Equally so, 72 (90%) of them highlighted that they rotate the site of injection and only 8 (10%) do not rotate the site of injection, with more than a half 38 (52%) of them doing the rotation sometimes. About 26 (36%) do the rotation most of the time, 4 (5%) after a month, 2 (3%) monthly, 2 (3%) do it weekly and 1 (1%) indicated not often rotation. Of those that take insulin, about 47 (58%) of them keep their insulin in a fridge, 13 (16%) keep it in a safety box, 7 (9%) keep it in a bag, 4 (5%) in a bottle and 3 (4%) keep it in a coke bottle or cooler box. Results show that 55 (71%) of the respondents keep their syringe in a safety

box, 12 (15%) keep it in a coke bottle, and 3 (4%) keep it in a syringe dispenser. And lastly, 1 (1%) keep the syringe on the table in the room, plastic bags and same number reported their syringes are attached to the insulin, however 4 (5%) indicated none as the answer.

Table 9: Meal Plan

Meal plan		**Frequency**	**Percentage (%)**
Breakfast	Coffee and Bread	11	5.6
	Jungle oat	5	2.5
	Porridge and Meat	3	1.5
	Porridge	5	2.5
	Spinach	1	5
	Total	**198**	**100.0**
Lunch	Fish and Porridge	1	.5
	Fish and vegetable	2	1.0
	Porridge and Meat	15	7.6
	Porridge	2	1.0
	Rice and macaroni	2	1.0
	Salad	1	.5
	Spinach and porridge	5	2.5
	Total	**198**	**100.0**
Dinner	Porridge and Meat	14	7.1
	Porridge and macaroni	1	.5
	Protein and vegetable	1	.5
	Rice and chicken	1	.5
	Rice, and macaroni	2	1.0
	Spinach and porridge	5	2.5
	Total	**198**	**100.0**
Do you strictly follow your diet plan	No	98	65
	Yes	53	35

	Total	**151**	**100**
How do you prepare your food	Less salt and oil	61	32
	I cook without salt and less sugar	4	2
	I cook without salt and sugar	94	50
	Less salt and sugar	5	3
	Less sugar and no salt	9	5
	Normal	16	8
	Total	**168**	**100**

Findings show that the majority 11 (6%) of the respondents have coffee and bread for their breakfast. This was followed by 2.5 (3%) who had jungle oats, spinach 1 (5%), whereas 5 (2.5%) had porridge and 3 (1.5%) had porridge and meat. About 15 (8%) of the respondents indicated that they always have porridge and meat for their lunch, 5 (3%) had spinach and porridge, while less than (2%) had fish and porridge, rice or macaroni, or salad. For dinner, 14 (7.1%) indicated that they always have porridge and meat, while 5 (3%) indicated that they had spinach and porridge. More than half, of the participants 98 (65%) don't follow their diet plan, however, 53 (35%) do follow a diet plan. When it comes to food preparation, 61 (32%) cook with less salt and oil, 4 (2%) cook without salt and less sugar, 94 (50%) cook without salt and sugar, 5 (3%) use less salt and sugar, 9 (5%) use less sugar and no salt, and 16 (8%) cook normally.

Table 10: Physical Exercise

Physical exercise		**Frequency**	**Percentage**
How often do you exercise	Don't exercise	31	27%
	Not really	12	10%
	Regularly	16	14%
	Sometimes	57	49%
	Total	**116**	**100%**
Type of exercise	Extreme	2	2%
	Light Exercise	41	36%
	Moderate	42	37%
	None	29	25%
	Total	**114**	**100%**
How long do you exercise	30 Minutes and more	53	48%
	Less than 30 minutes	28	25%
	No	30	27%
	Total	**111**	**100%**
What time do you exercise	Evening	42	38%
	Morning	17	15%
	Morning and Evening	21	19%
	None	30	27%
	Total	**110**	**100%**
Do you have any problem with exercising	No	132	96%
	Yes	6	4%
	Total	138	100%

Results show that 57 (49%) of the respondents exercise sometimes, while 16 (14%) exercise regularly. About 12 (10%) exercise though it's not much and 31 (27%) do not exercise at all. Of those that exercise, 42 (37%) of them do moderate exercise, 41 (36%)

do light exercise, 2 (2%) do extreme exercise, and lastly 29 (25%) did not indicate the type of exercise. It was reported that less than half 53 (48%) of the respondents exercise for 30 minutes or more, while 28 (25%) exercise for less than 30 minutes, however, 30 (27%) did not indicate the duration of their exercise. About 42 (38%) of the respondents indicated that they exercise during the evening, 17 (15%) during the morning and 21 (19%) exercise in the morning and evening and 30 (27%) didn't not indicate time. In the end, only 6 (4%) of the respondents indicated they have a problem with exercising, while 132 (96%) do not have any problem.

Table 11: Overall practice of self-care management

		Percentage
Glucose monitoring	Unknown	2.5
	Good Practice	40.4
	Bad Practice	57.1
Meal Plan	Unknown	.5
	Good Practice	92.9
	Bad Practice	6.6
Physical Exercise	Unknown	3.0
	Good Practice	56.6
	Bad Practice	40.4
Medication Taking	Good practice	60.6
	Bad practice	38.4
	unknown	1

Findings show that about (57%) of the respondents have bad practice with glucose monitoring, and only (40.4%) have a good practice. On meal plans, almost all (92.9%) have good practice while (6.6%) have bad practice. About, more than half (56.6%) of participants have good practice on physical activities while (40.4%) have a bad practice.

Lastly (60%) have good practice in meal plan, (38.4%) have bad practice and only (1%) have unknown practice.

4.2.4 Association between socio-demographic characteristics and knowledge, attitude and practice on self-care management of diabetes.

In this study chi-square statistic for association was used to determine the association between socio-demographic characteristics of the respondents with knowledge, attitudes and practice on diabetic self-care management. All the statistical conclusions in this study were concluded at a 0.05 level of significance.

Association between knowledge and demographic factors

Table 12: Association between socio-demographic characteristics and knowledge on self-care management of diabetes

		Knowledge				
		Adequate Knowledge	**Inadequate Knowledge**	**No Results**	**Chi-square**	**P-Value**
Sex	Female	48.8%	48.0%	3.2%	1.077	.898
	Male	48.6%	48.6%	2.8%		
Education	Primary	53.7%	42.6%	3.7%	5.127	.744
	Secondary	54.3%	45.7%			
	Uneducated	44.0%	51.6%	4.4%		
	University	57.1%	42.9%			
Marital Status	Married	50.0%	48.3%	1.7%	2.658	.617
	Single	47.4%	48.9%	3.8%		
Employment /Status	Employed	54.8%	41.9%	3.2%	6.717	.567
	Retired	60.0%	40.0%			
	Student		100.0%			
	Unemployed	49.0%	48.3%	2.6%		
Age Group	15-29	33.3%	66.7%		2.904	.821
	30-44	55.6%	42.2%	2.2%		
	45-59	47.7%	49.2%	3.1%		

	60 and above	48.7%	47.4%	3.9%		

Results show that the prevalence of adequate and inadequate knowledge among males and females was the same. Furthermore, adequate knowledge was significantly high among participants with university qualifications (57%), followed by those with secondary education (54%), and lowest among the uneducated (44%). More than half (51%) of the respondents without education indicated they have inadequate knowledge of diabetes. It was indicated that adequate knowledge was more prevalent among the married (50%), while inadequate knowledge was prevalent among unmarried (49%). Findings from the study show that adequate knowledge was dominant among the retired (60%) respondents, followed by employed (55%), and lowest among the unemployed (49%) respondents. On the other, hand all students indicated that they do not have adequate knowledge. About (55%) of the respondents in the age group 30-44 indicated that they have adequate knowledge of diabetes, while (68%) of those aged 15-29 years had inadequate knowledge of diabetes. To end, none of the socio-demographic variables was significantly associated with knowledge of diabetes.

Association between attitudes and socio-demographic factors

Table 13: Association between socio-demographic data and attitudes toward self-care management

		Attitudes				
		Unknown	**Bad Attitudes**	**Good Attitudes**	**Chi-square**	**P-Value**
Sex	Female	1.6%	8.0%	90.4%	1.422	.840
	Male		9.7%	90.3%		
Education	Primary	1.9%	5.6%	92.6%	28.480	<.05
	Secondary	2.9%	14.3%	82.9%		

	Uneducated		5.5%	94.5%		
	University		7.1%	92.9%		
Marital Status	Married		11.7%	88.3%	2.331	.675
	Single	1.5%	7.5%	91.0%		
Employment Status	Employed	3.2%	12.9%	83.9%	5.969	.651
	Retired			100.0%		
	Student		33.3%	66.7%		
	Unemployed	.7%	7.3%	92.1%		
Age Group	15-29		25.0%	75.0%	6.474	.372
	30-44	2.2%	6.7%	91.1%		
	45-59	1.5%	9.2%	89.2%		
	60 and above		6.6%	93.4%		

It was indicated that more than (90%) of the respondents from both sexes (gender) have good attitudes towards self-care management of diabetes. Furthermore, the majority (94.5%) of uneducated respondents indicated that they have good attitudes towards self-care management for diabetes, followed by (92.9%) of those with university education, while (82.9%) with secondary which was the lowest to have good attitudes towards self-care management on diabetes. Respondents who were single (91%) indicated that they had good attitudes towards self-care management of diabetes compared to (88.3%) among those who were married. All retired respondents (100%) indicated a good attitude of self-care management of diabetes, this was followed by unemployed respondents (92.1%), (84%) of those who were employed and the lowest among the students (66.7%). It was also indicated that good attitudes on self-care management of diabetes were prevalent among those aged 30-44 (91.1%) and lowest among the younger (15-29 years (75%) respondents. It was concluded that all the socio-demographic factors were not significantly associated with attitudes of self-care management.

Association between practice and socio-demographic factors

Association between practice on glucose monitoring, meal plan, medication taking and physical activities and socio-demographic factors.

Table 14: Association between socio-demographic characteristics and practice on self-care management of diabetes

		Practice			
		Bad Practice	**Good Practice**	**Chi-square**	**P-Value**
Sex	Female	57.6%	42.4%	.735	.692
	Male	58.3%	41.7%		
Education	Primary	50.0%	50.0%	48.931	<.05
	Secondary	28.6%	71.4%		
	Uneducated	82.4%	17.6%		
	University	14.3%	85.7%		
Marital Status	Married	51.7%	48.3%	2.383	.304
	Single	61.7%	38.3%		
Employment Status	Employed	16.1%	83.9%	36.833	<.05
	Retired	20.0%	80.0%		
	Student		100.0%		
	Unemployed	68.9%	31.1%		
Age Group	15-29	33.3%	66.7%	23.349	<.05
	30-44	42.2%	57.8%		
	45-59	49.2%	50.8%		
	60 and above	78.9%	21.1%		

Findings from the study show equally, males and females have bad practices on glucose monitoring, meal plans, medication taking and physical activities. It was also indicated that about (85.7%) of those with university qualifications indicated a good practice whereas (82.4%) of uneducated respondents indicated a bad practice of glucose

monitoring, meal plan, medication taking and physical activities. More than half (51.7%) of the married respondents indicated bad practices on glucose monitoring, meal plan, medication taking and physical activities and only (48.3%) indicated good practice. Furthermore, students reported good practices, while (69%) of the unemployed respondents show bad practices. Good practice on glucose monitoring, meal plan, medication taking and physical activities was dominant among those aged 15-29 (66%) and lowest among those aged 60 and above (21%). The study found a significant association ($p<0.05$) between education level, employment status and age group with the practice of glucose monitoring, meal plan, medication taking and physical activities.

Overall, there is an association between socio-demographic characteristics of participants and their attitudes towards self-care management on diabetes and the practice of glucose monitoring, meal plan, medication taking and physical activities.

Table 15: overall association between knowledge, attitudes and practice toward self-care management

		Practice			
		Bad Practice	**Good Practice**	**Chi-square**	**P-Value**
Knowledge	Adequate Knowledge	55.7%	44.3%	1.832	.400
	Inadequate Knowledge	58.9%	41.1%		
	Unknown	83.3%	16.7%		
Attitudes	Bad Attitudes	52.9%	47.1%	3.051	.218
	Good Attitudes	59.2%	40.8%		

Findings show that (44.3%) of the respondents with adequate knowledge also reported that they had good practice with regard to glucose monitoring, medication taking, meal

plan and physical activities. On the contrary, more than half of the respondents with adequate knowledge has bad practice with regard to glucose monitoring, medication taking, meal plan and physical activities. Results further show that (40.8%) of the respondents with good attitudes on self-care management of diabetes also indicated that they have good practice with regards to glucose monitoring, medication taking, meal plan and physical activities. In the end, there was no significant association between knowledge, attitudes and practice.

Table 16: Association between knowledge and attitudes of diabetes self-care

		Knowledge		**Chi-square**	**P-Value**
		Adequate Knowledge	**Inadequate Knowledge**		
Attitudes	Bad Attitudes	41.2%	58.8%	3.297	.509
	Good Attitudes	49.2%	47.5%		

About (49.2%) of the respondents with good attitudes on self-care management of diabetes indicated that they had good knowledge of diabetes, and more than half (59%) of the respondents with bad attitudes on self-care management of diabetes had inadequate knowledge of diabetes. The association between attitudes on self-care management and knowledge of diabetes was not significant.

4.3 SUMMARY

Data analysis and results were presented in this chapter. The results indicated that although patients had adequate knowledge of diabetes self-care, there is a gap in self-care practice among various domains of self-care. In addition, the attitudes toward self-care management were average. The next chapter deals with discussion of findings.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

The previous chapter provided information on data analysis and presentation of research findings. This chapter will present the discussion of study findings which was presented on the previous chapter.

5.2 DISCUSSION

According to OremTheory patients have ability to take care of themselves and nurses have to help them when the abilities is being disturbed because the nurses' role is considered as the facilitator and agent of change (Abd Al-Aal & Ali El-Nagar, 2018). Patients with diabetes are often recommended to follow healthy living practices which include regular self-care in diet planning, exercise care of the foot, regular blood glucose monitoring and medication adherence. Extensive knowledge, attitudes and practice could be the means to control and prevent diabetes-related consequences. Kassahun et el., (2016), said for effective management and to have good glycaemic control, patients need to have an adequate level of knowledge of diabetes self-care, a concept that fosters adherence to medications, good dietary pattern and physical activities.

The majority of the respondents were female 125 (63%) and belonged to the 45-49 age group 65 (32.8%) in the current study. These findings differ from the study by Alhaik, Anshasi, Alkhawaldeh, Soh, and Naji, (2018), in Amman Jordan, where the majority of respondents (59.6%) were males. However, there is a similarity in the prevalent age group as the majority belonged to the 40-49 age group (31%) in a study done in rural Sullia

Karnalaka by (Dinesh et al., 2016). In this study, 91 (47%) of the participants were uneducated and these findings are similar to those by Dinesh et al, (2016), in rural Sullia Karnalaka where participants with formal education were (46.9%). Furthermore, the study shows a total of 151 (79%) were unemployed and 133 (69%) were single.

Regarding the treatment profile, most patients were on oral medications at 115 (58.5%), followed by insulin injection at 79 (39.9%) and only 4 (2%) on both oral medication and insulin injection. This finding is similar to Alhaik et al., (2018), done in Amman Jordan, where the majority were on oral medication (46.5%), followed by insulin only (32.6%) and both insulin and oral medication (20.9%).

The knowledge was categorized as adequate and inadequate knowledge in the current study. The study revealed a nearly balanced prevalence of knowledge of diabetes between adequate 97 (49%) and inadequate 95 (48%) knowledge of the participants. The study findings showed a lower frequency compared to the study done in Ethiopia, where (63.3%) of patients had good knowledge about diabetes self-care (Mekonnen & Hussien, 2021). Moreover, the findings were higher than a study in rural Sullia Karnalaka by Dinesh et al., (2016), who revealed that only (24%) of their participants had good knowledge of self-care management. However, study done in Cotonou southern Benin and rural Bangladesh reported participants had poor diabetes knowledge in their studies (Alaofe et al., 2021: Fottrell et al., 2018).

In this study, the majority 76 (69%) of the patients revealed that diabetes is not curable with treatment, which is lower compared to studies done in South Africa by (Roux, Walsh, Reid & Jacques, 2018), and study done in Cotonou southern (Alaofe et al., 2021), who reported a (73%) and (93%) frequency on a similar question respectively. However,

the findings differ from the study by Dinesh et al., (2016), study done in rural Sullia Karnalaka who indicated that the majority (52.5%) indicated that diabetes is curable.

One main element of self-care is that patient education and self-care also requires the ability to self-medicate. Nurses have to teach the patients how to solve problems and make decision (Borji et al., 2017) as this will improve their knowledge. The majority of participants 74 (45%) indicated that they do not know the complications of diabetes, which shows poor knowledge of diabetes complications. In this study the knowledge of patients diagnosed with diabetes is poor regarding complication which is an indication of poor education. Given the of role support and nursing care and its impact on quality of life in diabetes have shown the use of education and care model help the condition of the patients (Rosman et al., 2022). Similarly, study done in Namibia by Kambinda, (2017), showed that there was poor knowledge about diabetes complications among participants in their study. Cardiovascular 32 (20%) and diabetic foot 17 (10%) were the most known complications by participants while kidney damage 2 (1%) was the least known in the current study. These results are consistent with findings done in Dhaka by Rahaman, Majdzadeh, Naieni and Raza (2017), who reported that cardiovascular complications were known by the majority of patients (91.8%).

More than half, 89 (56%) indicated that they do not know the risk factors for diabetes. On the other hand, overweight 20 (13%), age 19 (12%), and family history 12 (7%) were indicated as the predisposing factors to diabetes by a few participants. In much the same way, participants in a study done in Cotonou southern Benin by Alaofe et al., (2021), demonstrated that an overweight (60.3%) and family history (60.3%) could predispose them to develop diabetes.

About 47 (28%) of the participants showed that frequent urination was one of the symptoms of diabetes and 43 (26%) indicated increased thirst. The findings are much less compared to the study by Dinesh et al, (2016), in rural Sullia Karnalaka, who revealed half of the study population (50%) mentioned that they have experienced increased thirst and urination (56.25%) as symptoms of diabetes. The study findings differ from the study done in Egypt which presented that over three-quarters (76.5%) of the patients had correct knowledge about the symptoms of diabetes (El-Khwaga & Abdel-Wahab, 2015).

The study results indicated that patients have learned about diabetes and its care from doctors 155 (79%), followed by nurses 31 (16%) and only their diabetic group 1 (1%). This is in contrast with findings by Nkomani, Rusakaniko and Blaauw (2019), in Zimbabwe where (85%) of the respondents cited doctors, nurses and dieticians as the source of primary information on diabetes.

Participants in this study had adequate knowledge of components such as meal plans 184 (92.9%), physical exercise 112 (56.6%), and medication-taking 195 (98.5%). The findings were similar to a study in Amman Jordan by Alhaik et al., (2018), which demonstrated that participants had the highest level of knowledge, on meal plans at (70.2%). On the other hand, more than half 154 (77.8%), had inadequate knowledge of foot care, which is consistent with the previous studies done in Addis Ababa Ethiopia and Indonesia, which reported that foot care was the least practice (Tewahido & Berhane, 2017: Sari et al., 2020). Regular self-monitoring and treatment of blood glucose help to prevent further micro-vascular and macro vascular complications. Serial monitoring is necessary as it helps to adjust anti-diabetic medications and warn patients as well as the physicians when blood glucose is extremely high or low.

The current study revealed that, 154 (77.8%) of the participants had inadequate knowledge about foot care, which demonstrated a poor knowledge compared to the study done in Saudi Arabia by Solan et al., (2016), who revealed that almost (53.6%) had good foot care knowledge similar to study done in Ethiopia by (Tuha, Faris, Andualem & Mohammed, 2021) who indicated (57.6-68.3%). In another study by Onuoha et al., (2017), in East Trinidad, self-care knowledge regarding foot care showed that (60.6%) had a medium level of knowledge, however, (39.4%) had a high level of knowledge.

The study revealed that more than half 113 (57.4%) had average attitudes toward self-care, while other studies done in in Ethiopia and Cotonou southern Benin reported contradictory findings where (59.6%) and (58.7%) of patients had a positive attitude (Mekonnen & Hussien, 2021: Alaofe et al., 2021). However, a study by Roux et al., (2018), in South Africa showed a negative attitude by most of the participants. This shows that there is a need for more patient education on diabetes mellitus. On the other hand, the findings revealed that all participants (100%) had good attitudes toward the harmfulness of insulin to the body, traditional doctor's treatment of diabetes and dietary adjustment and exercise. Similarly, (91.3%) of the participants had good attitudes towards community discrimination, and (55%) recorded poor attitudes toward managing glucose with diet alone.

Patients should monitor their blood glucose at least twice a week on average for effective control of blood glucose (Yao, Wang, Yan, Shao, Sun, & Yin, 2021). The study revealed that more than half, 111 (59%) do not check their sugar levels at all. And of those who check their sugar level, 41 (22%) of participants only check their blood sugar levels in the morning, however, the majority of patients 132 (72%) never/rarely check their sugar level. Additionally, 127 (68%) of the participants checked their blood sugar levels occasionally. Out of the study population, (40.4%) of participants had good practice in

glycaemic control. In addition, almost all the participants (92.9%) had a good meal plan and (56.6%) had good physical activities. In contrast, findings from Ethiopia by Asmelash, Abdu, Tefera, Bynes and Derbew, (2019), reported that (74.4%) had good glycemic control and almost all participants (99%) had good medication adherence. However, the findings were higher than findings in Ethiopia by Katema, Leshargie, Kibret, Assemie, Alamneh, Kassa and Alebel, (2020), who indicated that only (28%) practice good glucose monitoring. This poor adherence practice could probably be attributed to relevant financial barriers to the acquisition of gluco meters.

The current study revealed that 193 (98%) of the respondents were taking their medication as prescribed and 158 (81%) of the patients diagnosed with diabetes agreed that they never forgot to take their medication. This is consistent with results in South Africa by Roux et al., (2018), who revealed that (83%) reported they never forgot to take their medications. Of those taking medication, 174 (89%) were on pills, while 76 (39%) were on insulin injections. The findings differs from the study done in Northwest Ethiopia by Belsti et al., (2020), who demonstrated that (33.1%) were on oral medications and (54.2%) were on insulin injections. In the present study, 4 (2 %) of patients were on both insulin and oral medication drug, which differs from the findings in Northwest Ethiopia by Belsti et al., (2020), and Mekonnen and Hussien, (2021), in Ethiopia where (12.7%) and (5.1%) of patients were on both insulin and oral medication respectively. A total of 193 (98%) of patients had medication adherence in the current study which is consistent with results in Ethiopia by Asmelash, et al., (2019), where (99%) adhered to prescribed medication.

Among various sites of insulin administration, the thigh was the most known site of administration with 49 (64%), followed by the upper arm at 19 (25%) and the abdomen at 9 (12%). The findings differ from the study in Eastern Nepal by Shrestha, Basnet,

Parajuli, Baral, and Badhu, (2018), where the majority indicated the abdomen (94%) and the thigh (90%) as the common sites of insulin administration. Moreover, the study was in contrast to Kamrul-Hasan, et al., (2020), in Bangladesh who reported the abdomen as the most frequent site, followed by the arm and thigh as less commonly used sites. Our study revealed that the majority of the participants 72 (90%) rotate sites of injection similar to findings in Ethiopia by Netere, Ashete, Gebreyohannes and Belachew, (2020), who reported (69.9%) correctly rotate injection sites as well as in Bangladesh (Kamrul-Hasan et al., 2020), reported similar findings.

About 47 (58%) of the patients had knowledge of the proper storage of insulin. On the other hand, the results differ from the study in Eastern Nepal by Shrestha et al., (2018), who reported that (90%) of patients had knowledge of proper insulin storage. Improper disposal of used syringes and needles can cause injuries to people and pets. Different countries have implemented various policies and programs to guide the proper disposal of home-used sharp materials for people living with diabetes (Gishoma et al., 2019). The study identified a large percentage of patients who appropriately disposed of used insulin syringes or needles at 55 (71%). These participants dispose of the used insulin syringes and needles in a safety box at home. On the other hand, the finding is higher compared to those done in Rwanda by Gishoma, et al., (2019), were slightly more than half of the study subjects (53.3%), and knew the proper ways of disposing of sharps. However, among those who knew, (93%) disposed of sharps in the proper ways.

A variety of eating patterns are acceptable for the management of diabetes and referral to a registered dietician or registered diet nutritionist is essential to assess the overall nutrition status of patients and create a personalized meal plan, considering the patient`s health status, skills, resources and food preferences (ADA, 2019). According to the Center for Disease Control and Prevention (2021), a good meal plan includes more non-

starchy vegetables such as spinach, white bread, eggs, yoghurt, carbohydrate and protein. The current study showed that the majority of patients eat locally available food such as fish, meat, porridge (porridge), bread, oats, rice and pasta. All these foods contain carbohydrates, starch and protein. According to study in Ethiopia, Katema et al., (2020), said participants in their study had been practising the recommended diet (grain and starchy vegetables, non-starchy vegetables) which is similar to the current study.

The study revealed that less than half of the respondents 53 (35%) practice dietary modifications such as cooking with low or no salt, less or no sugar and less oil, which is extremely lower than the study in Northwest Ethiopia, by (Belsti, Akalu, & Animut 2020), who indicated that (86.6%) of participants practised dietary modification. Furthermore, in South Africa, Roux et al., (2018), reported that more than half of participants avoid the intake of sweets as the only dietary restriction needed for diabetes control and daily consumption of vegetables was reported by (38.8%) while fruits consumption was reported by (50.2%).

Application of self-management is one aspect that play an important role in the aspects of management of diabetes mellitus. According to Orem's theory, a significant aspects of diabetes care is self-care management. However patients are often faced with challenges in making the behaviour changes necessary to achieve optimum blood glucose control in order to minimize the risks of diabetic complications, patients may lack adequate skills and support needed to improve their health care management. The aim of self-care is to regulate the effective factors on growth and patient's performance in relation to life, health and well-being. Self-care behaviours is affected by the total skills and knowledge that a person has and uses his practical efforts (Borji et al., 2017). Health personnel should educate patients to create awareness of the importance of self-care practices domains and strongly promote the practice among patients diagnosed with diabetes. Amongst various

domains of self-care, participants had good practice of meal plans (92.9%), medication-taking (60.6%), and physical exercise (56.6%). This indicated sufficient practice of diabetes self-care among patients. Poor practice in glucose monitoring was observed in (57.1%) which could be due to the low socio-economic status of participants and a lack of awareness of the use and necessity of a glucometer. This was consistent with Dedefo et al., (2019), in West Ethiopia who confirmed that patients who have no access to self-monitoring blood glucometer were more likely to have poor self-care practice.

Significant association in the level of knowledge was high among participants with a university education level (57%) and secondary school level (54%). This finding is similar to studies done in Nepal and Ethiopia where for those with a primary level of education and those who attained tertiary education levels, significant differences in knowledge were observed (Guatam et al., 2015: Mekonen & Hussien, 2021). This indicated how education and its application are crucial for diabetic management. In addition, knowledge improves with an increase in education level as patients have access to more reading materials. The study did not observe a significant association between demographic characteristics and knowledge.

On the other hand, the current study revealed that both males and females had average attitudes toward self-care management of diabetes, although none of the demographic variables was significantly associated with attitudes.

The current study showed that uneducated patients (82.4%) were more likely to perform poor self-care activities than educated patients (university) (85.7%). The finding is similar to the results of a previous study done in Ethiopia and Nepal where illiterate patients were three times more likely to perform poor self-care activities than literate patients who attained tertiary education level (Mekonen & Hussien, 2021: Baral & Baral, 2021). The

possible reason for this might be that educated individuals have increased interest in their health promotion for which they become aware and follow their desirable self-care practice.

Patients aged 15-29 years were more likely to have good self-care practice than patients who are 60 years. This suggests that as age increases individuals have diminished mental capacity leading to poor self-care. The current study result confirmed this since the patient's age of 60 years was associated with poor self-care practice. Furthermore, the present study findings revealed that more than half of both males and females had bad self-care practices. This finding contradicts the study done in Nepal which showed that females were 2.3 times more liable to have poor self-care practices than males (Baral & Baral, 2021).

The study finds a significant association between ages, education level and employment status with the practice of self-care management of diabetes. These findings were similar to those done in Iran and Ethiopia by Ghannadi, et al., 2016: Asmelash, 2019), which revealed the association between patients' knowledge and practice with their self-care management. This could be because educated people are more aware of the self-care routines than uneducated people and as the level of education increases the chance of attending different conference and seminars on diabetes mellitus also increase, which helps in increasing awareness and improving practice. Moreover, the middle age group are active and falls into categories of educated and employed patients.

The study finds no significant association between knowledge and attitudes. These findings are consistent with study conducted in Malaysia by Salleh, Rahman and Haque (2019), who found no significant association between knowledge and attitudes scores regarding diabetes.

5.3 SUMMARY

The chapter presented the discussion of data analysis, it highlighted the similaries and the differences of this study to other studies. The next chapter will deal with the conclusion, recommendation and limitation.

CHAPETR SIX

CONCLUSION, RECOMMEDATION AND LIMITATION

The previous chapter dealt with the discussion of the study findings which highlighted the similarities and the differences of the study with other studies. This chapter will deal with the conclusion, recommendation and the limitation.

6.1 CONCLUSION

The study have answered the objectives of the study.

Assess the knowledge of self-care management among diabetic patients in Rundu Intermediate Hospital, Kavango East region. Diabetes self-care knowledge was adequate knowledge on self-care among the sample studied on components such as meal plans, medication taking and physical exercise. However, participants had limited knowledge on diabetes complications, risk factors, foot care and glucose monitoring. More education should be enforced to empower patient with knowledge as this will lead to improved self-care once the patients are knowledgeable about the disease complications and risk factors.

Assess the attitudes towards self-care management among diabetic patients in Rundu Intermediate Hospital, Kavango East region. Participants had average attitudes, efforts should be made from different stakeholders like hospitals, health professionals who are following cases of these patients.

Assess the practice of self-care management among diabetic patients in Rundu Intermediate Hospital, Kavango East region. Generally more than half of participants had bad practice towards self-care although good practice was observed in meal plans,

physical exercise and medication taking. Though participants do not appear to monitor their glucose level on a regular basis, findings may reflect low level of health literacy, low economic status since majority of participants were above 60 years. Creating awareness to the importance of self-care practice domains can promote the practice among patients diagnosed with diabetes can change the behaviours towards self-care.

Analyse the relationship between knowledge and attitudes on the practice of self-care management among diabetic patients in Rundu Intermediate Hospital, Kavango East. There was no association between attitudes and knowledge on the patients diagnosed with diabetes in Rundu hospital.

Health care providers should begin with health literacy, counselling, educational program and adequate health messages regarding diabetic self-care practice in both clinical and community settings to improve health promotion and evaluate the patients' perceptions. The study findings draw attention to practice as a way of closing the gap between knowledge and practice of self-care among patients with diabetes. Furthermore, the study finds a highly significant association of attitudes and practice among participants with university and secondary education levels.

6.2 RECOMMENDATION

The following recommendation may be used for the Ministry of Health and Social Services, health care workers, health institutions and the community within Namibia.

Education

- Health care workers should enforce health education on importance of self-care practice domains.

- Create awareness in the community through health education and programs which helps the patients diagnosed with diabetes and their caretakers to understand the importance of self-care practice domains and strongly promote and engage more in self-care activities and lifestyle changes.
- Health care workers should educate patients and their care takers by using different kind of information dissemination such as reflects or focus group discussion and create community group to promote support system among individuals.

Practice

- Strengthening outreach program so that services are brought closer to patients diagnosed with diabetes and their care takers who are living far from the hospitals and clinics.
- Dissemination of information should be done through different kind of communication such as radio, reflects, and news papers regarding the importance of self-care practice
- Health care workers should begin taking time to evaluate their patient's perceptions and make realistic and specific recommendations for self-care activities.

Research

- Further research should be done on self-care practice

6.3 LIMITATIONS

The study was carried out in a hospital-based setting at a single site in Rundu Intermediate Hospital OPD, so it may be difficult to generalize to the entire country. Furthermore, the findings are based on self-reported data from participants which limits the validity of the data.

6.4 SUMMARY

This chapter presented the conclusions, recommendations and limitations of the study. This is also the final chapter of this thesis and focused on discussing the research findings and results presented in chapter 4. Subsequently, conclusions were drawn and recommendations were made.

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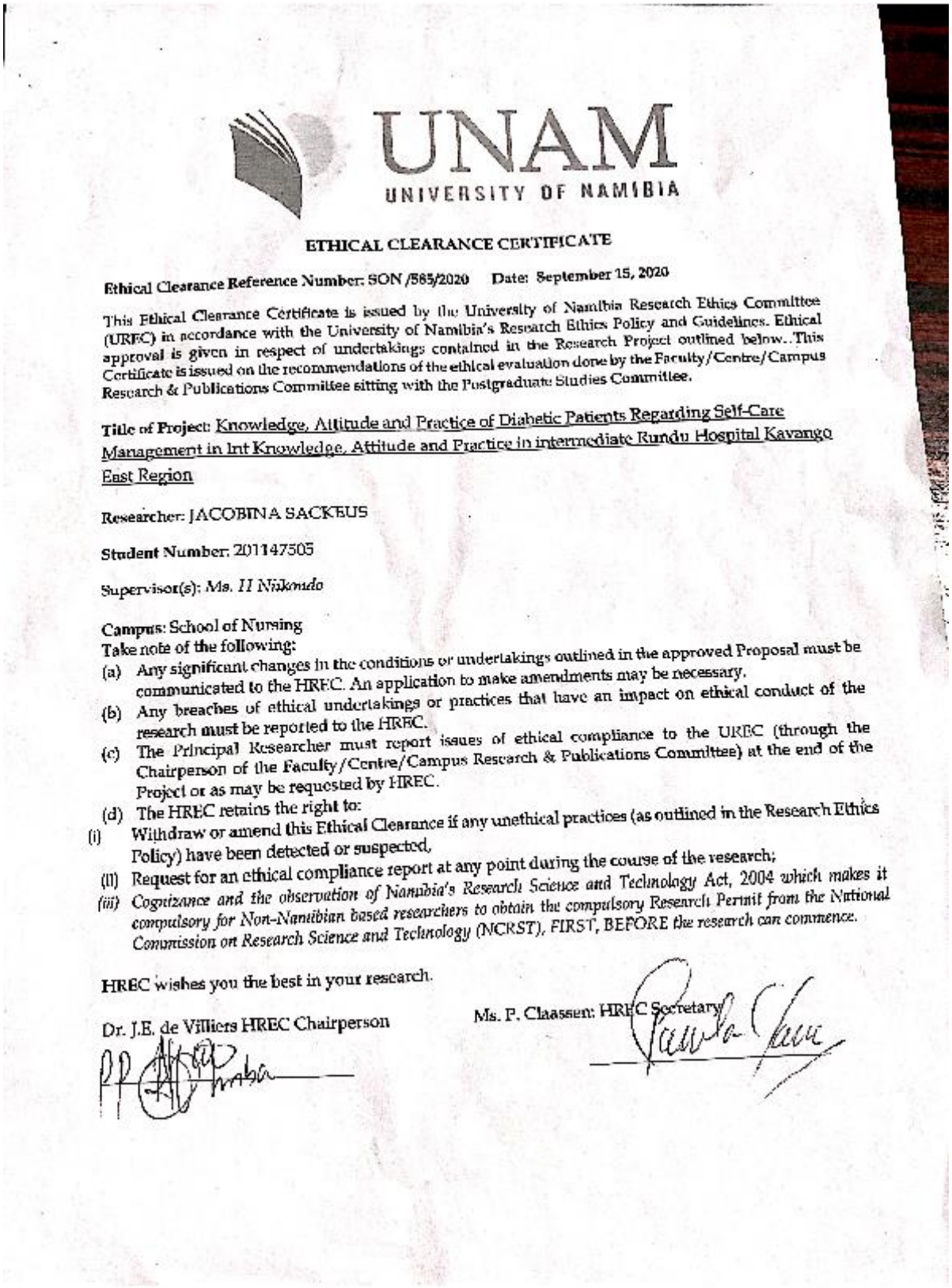
Annexure A: Ethical clearance from UNAM Post Graduate Research Committee



UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SON /S65/2020 **Date:** September 15, 2020

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: Knowledge, Attitude and Practice of Diabetic Patients Regarding Self-Care Management in Int Knowledge, Attitude and Practice in intermediate Rundu Hospital Kavango East Region

Researcher: JACOBINA SACKEUS

Student Number: 201147505

Supervisor(s): *Ms. II Nikondo*

Campus: School of Nursing
Take note of the following:

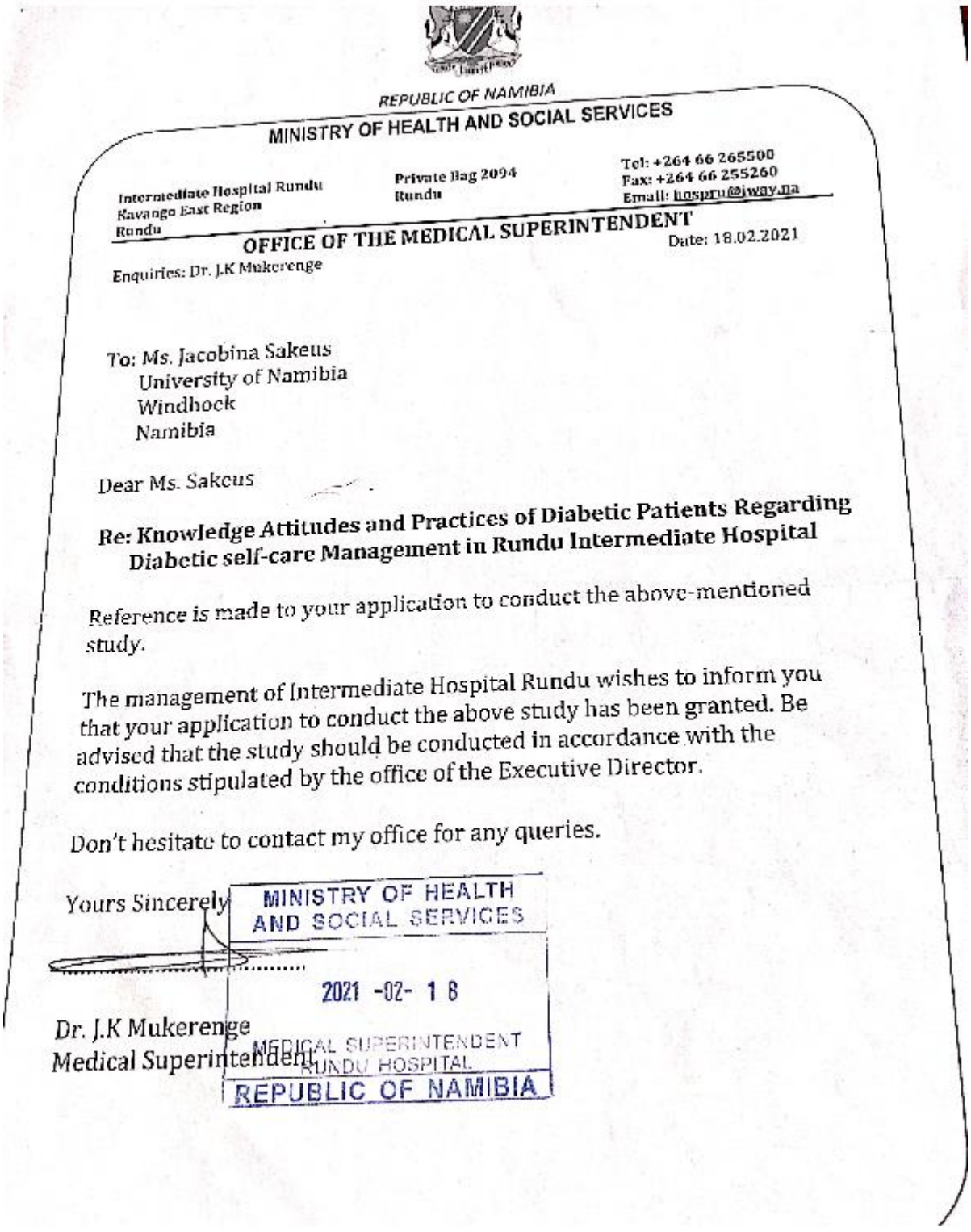
(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the HREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the HREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by HREC.
(d) The HREC retains the right to:
(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
(ii) Request for an ethical compliance report at any point during the course of the research;
(iii) Cognizance and the observation of Namibia's Research Science and Technology Act, 2004 which makes it compulsory for Non-Namibian based researchers to obtain the compulsory Research Permit from the National Commission on Research Science and Technology (NCRST), FIRST, BEFORE the research can commence.

HREC wishes you the best in your research.

Dr. J.E. de Villiers HREC Chairperson

Ms. P. Claassen: HREC Secretary

Annexure B: Permission letter from Rundu Intermediate hospital Superintendent



REPUBLIC OF NAMIBIA

MINISTRY OF HEALTH AND SOCIAL SERVICES

Intermediate Hospital Rundu
Kavango East Region
Rundu

Private Bag 2094
Rundu

Tel: +264 66 265500
Fax: +264 66 255260
Email: hosprn@iway.na

OFFICE OF THE MEDICAL SUPERINTENDENT

Date: 18.02.2021

Enquiries: Dr. J.K Mukerenge

To: Ms. Jacobina Sakeus
University of Namibia
Windhoek
Namibia

Dear Ms. Sakeus

Re: Knowledge Attitudes and Practices of Diabetic Patients Regarding Diabetic self-care Management in Rundu Intermediate Hospital

Reference is made to your application to conduct the above-mentioned study.

The management of Intermediate Hospital Rundu wishes to inform you that your application to conduct the above study has been granted. Be advised that the study should be conducted in accordance with the conditions stipulated by the office of the Executive Director.

Don't hesitate to contact my office for any queries.

Yours Sincerely

MINISTRY OF HEALTH AND SOCIAL SERVICES
2021 -02- 18
MEDICAL SUPERINTENDENT
RUNDU HOSPITAL
REPUBLIC OF NAMIBIA

Dr. J.K Mukerenge
Medical Superintendent

Annexure C: Permission letter from the Ministry of health and social services

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198
Windhoek
Namibia

Ministerial Building
Harvey Street
Windhoek

Tel: 061 – 203 2537
Fax: 061 – 222558
E-mail: itoshipu87@gmail.com

OFFICE OF THE EXECUTIVE DIRECTOR

Ref: 17/3/3/JS
Enquiries: Mr. A. Shipanga

Date: 15 February 2021

Ms. Jacobina Sakeus
University of Namibia
Windhoek
Namibia

Dear Ms. Sakeus

***Re:* Knowledge Attitudes and Practices of Diabetic Patients Regarding Diabetic self-care Management in Rundu Intermediate Hospital Kavango East region.**

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**

3.1 The data to be collected must only be used for academic purpose;

3.2 No other data should be collected other than the data stated in the proposal;

3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;

3.4 A quarterly report to be submitted to the Ministry's Research Unit;

3.5 Preliminary findings to be submitted upon completion of the study;

3.6 Final report to be submitted upon completion of the study;

3.7 Separate permission should be sought from the Ministry for the publication of the findings.

4. All the cost implications that will result from this study will be the responsibility of the applicant and not of the MoHSS.

Yours sincerely,

BEN NANGOMBE
EXECUTIVE DIRECTOR

EXECUTIVE DIRECTOR
MINISTRY OF HEALTH AND SOCIAL SERVICES

"Your Health Our Concern"

Annexure D: Consent form

Title: knowledge, attitudes and practice of patients diagnosed with diabetes regarding diabetes self-care in intermediate Rundu hospital, Kavango east region

INFORMED CONSENT

You are being invited to participate in a research study about the knowledge, attitudes, and practice of patients diagnosed with diabetes regarding diabetes self-care management in intermediate Rundu hospital, Okavango east region. This study is being conducted by Jacobina Sakeus, in fulfilment of the requirements for the degree of master in nursing science of the University of Namibia. You were selected as a participant in this study because you are a diabetic patient who is on treatment and perform self-care. You are humbly requested to answer the questions in the form of a questionnaire, which you are requested to fill. It will take about 30 minutes. You are not required to provide your name or contact details. There are no costs to you for participating in the study. There are no foreseeable risks or discomforts in your participation in this study. The information you provide will be used to help the Ministry of Health and Social Services in identifying gaps in diabetes self-care and will help in developing an appropriate educational program for both prevention and management of the disease. This study is anonymous. No one will be able to identify you or your answers, and no one will know whether or not you participated in the study. Your participation in this study is voluntary. You are free to decline to answer any particular question you do not wish to answer for any reason.

If you have any questions about the study, please contact Jacobina Sakeus at Cell:

0814353610

E-Mail: jacobinasakeus33@gmail.com.

I agree to participate in this research study voluntarily.

---------- Date ----------

Annexure E: Questionnaire

QUESTIONNAIRE

Section A

Demographic characteristics

Please fill in the following characteristics about you:

1. Age: _____
2. Sex: Male _____ Female _____
3. Education: Uneducated_____ Primary_____ Secondary____ University____
4. Marital status: Single ____Married_____
5. Occupation: Unemployed ____Employed ____ Student _____Retired_____
6. Current treatment: Oral medications_____ Insulin _____Oral medications and Insulin ____

Section B

Knowledge, attitudes and source of information on diabetes self-care and diabetic complications

1. Knowledge

1.1 How do you rate your knowledge of self-care management of diabetes?
Well informed_____

Less informed_____

Know something_____

Know very little_____

Know nothing_____

1.2 Is Diabetes curable with treatment? Yes___ No___ Don't know___

1.3 Do you know the complications of diabetes
_____
_____
_____?

1.4 What are the risk factors of
diabetes_____
_____
_____?

1.5 Which of the followings are symptoms of diabetes? Tick the correct answers

Poor appetite

Increased thirst

Frequent urination

Abdominal pain

Palpitation and slow healing of cut and wound

1.6 Where did you learn about diabetes and its care?
Doctor_____

Nurse _____

Internet _____

Television_____

Radio_____

Diabetes group_____

I have no knowledge_____

1.7.1 Glucose monitoring

Please tick your answer to the following questions and statements:

Questions	**Strongly disagree (1)**	**Disagree (2)**	**Neutral (3)**	**Agree (4)**	**5 Strongly Agree (5)**
2.1 Do you know how to use a glucose monitoring machine					
2.2 I need my own glucose machine at home					
2.3 Checking blood glucose daily is important					
2.4 Blood glucose should be monitored daily					

2.5 Blood glucose monitoring can be done at home by myself or relative					

1.7.2 Meal plan

Please tick the answer to the follo0wign questions and statements:

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
3.1 Diet adjustment plan is important in glucose control					
3.2 Weight monitoring is important in controlling glucose					
3.3 Alcohol and smoking cause poor glucose control					
3.4 Frequent and small amount of food is necessary for sugar control					
3.5 Drinking plenty of water is important					

1.7.3 Medication taking

Please tick your answer to the following statements:

Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
4.1 Taking medication is important					
4.2 Medication should be taken daily as prescribed					
4.3 Medication should be taken with water only					
4.4 Medication should not be shared					
4.5 Medication should be stored in a safe place					

1.7.4 Foot care

Please answer the following questions and tick in the appropriate box:

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

5.1 Foot inspection should be done daily					
5.2 Always wear comfortable protective shoes and socks					
5.3 Dry your foot after a shower and moisturise					

1.7.5 Physical exercise

What do you think of physical exercise? Please tick the appropriate answer for the following questions:

Questions	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
6.1 Regular exercise prevents complications					
6.2 Sugar level can be controlled with exercise					
6.3Being physically active is important					

Section C

Attitudes of self-care management

Please tick the appropriate answer for the following questions:

Questions	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Do you think society discriminates against a person with diabetes?					
Do you think controlling glucose with diet alone is superior to that of controlling glucose with diet and medication?					
Does insulin cause harmful effects to the body?					
Do you think therapies such as exercise, yoga, and herbal are better than methods usually prescribed?					
Do you think is important to control blood glucose well to prevent complications?					
Diabetes is a disease for the rich not for poor					
Diabetes can be cured by traditional healers					
Self-glucose monitoring should be done at hospitals and clinics only					
Diet adjustment and regular exercise help to control diabetes					
Diabetes is treatable with medications, diet and regular exercise					
Smoking and alcohol cause poor glucose control					

Blood pressure control is good for sugar control					

Section D

The practice of self-care management

A) Glucose monitoring

1. Do you check your sugar level? Yes___ No____
2. When do you check your sugar level? Morning ___Afternoon ____Bed time ___Never/ Rarely___
3. How often do you check your sugar level: Once a day ___ 2 or more /day ___? 1or more/week _____ Occasionally___ Never ____

B) Medication taking

Questions	**Yes**	**No**	**Do not know**
Do you take diabetic medication			
Do you take Pills			
Do you inject Insulin			
Do you take your medication as prescribed?			
Do you have any other medication that you take?			
Any side effects from the medication?			
Have you ever forgotten to take your medication?			
Do you ever reuse the syringe?			

4. What time do you take your medication _____ _____?
5. What do you do when you have side effects from medications_____ _____ _____?
6. If you take insulin what site do you inject? Thigh _____Upper arm ___Abdomen _____?

7. Do you rotate the site: Yes ____No ___How often _____?
8. Where do you keep the insulin _____?
9. Where do you keep the syringe after use _____?

C) Meal plan

10. Give example of your meal plan

Time_____ Break-fast_____

Time_____ Lunch_____

Time_____ Dinner_____

Time_____ snacks_____

11. Do you strictly follow your diet plan? Yes___ No___ Do not know___
12. How do you prepare your food_____ _____ _____ _____?

Physical exercise

13. How often do you exercise_____?
14. Type of exercise_____?
15. How long do you exercise_____?
16. What time do you exercise_____?
17. Do you have any problem with exercising? _____

Thank you.

Annexure F: Editorial Certificate

Dr Cossam Makunganya(PhD)
Sunshine Private College
Tertiary Department
Windhoek North ,Namibia

Cell,0813272472

EDITORIAL CERTIFICATE

This document certifies that the research report listed below was edited for proper English language, grammar, punctuation, spelling, and overall style following UNAM recommendations.

TITLE

Knowledge, attitudes and practice of diabetic patients regarding diabetic self-care management in intermediate Rundu hospital, Kavango east region

AUTHOR
Jacobina Sakeus

DATE OF ISSUE
04.10. 2022

Editor Dr Cossam Makunganya guarantees the quality of the English language in this thesis and assures that neither the research content nor the author's intentions were altered in any way during the editing process.

Editor C.Makunganya specializes in the comprehensive preparation of scientific manuscripts, research reports, and presentations that are targeted for publication in English Journals.