SELF-CARE PRACTICES AMONG ADULTS LIVING WITH DIABETES MELLITUS, IN A SELECTED VILLAGE OF THE VHEMBE DISTRICT, LIMPOPO PROVINCE

BY

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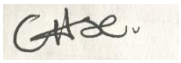
DECLARATION

I, Elizabeth Mmapula Hamese, declare that the mini-dissertation titled: "***Self-care practices among adults living with diabetes mellitus in a selected village of the Vhembe, Limpopo Province***" submitted by me, has not been submitted previously for a degree at this or any other university, that it is my work in design and execution, and that all reference materials contained therein have been duly acknowledged.

Signature:  Date: 09 March 2026

PREFACE

This mini-dissertation is presented in an article format and divided into three sections - Section A is the overview of the study, Section B consists of two manuscripts, and Section C outlines the summary, limitations, conclusion and recommendations, based on the findings of the study.

Section A: Dissertation Overview

Section A of this dissertation outlines the components of this study and provides details on - the introduction, background, problem statement, the study's purpose and objectives, research methods and study design, as well as the ethical considerations adhered to in the study.

Section B: Manuscripts

Section B of this dissertation contains two manuscripts:

The first manuscript is titled: Self-care practices among adults living with diabetes mellitus: A Systematic Review.

The second manuscript is titled: Self-Care Practices, Barriers, and Facilitators Among Adults with Diabetes Mellitus, in a Rural Community of the Vhembe District, South Africa: A Qualitative Study.

Section C: Summary, limitations, conclusion and recommendations

This section outlines the summary, limitations, conclusion and recommendations of the study. All these components were based upon the findings of the study.

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DEDICATION

This mini dissertation is dedicated to myself, Hamese Elizabeth Mmapula, as well as my supportive family members, Betty Mabapa, Lyborn Mabapa, and James Hamese, who played a significant role in encouraging and supporting me, throughout the conducting of this Master's degree.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADA : American Diabetes Association

CASP : Critical Appraisal Skills Programme

EASD : European Association for the Study of Diabetes

FRIIC : Faculty Research and Innovation Integrated Committee

IDF : International Diabetes Federation

LMICs : Low- and Middle-Income Countries

MMAT : Mixed Methods Appraisal Tool

PRISMA : Preferred Reporting Items for Systematic Reviews and Meta-Analyses

SASSA : South African Social Security Agency

SSA : Sub-Saharan Africa

Stats SA : Statistics South Africa

T2DM : Type 2 diabetes mellitus

UHDC : University of Venda Higher Degrees' Committee

WHO : World Health Organisation

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ABSTRACT

Diabetes mellitus is a major public health issue, contributing to several fatalities annually, due to its possible severe complications. These complications frequently manifest as blindness, kidney disease, stroke, and lower limb amputation. The impact of diabetes in adults often depends on how effectively they manage this chronic condition, through self-care. The purpose of this study was to explore and describe self-care practices among adults living with diabetes mellitus, in a selected village of the Vhembe District, Limpopo Province. The theoretical framework used in this study was Orem's Self-Care Deficit Nursing Theory**.** The study adopted a qualitative approach using the exploratory, descriptive, and contextual design to provide insight into the self-care practices adopted by adults living with diabetes mellitus. The target population consisted of adult women and men aged 25 to 64, and purposive sampling was adopted to select participants; the sample size comprised 11 participants, which was determined by having reached data saturation. Data was collected using face-to-face semi-structured interviews, guided by an interview guide and the collected data was analysed by using the six steps of thematic analysis. The study ensured trustworthiness through adopting measures such as dependability, credibility, conformability, and transferability. The findings of the study indicated that adults living with diabetes mellitus, generally, executed standard self-care practices, including medication use, physical activity, and diet management. The results, however, also highlighted knowledge gaps and poor adherence in certain aspects of these practices. Barriers and facilitators identified in the study significantly impacted participants' self-care behaviours, hence, the researcher proposed recommendations based on these findings.

Keywords: Adults, Diabetes mellitus, Practices, Self-care.

1. **SECTION A: AN OVERVIEW OF THE STUDY**

SECTION A

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

The World Health Organization (2023) defines “diabetes mellitus” as a chronic condition that develops when the pancreas fails to produce sufficient insulin or when the body is unable to effectively utilise the insulin produced - insulin is a hormone responsible for regulating blood glucose levels. The two main types of diabetes are type 1 and type 2. According to the WHO (2023), type 1 diabetes results from inadequate insulin production by the pancreas, making individuals dependent on insulin therapy, whereas type 2 diabetes occurs when the body becomes resistant to insulin or does not use it effectively. If left untreated, diabetes can lead to severe complications, such as blindness, kidney failure, heart attacks, stroke, and lower-limb amputation. Its impact, however, can be mitigated through effective self-management, including rigid adherence to medication, an appropriate diet, physical activity, and regular monitoring of blood glucose levels (WHO, 2023).

Managing diabetes, outside formal healthcare settings, requires consistent self-care practices to maintain glycaemic control and prevent complications (Pokhrel, Shrestha, Timilsina, Sapkota, Bhatt & Pardhe, 2019). Effective self-care has been shown to improve blood glucose regulation and reduce the risk of diabetes-related complications. Key components of diabetes self-care include - maintaining a balanced diet, engaging in regular physical activity, monitoring blood glucose, caring for the feet, and taking medications as prescribed (Bukhsh, Goh, Zimbudzi, Lo, Zoungas, Chan, & Khan, 2020).

1.2 BACKGROUND TO THE STUDY

Diabetes mellitus is a significant global public health challenge that continues to impose a growing burden on health systems and economic development, worldwide (Lin et al., 2020). While diabetes was once regarded as a disease affecting mainly high-income countries, recent evidence indicates a rapid increase in type 2 diabetes, even across developing nations (Ahmad & Joshi, 2023). Globally, an estimated 422 million people are living with diabetes; the majority residing in low- and middle-income countries, and the disease accounts for approximately 1.5 million deaths each year; a clear indication that the prevalence and incidence of diabetes have risen steadily over recent decades (WHO, 2023).

In Europe, recent data from the WHO (2024) indicate that around 60 million people are living with diabetes mellitus, with prevalence increasing across all age groups. The main contributing factors include poor dietary habits, physical inactivity, and obesity. In the United States, Saydah (2021) reported that nearly 88.2% of adults with diabetes manage their condition through medication, either oral, insulin, or a combination, alongside self-care practices; nevertheless, a substantial proportion of American adults continue to exhibit inadequate self-care behaviours (Getie, Geda, Alemayhu, Bante, Aschalew, & Wassihun, 2020). Consistent with these findings, the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) have underscored that effective diabetes management extends beyond pharmacological therapy and requires personalised self-care strategies (Davies, D'Alessio, Fradkin, Kernan, Mingrone, & Buse, 2018).

The WHO (2022) reports that Africa faces, disproportionately, high diabetes mortality rates, with premature deaths reaching 58%, compared to the global average of 48%. The continent's age-standardised mortality rate for diabetes is 48 deaths per 100,000 population - more than double the global rate of 23 per 100,000. Tusubira, Nalwadda, Akiteng, Armstrong-Hough, Hsieh, Ngaruiya, and Schwartz (2020) identified limited awareness and knowledge of diabetes self-care as a major barrier to effective management, among patients in rural Sub-Saharan Africa; despite the increasing prevalence of diabetes in the region, limited research and interventions have focused on self-care among adults with diabetes, in countries such as Ethiopia (Tiruneh, Ayele, Emiru, Tegegn, Ayele, Engidaw, & Gebremariam, 2019).

A study in Ethiopia revealed that more than half of diabetic patients demonstrated inadequate self-care, particularly in areas such as diet, blood glucose monitoring, physical activity, and foot care (Ketema, Leshargie, Kibret, Assemie, Alamneh, Kassa, & Alebel, 2020). Similarly, Chinnappan, Athira, Iqbal, Jasna, Ashok, and Varghese (2020) reported that while patients in India showed relatively better adherence to medication and glucose monitoring, gaps persisted in areas such as foot care. These findings highlight variability in self-care behaviours across contexts but point to a global challenge of suboptimal diabetes self-management.

In South Africa, the prevalence of diabetes continues to rise. Grundlingh, Zewotir, Roberts, and Manda (2022) found that approximately 67% of the population had pre-diabetes, while 22% had been diagnosed with diabetes, with a considerable proportion remaining undiagnosed. These are very disturbing statistics, despite this, effective self-care remains limited in the country, where social and economic factors shape individuals' ability to manage their condition (Lubaki, Omole, & Francis, 2022). The healthcare system in South Africa faces persistent challenges, as only one in four patients with type 2 diabetes achieves adequate glycaemic control (Kok, Hariram, Webb, & Amod, 2021). A recent study conducted in Tshwane

observed that while some diabetic outpatients exhibited strong self-management skills, others continued to struggle with disease control (Zwane et al., 2023). These findings emphasise the need for patient empowerment and self-management education, in diabetes care.

The rationale for diabetes self-care lies in its ability to prevent complications and reduce premature mortality (Tewahido & Berhane, 2017); however, studies show that South African patients often have limited knowledge about essential self-care practices, including management of diet, regular exercises, glucose monitoring, insulin administration, and complication screening (Owolabi, Goon, Ajayi, & Adeniyi, 2022). According to Bukhsh, Goh, Zimbudzi, Lo, Zoungas, Chan, and Khan (2020), some of the barriers to self-care include - financial hardship, physical limitations, cultural dietary preferences, memory lapses, needle phobia, and demanding work schedules. Such challenges hinder adherence and contribute to poor outcomes in diabetes management.

Celik, Olgun, Yilmaz, Anataca, Ozsoy, Ciftci, and Cetin (2022) stressed that diabetes health education plays a critical role in promoting effective self-care behaviours; however, Manickuma, Madiba, and Ramklass (2022) reported a scarcity of structured educational programmes in South Africa, particularly those addressing foot care, which are widely integrated into clinical practices, in other countries. This highlights the need for targeted educational interventions to enhance knowledge and practice of diabetes self-care.

Recognising the growing burden of non-communicable diseases, including diabetes mellitus, the South African National Department of Health developed a strategic plan for 2020/21–2024/25. This plan aims to ensure that 90% of adults, aged 18 years and older, are aware of their blood glucose levels, that 60% of those diagnosed should receive appropriate interventions, and that 50% of those receiving treatment achieve controlled blood glucose levels. These goals reflect the Department’s commitment to improving diabetes management and reducing its long-term impact on the South African population, hence, this research holds significance in exploring self-care practices among diabetic adults, in a selected village of the Vhembe District of Limpopo Province.

1.3 PROBLEM STATEMENT

In South Africa, strategic plans and policies addressing chronic disease management emphasise patients’ self-responsibility, supported by primary healthcare teams that aim to educate and empower individuals for effective long-term disease management (Zwane et al., 2023). A substantial proportion of individuals, despite these initiatives, continue to present with

poorly-controlled glycaemic levels, thereby requiring ongoing care for diabetes-related complications at primary healthcare facilities (Masilela, Pearce, Ongole, Adeniyi, & Benjeddou, 2020).

According to Statistics South Africa (Stats SA, 2018), diabetes-related deaths increased by 36.5%, from 19,692 in 2008 to 26,880 in 2018. Similarly, the International Diabetes Federation (IDF, 2019) reported that diabetes mellitus remains one of the leading causes of mortality in countries, ranking as the second most common cause of death, with approximately 90,000 fatalities attributed to diabetes complications in 2019.

Within the Vhembe District, the 2019/2020 District Health Survey identified diabetes as one of the top five causes of mortality among adults aged 25–64 years, accounting for 6.8% of female deaths and 5.0% of male deaths (Massyn, Day, Ndlovu, & Padayachee, 2020). Poorly managed diabetes, therefore, contributes to a high burden of complications, disability, reduced quality of life, and premature mortality (Kok, Hariram, Webb, & Amod, 2021); hence, this study aimed to explore self-care practices among adults living with diabetes mellitus.

1.4 Rationale of the study

At present, studies conducted on diabetes mellitus, within the Vhembe District, have mainly focused on the encounters and difficulties faced by caregivers of people with diabetes. A study carried out by Mamatsharaga, Mashau and Phiri (2020) examined the challenges and coping strategies of caregivers responsible for elderly individuals with diabetes mellitus. Another study conducted by Ndou, Tshililo, and Raliphaswa (2021) focused on caregivers' experiences with home-care for children with type 1 diabetes. No known research specifically examines self-care practices in adults with diabetes mellitus in the Vhembe District, and within the selected village. This study will contribute to the body of knowledge by identifying specific self-care practices essential for diabetes mellitus management among adults living with the illness, in a selected village of the Vhembe District, Limpopo Province.

1.5 Significance of the study

The results of the research could assist community members in the Vhembe District in increasing their understanding of various aspects of managing diabetes on their own, thereby ensuring the effective implementation of these practices. Community members will gain awareness of the significance of practising self-care, ultimately preventing the development of related complications of diabetes mellitus. The results of the study may also help the Department of Health to create and execute diabetes education programs that prioritise

enhancing self-care habits in individuals with diabetes. The study findings are anticipated to also assist the Department of Health and policymakers in reviewing and making amendments to the strategic plans and policies for long-term care and self-management of chronic diseases, such as diabetes mellitus.

1.6 Purpose of the study and Objectives

1.6.1 Purpose of the study

The purpose of the study was to explore and describe self-care practices among adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province.

1.6.2 Objectives of the study

The objectives of the study were:

- To explore and describe self-care practices employed by adults with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province.
- To explore the barriers and facilitators associated with implementing self-care practices among adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province.

1.7 Research questions

The following questions were formulated to assist in achieving the purpose of the study:

- What self-care practices are employed by adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province?
- What are the barriers and facilitators associated with implementing self-care practices among adults living with diabetes mellitus, in a selected village, of the Vhembe District, Limpopo Province?

1.8 Theoretical Framework

Orem’s Self-Care Deficit Nursing Theory

This study was guided by Orem’s Self-Care Deficit Nursing Theory (Orem, 2001). Orem's Nursing Theory on Self-Care Deficit is famous for its three key concepts: self-care, self-care deficit theory, and nursing systems theory. According to Orem (2001), “self-care” refers to

activities with specific timeframes that focus on safeguarding, controlling, and enhancing an individual's health. The theory posits that individuals acquire skills to enhance their well-being and prevent the worsening of symptoms and complications associated with existing conditions (Orem, 2001).

Conversely, “self-care deficits” occur when individuals lack the knowledge, motivation, and ability to attend to their health needs (Orem, 2001). Ashiqali (2022) supports the idea that a self-care deficit happens when individuals are unable to meet their survival needs.

The nursing system theory, also referred to as the “nursing process theory”, aims to address the requirements of both the self-care theory and the theory of self-care deficits to enhance an individual's overall wellness (Ashiqali, 2022)

This study focused solely on two constructs of the theory: self-care and self-care deficit. The two constructs were applied to this study as they provide a valuable framework for understanding the self-care practices of adults living with diabetes mellitus. They also guided the identification of the associated barriers and facilitators that influence self-care practices among adults living with diabetes mellitus. The two constructs explained in this theoretical framework, hence, gave direction in formulating the research questions that guided this study.

1.9 Definition of key concepts

Self-care practices - According to the World Health Organisation (WHO, 2024), self-care is the capacity of individuals, families, and communities to support and sustain their well-being, prevent illnesses, and manage sickness, whether or not they have assistance from a healthcare professional. In this study, self-care practice is the ability of an individual to effectively self-manage diabetes by monitoring glucose levels, following a healthy diet, engaging in physical activity, taking medications, and caring for their feet.

Adults - An adult is a person older than 19 years of age, unless a specific national law identifies an alternate age (WHO, 2016). In this study, an adult is a person who is over 25 years of age.

Diabetes mellitus - The World Health Organisation (2023), defines “diabetes mellitus” as a chronic condition that arises when the pancreas fails to generate sufficient insulin or when the body is unable to properly utilise the insulin it generates. In this study, diabetes mellitus refers to a chronic condition that affects adults, between the ages of 25 and 64.

Barriers - Barriers refer to elements that obstruct, restrict, or stop individuals from participating in a particular behaviour (Garcia, Mendonça, Benedetti, Borges, Streit, Christofoletti & Binotto,

2022). In this study, barriers are factors that hinder adults living with diabetes mellitus, from practising diabetes self-care.

Facilitators - Facilitators are defined as elements that support, aid, or assist individuals in engaging in a specific behaviour (Garcia, Mendonça, Benedetti, Borges, Streit, Christofoletti & Binotto, 2022). In this study, facilitators are factors that enable and motivate adults living with diabetes mellitus, to practice diabetes self-care.

2. RESEARCH METHODOLOGY

A methodology represents a variety of methods, principles, and techniques that govern the conduct of scientific research (Kazdin, 2021). This section commenced by explaining the research paradigm, research approach, and study design that were utilised in this study to gather data. The section also provided details on the study setting, target population, and sampling methods. In addition, the section covered aspects such as the data collection instruments, data analysis procedures, ethical considerations, pre-testing of the research instruments, study limitations, and dissemination of the results.

2.1 Research paradigm

Polit and Beck (2021) explain that a paradigm is a perspective on the world and a collection of beliefs about the fundamental types of things in the world, their interactions, and the appropriate approaches for developing and validating theories about them. These paradigms are defined by their distinct ontological, epistemological, and methodological beliefs (Polit & Beck, 2021).

This study employed an interpretivist approach, which used qualitative instruments to collect and interpret data. Interpretivism highlights the significance of considering the perspectives of people within a specific social context in order to understand social situations and occurrences (Brink & Van Rensburg, 2022). Its main concern is the meanings that individuals or communities attribute to their experiences. The study's research questions and interview guide were developed to allow participants to share their perspectives on practising self-care as adults living with diabetes mellitus within their home settings. The study, therefore, was directed towards exploring self-care practices among adults with diabetes by utilising the interpretivist paradigm, which focuses on understanding specific phenomena through individual perspectives.

2.2 Research Approach

This research utilised a qualitative research approach as described by Hennink, Hutter, and Bailey (2020), who define it as a research method that enables an in-depth exploration of individuals' experiences through specific data collection techniques such as focus group discussions, in-depth interviews, observations, and other related qualitative methods. The qualitative approach assisted the researcher in gaining a comprehensive understanding and deeper insight into the various self-care practices utilised by adults living with diabetes mellitus, as well as in developing a clearer understanding of the barriers that influenced these practices. Furthermore, this approach enabled the researcher to conduct in-depth interviews with participants, thereby providing opportunities to seek clarification and probe further into participants' responses. This process resulted in rich and detailed information regarding diabetes self-care practices among adults living with diabetes mellitus within the selected study setting.

2.3. Research design

Research design is the setup or plan of an experiment used to investigate the research question or hypotheses of interest (Kazdin, 2021). This study adopted an explorative, descriptive, and contextual research design to explore self-care practices among adults living with diabetes mellitus in a selected village, of the Vhembe District, Limpopo Province.

2.3.1 Explorative research Design

Maree (2016) asserts that an exploratory study constitutes a significant portion of social research and aims to investigate a topic or establish a foundational understanding of a subject about which limited information is available. An exploratory design was considered appropriate for this research, as it allowed the researcher to explore the various self-care practices utilised by individuals living with diabetes mellitus, as well as the barriers and facilitators that influenced effective self-care. This design enabled the researcher to obtain more in-depth information from participants by allowing the use of probing questions as follow-up questions to obtain additional information and clarification. It also allowed the researcher to observe participants' emotional responses during the interviews. The exploratory design was particularly appropriate for this study because limited research has examined diabetes self-care practices among adults residing in rural communities within the Vhembe District of Limpopo Province.

2.3.2 Descriptive research design

Descriptive research design is a scientific approach that involves describing individuals, events, or conditions in their natural state without attempting to control the variables (Siedlecki, 2020). In this study, the descriptive research design enabled the researcher to describe in detail how participants engaged in diabetes self-care practices that they had adopted and how various barriers and facilitators influenced these practices. This design was appropriate because it allowed the researcher to provide a detailed account of participants' lived experiences and behaviours related to diabetes self-care within their everyday environments.

2.3.3 Contextual research design

Contextual research design focuses on examining phenomena within real-life environments (Burns & Grove, 2016). In this study, data were collected in Nweli village, where the participants resided. This enabled the researcher to utilise the participants' natural setting to understand the real-life motivations underlying their adopted diabetes self-care practices. The contextual design also allowed the researcher to understand and interpret the barriers and facilitators that influenced participants' self-care practices. This process was further facilitated through observations made while the researcher conducted interviews with participants within their village setting. The contextual design was appropriate for this study because self-care practices are often influenced by social, cultural, and environmental factors within the community in which individuals live.

2.4 Study setting

The research was conducted in Nweli village, a remote rural village located in the Republic of South Africa. The village is situated within the Thulamela Local Municipality in the Vhembe District of Limpopo Province. Thulamela Local Municipality forms part of the Vhembe District and covers an area of approximately 2,893.936 km² at coordinates 22°57′ S and 30°29′ E (Thulamela Municipality IDP Review 2023/24–2025/26). It borders Collins Chabane Municipality to the southeast, Musina Municipality to the northeast, and Makhado Municipality to the west (Thulamela Municipality IDP 2020/21–2022/23). Thulamela Municipality is the second-largest local municipality in Limpopo Province in terms of population and consists primarily of extensive tribal lands, with Thohoyandou serving as its political, administrative, and commercial hub (Thulamela Municipality IDP Review 2020/21–2022/23). According to Stats SA (2022), the population of Thulamela Local Municipality is 618,462, accounting for approximately 47.7% of the total population of the Vhembe District, with more than 85% of this population residing in tribal areas. The adult population in Thulamela Local Municipality, aged between 35 and 64 years, is estimated to be 102,497, while the elderly population aged 65 years and above is estimated at 33,475 (IDP, 2020).

Nweli village in the Vhembe District of Limpopo Province was purposefully selected as the study site because it provided a suitable rural context for exploring self-care practices among adults living with diabetes mellitus. Rural communities often experience challenges related to limited healthcare infrastructure, socioeconomic constraints, and restricted access to continuous health services, which may influence the ability of individuals to effectively manage chronic conditions such as diabetes. In Nweli village, residents rely on a mobile health clinic to access healthcare services, as there is no permanent healthcare facility within the community. Community members also depend on home-based care workers who provide additional health-related support. These healthcare access conditions made the village an appropriate setting for examining how individuals living with diabetes manage their self-care practices within a resource-constrained environment. The selection of the village was further supported by its established collaboration with the University of Venda Department of Public Health, which facilitated access to the community. Nweli village has one primary school, namely Nweli Primary School, as well as a single undeveloped playground within the community. Waste management services are provided in the village, with waste collected every Tuesday; however, challenges related to water service delivery persist. The community receives water from the municipality once a month, although the supply does not reach all households, resulting in many residents relying on a nearby river as an additional water source. The village is under the leadership of a traditional chief, and the commonly spoken language in the community is Tshivenda

2.5 Study population

Population refers to the complete set of individuals or units that researchers focus on and who meet the specified criteria for inclusion in a study (Burns & Grove, 2020). The study population comprised all women and men living with diabetes mellitus in the Vhembe District, while the target population consisted of adult women and men aged between 25 and 64 years who were living with diabetes mellitus and resided in Nweli village. The rationale for focusing on this specific age group was based on the problem statement, which highlights the premature mortality associated with diabetes mellitus among adults between the ages of 25 and 64 years.

2.6 Sampling

Brink, Van der Walt, and Van Rensburg (2017) define a sample as a smaller group of individuals selected from a larger population to participate in a study. In this study, the researcher employed a non-probability purposive sampling technique to select participants. Purposive sampling, also referred to as judgemental sampling, involves the deliberate selection of participants based on their knowledge, experience, or characteristics relevant to

the research topic (Brink & Van Rensburg, 2022). This sampling method was considered appropriate for the study because it enabled the researcher to intentionally select individuals who were living with diabetes mellitus and were able to provide relevant information regarding their self-care practices. Therefore, purposive sampling was utilised to recruit participants who met the specified inclusion criteria, including adults aged between 25 and 64 years who were living with diabetes mellitus and residing in Nweli village.

2.6.1 Sample size

Masuku and Singh (2014) indicate that determining an appropriate sample size is an important consideration in qualitative research, as it ensures that sufficient data are collected to adequately address the research objectives. In this study, the sample consisted of 15 participants. The sample size was guided by the principle of data saturation, which occurs when no new information or themes emerge from additional data collection (Gray, Grove & Sutherland, 2017). Data saturation was reached when participants began to repeat similar information regarding their diabetes self-care practices and related experiences. Once saturation had been achieved, no additional participants were recruited, as further interviews were unlikely to yield new insights relevant to the study.

2.6.2 Inclusion criteria

Inclusion criteria are the shared traits required for a sample to be included in a study, according to Brink et al. (2017). Participants were included in the study if they met the following criteria:

- Adults diagnosed with diabetes mellitus;
- Adults aged between 25 and 64 years;
- Residents of Nweli village; and
- Adults who were willing to participate in the study and provided informed consent.

2.6.3 Exclusion criteria

Participants were excluded from the study if they met any of the following criteria:

- Adults living with diabetes mellitus who refused to sign the consent form on the day of data collection; and
- Adults who were living with diabetes mellitus but showed signs of mental incapacitation.

2.7 Selection bias

Selection bias may have occurred in this study due to the sampling strategy used to recruit participants. The study employed a non-probability purposive sampling method, in which individuals were intentionally selected based on their diagnosis of diabetes mellitus and their residence in Nweli village. While this approach was appropriate for identifying participants who could provide rich information about diabetes self-care practices, it may have resulted in a sample that does not fully represent the broader population of adults living with diabetes in the Vhembe District.

Participants were identified with the assistance of home-based care workers who were familiar with community members managing diabetes at home. Although this facilitated access to eligible participants, it may have introduced selection bias, as individuals who are already connected to home-based care services may be more engaged with healthcare systems or more aware of diabetes self-management practices than those who are not receiving such support. Consequently, the experiences and self-care practices of adults who are less connected to community health services may not have been fully captured.

Furthermore, all participants recruited for the study were female, which limits the diversity of perspectives included in the sample. As a result, the findings primarily reflect the experiences and self-care practices of women living with diabetes in this rural community, and the perspectives of male patients were not represented.

Taken together, these factors suggest that the study sample may not fully represent all adults living with diabetes in the community or in other rural settings. Therefore, the findings should be interpreted as context-specific insights rather than broadly generalisable conclusions. Nevertheless, the purposive sampling approach enabled the researcher to obtain in-depth information from participants with direct experience of diabetes self-management, thereby providing valuable understanding of the barriers and facilitators influencing self-care practices in this rural context.

2.8 Sampling procedure

After permission had been obtained from the local traditional royal council to conduct the study, a meeting was arranged between the researcher and members of the community at the traditional royal council to provide information about the study. The researcher then requested assistance from home-based care workers in Nweli village to help identify individuals living with diabetes mellitus who met the study's inclusion criteria. The home-based care workers

were familiar with community members who managed their condition at home and were therefore able to assist in identifying potential participants.

All individuals who expressed willingness to participate were considered for inclusion in the study; however, interviews were conducted with a total of 15 participants. Data saturation was reached by the eleventh participant, as no new information or themes emerged during subsequent interviews. Nevertheless, data collection continued until the fifteenth participant to confirm that no additional relevant information would emerge. Prior to data collection, the researcher obtained permission from potential participants and arranged suitable times to meet them at their homes for the interviews. Participants who were available on the scheduled day of data collection and who were willing to sign the informed consent form were subsequently interviewed.

2.9 Data collection technique

The researcher conducted semi-structured interviews to explore the self-care practices used by adults living with diabetes to understand their views on any barriers and facilitators in achieving diabetes self-care. An interview guide (Annexure D) with open-ended questions was used to guide the interviews, thereby, align with the study's purpose. Participants freely shared their thoughts and experiences as they were enabled by the open-ended nature of the interview. According to DeJonckheere and Vaughn (2019), a semi-structured interview involves a conversation between a researcher and participant following an interview guide, with additional questions, probes, and comments, when necessary. The following central question was asked to start the conversation:

- "*Can you please tell me how you care for yourself every day at home?"*

The interview guide (Annexure D) consisted of 3 sections, comprising of - questions seeking demographic information, the research's central question and follow-up questions. It was also utilised during the data collection to guide the researcher towards asking both main and probing questions relevant to the purpose of the study. This interview guide (Annexure D) was developed based on the specific research questions of the study and was used to obtain in-depth information on self-care practices employed by adults living with diabetes mellitus, as well as the associated barriers and facilitating factors associated with practising self-care. The

interview guide was developed in English and translated into Tshivenda by a language expert to enable participants to engage in the interview discussions in their language.

2.10 Pre-test

According to Brink and Van Rensburg (2022), a pre-test is conducted to identify any potential flaws in the instruments, as well as the observability and measurability of variables outlined in the operational strategies. Before the commencement of the data collection, the researcher tested the interview guide on three participants which took place at their homes. The pre-test confirmed that there was no need to modify the interview guide questions, as the three participants were able to understand and respond to the questions asked by the researcher, although the pre-test, helped the researcher to strategise the interviewing process. An audio recording device was also pre-tested for functionality, at the same time. Data collected during the pre-testing interviews were included in the main study as the information gathered also provided valuable insights to the topic. No changes were deemed necessary to the data collection instruments, after conducting the pre-test.

2.11 Plan for data collection.

The data collection process took place after permission to conduct the study was obtained from the Nweli local traditional royal council.

2.11.1 Recruiting the participants

Once the researcher received ethical clearance from the University of Venda Research Ethics Committee, the researcher then wrote a letter to the traditional leader of Nweli village, seeking permission to conduct the study in the village. After permission was granted, the researcher engaged with the traditional leader and arranged a community meeting for the researcher to explain and initiate the research process by rendering health education on diabetes mellitus, and to recruit attendees at the meeting to participate in the study. The health education provided was only focused on the pathophysiology of the disease, not the management and care of the condition. After the meeting, the researcher managed to recruit 20 participants who met the inclusion criteria; however, only females met the inclusion criteria, and the researcher had a challenge in trying to recruit some male participants who met the inclusion criteria. This was a limitation in the study, which is explained in detail in Section Three of the study. The home-based caregivers helped to identify individuals who could provide in-depth information required to fulfil the purpose of the study and who also meet the inclusion criteria for the study. These workers at Nweli village are responsible for providing home-based health services for

people living with chronic conditions in the village, since there is no clinic, hence, the community depends on the mobile clinic and assistance from home-based caregivers, for health services. They also helped locate other people who are eligible to participate in the study, but were unable to attend the health education session.

2.11.2 Data Collection Procedure

Upon receiving permission to conduct the study from the traditional leader of Nweli village, the researcher planned with participants concerning scheduling individual appointments to interview them, in their respective homes. These appointments allowed them to decide upon the most convenient date and time for data collection. Before gathering data, the researcher informed each participant about the purpose of the study and reviewed the information sheet with them (Annexure C). A consent form was provided to the participants for signature, confirming their understanding of the expectations associated with participating in the study (Annexure C). The researcher also requested verbal consent from the participants to use an audio recording device when conducting the interviews.

The face-to-face semi-structured interviews were conducted in Tshivenda, which is the common spoken language in Nweli village; therefore, the participants preferred communicating in that language. The interview sessions were conducted by the researcher. Each session was allocated approximately 20-30 minutes, although the researcher was flexible about this; hence, the length of the sessions was determined by each participant. Each participant had the opportunity to discuss the self-care practices that they had been following as adults living with diabetes mellitus, and they explained the barriers and facilitators that had influenced these practices. The researcher compiled field notes that assisted in reflecting on the research process; observations of participants' nonverbal signals were also noted as part of the field notes. The researcher utilised the following techniques by Taherdoost (2021) to ensure that quality and in-depth data were collected:

Probing: The researcher asked follow-up questions, so as to receive in-depth information from participants' responses.

Listening: The researcher carefully listened to the participants' responses, with minimum interruptions, to ensure the gathering of detailed information for full understanding of their statements.

Summarising: the researcher summarised the participants' responses in written form, focusing on key points and organising them into themes.

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2.12 Plan for data management and analysis

2.12.1 Data management

Data management involves breaking down large amounts of data into smaller, more manageable portions (Brink & Van Rensburg, 2022). In this study, the data were managed before analysis. The first step was when the researcher became immersed in the data collected, thereby organising the data in a form that could be analysed. Audio-recorded data collected during interviews were transcribed verbatim in Tshivenda and later translated into English. The audio recordings were stored and backed up on a password-protected computer system to ensure confidentiality. Field notes were typed and stored in a password-protected system. The researcher made copies of all the typed data and stored them in a secure location with a lock and key for safekeeping. Only the researcher and supervisor had access to the data and the audio-recorded tapes will be destroyed after publication of the findings of the study.

2.12.2 Data analysis

Data analysis involves organising, arranging, editing, condensing, and explaining the information in meaningful ways (Brink & Van Rensburg, 2022). The researcher used the six steps of thematic analysis by Farmer and Farmer (2021).

All interviews were audio-recorded and supplemented with field notes to capture contextual information and non-verbal cues observed during the interviews. The researcher transcribed the interviews verbatim in Tshivenda and subsequently translated the transcripts into English to facilitate analysis. The analysis followed a systematic six-step process.

In the first step, the researcher listened to the audio recordings and read the transcripts several times to become familiar with the data and to gain a comprehensive understanding

participants' responses. This process helped the researcher immerse herself in the dataset and identify preliminary patterns.

In the second step, initial codes were generated inductively by carefully examining the transcripts and identifying meaningful segments of text relevant to the research objectives. Codes were assigned to sections of the data that reflected important ideas, experiences, or perceptions expressed by participants.

During the third step, related codes were compared and grouped together into broader categories, allowing patterns within the data to emerge. These categories were then examined to identify connections and relationships across participants' responses.

In the fourth step, the categories were organised into themes and sub-themes that captured the key patterns and meanings within the dataset. These themes represented recurring issues and experiences shared by participants in relation to the research topic.

The fifth step involved reviewing and refining the themes to ensure that they accurately represented the data and that there was internal consistency within each theme. This step also ensured that the themes were clearly distinguishable from one another.

In the final step, the themes were clearly defined and interpreted in relation to the research questions and study objectives. A detailed narrative report was then developed, supported by relevant participant quotations to illustrate the findings. The coding and theme development process was iterative, involving continuous comparison across transcripts to ensure that the themes accurately reflected the range of participants' perspectives.

To enhance the credibility and confirmability of the analysis, an independent coder reviewed a sample of the transcripts and the preliminary coding framework. The independent coder compared the coding with that of the researcher, and any discrepancies were discussed and resolved through consensus. This process helped ensure that the final themes were grounded in the data and accurately represented participants' experiences.

2.13 Measures to ensure Trustworthiness

Brink and Van Rensburg (2022) elaborate on trustworthiness as a means to ensure data quality in qualitative research. In this research, trustworthiness was guaranteed through credibility, dependability, confirmability, and transferability.

2.13.1 Credibility

Brink and Van Rensburg (2022) explain credibility as the accuracy of data, including interpretations made about the data. The following techniques guided the study in achieving credibility:

- Prolonged engagement and persistent observation: This refers to staying in the field for an extended period (Brink & Van Rensburg, 2022). In this study, the researcher established credibility by maintaining prolonged about their interactions. To achieve this, the researcher met with all participants a day before the interview to learn about and understand their culture, ultimately establishing trust and rapport. The researcher

paid closer attention during interviews, thereby capturing any non-verbal cues, which aided in interpreting the collected data.

- Triangulation: According to Brink and Van Rensburg (2022), triangulation refers to collecting data using multiple methods. In this study, the researcher used various data collection methods – interviews, taking field notes, audio recording, and observing non-verbal communication.
- Peer debriefing: It involves researchers interacting with impartial peers so as to reduce biases, analyse meaning of the data objectively, and clarify reasons behind specific interpretations (Brink & Van Rensburg, 2022). In this study, the researcher presented data to well-established researchers from a different field of study, beyond health, to maintain integrity.
- Member checking: This is a procedure during which the findings and interpretations are presented to participants for validation (Brink & Van Rensburg, 2022). The researcher allowed participants to engage in open discussions, thereby enabling them to correct errors and provide additional information or clarification as needed.

2.13.2 Dependability

Brink and Van Rensburg (2022) define “dependability” as the consistency of data across different periods and situations, hence, indicating the reliability of the results. This involves an auditor (usually a peer) observing the methods and protocols employed by the researcher to verify their adequacy. In this study, the data collected were presented along with details on the methods used for collection, for peer review and auditing by researchers, participants, and supervisors.

2.13.3 Confirmability

Confirmability ensures that the results, conclusions, and suggestions are backed up by the data and that there is consistency between the researcher's interpretations of the data and the data collected (Brink & Van Rensburg, 2022). In this study, the researcher maintained confirmability by accurately transcribing all participants’ data and providing the supervisor with transcripts and audio recordings for validation. An independent coder examined the transcripts as well, to ensure that they represent the exact findings.

2.13.4 Transferability

According to Brink and Van Rensburg (2022), transferability is the ability of the results to be applicable and relevant in different settings. The researcher achieved transferability by providing a complete description of the research process, including the research methodology, research design, study setting, population, sampling technique, data collection techniques and data analysis.

2.14 Ethical considerations

Research ethics is defined as guidelines established by a specific profession outlining the standards for conducting research, involving human participants (Farmer & Farmer, 2022). This study adhered to the following ethical principles:

2.14.1 Institutional protocol

The researcher presented the research proposal for evaluation and quality assessment by the Department of Public Health Research Committee; thereafter, the researcher submitted the research proposal for ethical evaluation by the Faculty Research and Innovation Integrated Committee (FRIIC). Once the research proposal passed the ethical evaluation stage by FRIIC, the researcher submitted an application for ethical clearance to the University Research Ethics Committee. Upon receiving ethical clearance, the researcher requested the proposal's approval by the University of Venda Higher Degrees Committee (UHDC).

2.14.2 Permission to conduct the study

After receiving proposal's approval by UHDC, the researcher wrote a letter to the traditional leader of Nweli village, requesting permission to conduct the research in Nweli village (see Annexure B). Permission to conduct the study was granted on 03/December/2024.

2.14.3 Informed Consent

Informed consent formalises the ethical principles of voluntary participation and the protection of participants from harm (Polit & Beck, 2022). This means that the individuals are well informed about the research, understand the details, and can agree to or refuse participation (Brink & Van Rensburg, 2022). In this study, participants were allowed to volunteer without any form of coercion or pressure. Participants were informed about the study's purpose, objectives, significance, and rationale to help them understand why the study was being conducted and what was expected from them. Participants were also informed that they are allowed to withdraw anytime from the study, without any penalty, if they felt they were no longer

comfortable continuing with the project. A written consent form was provided to participants explaining all the aspects that they need to be aware of before consenting (Annexure C). Literate participants signed the consent form, while the others gave verbal consent. Verbal consent was also obtained to use an audio recording device and take field notes during the interviews.

2.14.4 The principle of beneficence

The principle of beneficence ensures individuals are protected from harm and exploitation, hence, researchers must prioritise participants' well-being by this principle (Brink & Van Rensburg, 2022). The researcher ensured the safety and mental health of participants by allowing participants to share only personal information that they felt comfortable sharing. The researcher closely observed for any indications of discomfort throughout the interview to ensure participants were not under emotional distress during the interviews.

2.14.5 The principle of justice

The principle of justice includes ensuring that all participants are treated fairly, have the right to privacy, and are selected fairly. This implies that researchers must choose participants for a study, fairly, due to their direct relevance to the research issue (Brink & Van Rensburg, 2022). The researcher ensured that only participants who met the inclusion criteria were selected and treated equally and with respect. The researcher ensured the privacy of participants by honouring their choice to withhold certain personal information such as beliefs, behaviour, or medical records.

A research participant can anticipate that any information gathered from or about them will be kept confidential and anonymous, according to Brink & Van Rensburg (2022). The researcher stored the gathered data in a personal computer file protected by a PIN code, which was accessible only to the supervisor and the researcher. Field notes containing raw data were securely stored in a safe under lock and key to prevent unauthorised access. The researcher ensured anonymity by not requesting participants' names and addresses, but instead used pseudonyms by assigning participants numbers with which they were referenced. Participants' identities were safeguarded to prevent anyone from making connections between participants and their details.

2.14.6 Principle of respect for human dignity

Human dignity encompasses everybody's entitlement to self-determination and the privilege of complete disclosure (Brink and Van Rensburg, 2022). These authors also explain "self-determination" as the freedom to choose whether or not to take part in a study without any

pressure. The researcher allowed participants to volunteer for the study without using any pressure or coercion. They were provided with information on their right to withdraw from participation without facing any penalties or threats, and this was outlined on the consent form.

2.15 Researcher reflexivity and positionality

In this study, the researcher was responsible for conducting the interviews, engaging directly with participants, and interpreting the data collected. During the process of obtaining permission to conduct the study and engaging with community members and home-based care workers, the researcher developed familiarity with the community. While this facilitated access to participants and helped establish rapport during interviews, it also presented the possibility that the researcher's assumptions or expectations could influence the data collection and interpretation process.

To minimise potential bias, the researcher maintained a neutral and non-judgemental approach during interviews, allowing participants to freely express their experiences and perspectives without leading their responses. The researcher remained mindful of personal assumptions throughout the research process and ensured that the findings were grounded in participants' narratives rather than the researcher's interpretations. In addition, reflective field notes were maintained during data collection to document observations and reflections, which assisted the researcher in maintaining reflexivity and enhancing the credibility of the study.

2.16 Dissemination of findings

The final dissertation will be submitted to the University of Venda Library, where it will be included in the University's institutional repository. One copy will be utilised to share and give feedback on the research results with the Nweli village community, and another will be handed over to the traditional leader of Nweli village for use when engaging with the community regarding health-related matters that involve diabetes mellitus and self-care. Another copy will be sent to the Department of Health to aid in creating health awareness initiatives to improve self-care for diabetic adults. in the Vhembe District.

3 Summary

This section outlined the research methodology used in the study. It described the research design, study setting, population, sampling procedure, and inclusion and exclusion criteria used to select participants. The chapter also explained the data collection process, ethical considerations, and the procedures used for data analysis. Measures implemented to ensure trustworthiness and credibility of the study were also discussed, together with considerations of researcher reflexivity and positionality. subsequent section will present the findings of the study, accompanied by a discussion of the results.

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SECTION B: MANUSCRIPTS

2.1 MANUSCRIPT ONE

TITLE: Self-care practices among adults living with diabetes mellitus: A systematic review.

This manuscript was prepared following the "Health Sciences Review journal author guidelines, which are found at the following link: https://www.sciencedirect.com/journal/health-sciences-review/publish/guide-for-authors, and it is currently submitted to the Health Sciences Review Journal and awaiting editorial approval.

Self-care Practices Among Adults Living with Diabetes Mellitus: A Systematic Review

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Highlights

This review examines self-care practices among adults living with diabetes mellitus globally. Findings show that:

- medication adherence as the most common, with physical activity as suboptimal;
- socioeconomic status, knowledge, and social support are key factors influencing self-care;
- therefore, future research should target interventions enhancing all self-care domains for better outcomes.

Abstract

Background:
Diabetes mellitus is a major public health challenge worldwide. This systematic review explored self-care practices among adults living with diabetes mellitus.

Methods:
A systematic search was conducted in ScienceDirect, EBSCOhost, and PubMed for studies published in English between January 2020 and February 2025. Eligible studies included qualitative, quantitative, or mixed-methods research investigating self-care practices among adults (≥18 years) with type 1 or type 2 diabetes. Risk of bias was assessed using the Critical Appraisal Skills Programme (CASP) and the Mixed Methods Appraisal Tool (MMAT). A thematic synthesis approach was applied.

Results:
From 1,025 records screened, 14 studies of diabetic adults 18 years and older were selected; of these, eleven were cross-sectional, one qualitative, one mixed-methods, and one descriptive cross-sectional. Six themes were identified: general adherence to self-care, medication adherence, diet management, self-monitoring of blood glucose, foot care, and physical activity. Overall, medication adherence was the most consistently practised (>80% in most studies), while physical activity and dietary adherence were lowest (≤50% in several studies).

Determinants of adherence included: diabetes knowledge, education, income, social support, and access to glucometers.

Limitations:

The review was restricted to English-language publications and three databases; heterogeneity across study designs precluded meta-analysis.

Conclusions:

Self-care practices among adults with diabetes are generally suboptimal, particularly in physical activity and diet management. Interventions should target these gaps while addressing key social and educational determinants.

Registration:

The review was not prospectively registered.

Funding:

No external funding was received.

Keywords

Self-care; systematic literature review; diabetes mellitus; adults.

1. Introduction

According to the World Health Organisation (2024) [1], diabetes mellitus is a persistent metabolic condition characterised by elevated blood glucose levels, which can cause severe damage to vital organs such as the heart, blood vessels, eyes, kidneys, and nerves, over time. The most prevalent form, type 2 diabetes, primarily affects adults and results from insulin resistance or inadequate insulin production. Globally, diabetes remains one of the leading causes of death and disability, impacting individuals across all ages, sexes, and geographic regions. The International Diabetes Federation (2023) [2] projects a significant rise in diabetes cases, estimating that by 2045, approximately 783 million adults aged 20 to 79 will be affected. In low- and middle-income countries, the financial burden of managing diabetes is often high, due to individuals' limited health insurance coverage, forcing many households to bear treatment costs independently (Butt, Ong, Rafiq, Kalam, Sajjad, Abdullah, & Babar, 2024) [3].

Self-care is the ability of individuals, families, and communities to enhance health, prevent diseases, and manage illnesses, independently, or with professional support (WHO, 2024) [4]. For people living with diabetes, several key self-care activities are linked to positive health outcomes. These include - monitoring blood glucose levels, following a healthy diet, engaging in regular physical activity, adhering to prescribed treatment plans, taking medications as directed, and reducing risky behaviours. Such practices have been shown to manage blood glucose effectively, reduce diabetes-related complications, and improve overall quality of life (Ahmad & Joshi, 2023) [5].

Effective diabetes self-care is influenced by multiple factors, including age, income, marital status, and understanding of the disease (Weledegebriel, Mulugeta, & Hailu, 2021) [6]. Achieving optimal diabetes management requires a combination of good knowledge, positive attitudes, and appropriate practices; although, deficiencies in any of these areas cannot be compensated for by strengths in others, underscoring the need for a comprehensive approach (Maduemezia, Variava, Moloantoa, Abraham, Rambau, Ndaba, & Daya, 2024) [7]. Additionally, research indicates that patients with strong family or social support networks tend to demonstrate better diabetes self-care practices (Molalign, Takele, Weharei, Kidanu, Gebrekidan, & Gebregiorgis, 2021) [8].

Sub-Saharan Africa continues to grapple with substantial health issues, such as malnutrition and infectious diseases like HIV, however, the escalating prevalence of chronic non-communicable diseases, particularly diabetes, has emerged as a pressing concern, often overlooked on a global scale (Abate, Dessie, Workineh, Gedamu, Birhanu, Ayalew, & Endalamaw, 2021) [9]. There have been considerable investments in clinical care and pharmaceutical research, despite this, the suffering caused by diabetes is on the rise (Khan, Hashim, King, Govender, Mustafa, & Kaabi, 2020) [10]. Chronic complications associated with diabetes significantly reduce life expectancy, stressing the urgency of developing and implementing interventions that can prevent or mitigate these complications (Migdalis, 2024) [11]. Standard self-care practices benefit individuals with diabetes, although, mortality rates and complications persist, despite advances in management (WHO, 2024; IDF, 2023) [1][2]. This study explores self-care practices among adults living with diabetes.

2. Review question and objectives

2.1 Review question

- What are the self-care practices among adults living with diabetes mellitus globally?

2.2 Review Objectives

- To explore and synthesise evidence on the types and adherence levels of self-care practices among adults living with diabetes mellitus.
- To identify factors influencing self-care practices among adults living with diabetes mellitus.

3. Method details

3.1 Search strategy

The search strategy for this systematic review was developed and conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 guidelines to ensure transparency, reproducibility, and comprehensiveness [12]. A systematic literature search was conducted in February 2025 across three electronic databases: ScienceDirect, EBSCOhost, and PubMed. These databases were deliberately selected due to their capacity to provide data on a broad range of disciplines. The search combined keywords and controlled vocabulary terms, including “self-care,” “self-management,” “diabetes,” “type 1 diabetes,” “type 2 diabetes,” and “adults,” using Boolean operators (AND, OR) to refine the search results. Filters were applied to limit the search to studies published in English between 2020 and 2025. No grey literature, including dissertations, reports, or conference proceedings, were searched, and although the reference lists of the included studies were also examined, no further eligible studies were found. The retrieved records were imported into EndNote for organisation, and duplicates were removed. A total of 1,025 records were identified through database searches prior to screening. Below is the complete search strategy:

The search strategy used in PubMed was as follows:

("Diabetes Mellitus"[Mesh] OR "Type 1 Diabetes Mellitus"[Mesh]

OR "Type 2 Diabetes Mellitus"[Mesh] OR diabetes[tiab]

OR "type 1 diabetes"[tiab] OR "type 2 diabetes"[tiab])

AND

("Self Care"[Mesh] OR "self-care"[tiab] OR "self management"[tiab]

OR "self-management"[tiab] OR "self care practices"[tiab])

AND

("Adult"[Mesh] OR adult*[tiab] OR "aged 18 years and older"[tiab])

Filters were applied to limit results to human studies published in English between 2020 and 2025. The final search in PubMed was conducted in February 2025, yielding 75 records.

A similar search strategy was adapted for EBSCOhost, using subject headings and keywords appropriate for the MEDLINE and CINAHL databases and the the search strategy used was as follows:

(MH "Diabetes Mellitus+" OR TI diabetes OR AB diabetes

OR TI "type 1 diabetes" OR AB "type 1 diabetes"

OR TI "type 2 diabetes" OR AB "type 2 diabetes")

AND

(MH "Self Care+" OR TI "self-care" OR AB "self-care"

OR TI "self management" OR AB "self management")

AND

(TI adult* OR AB adult* OR "aged 18 years and older").

Filters were applied to limit results to peer-reviewed articles published in English between 2020 and 2025. The final EBSCOhost search was conducted in February 2025, yielding 386 records.

The scienceDirect strategy was as follows:

TITLE-ABSTR-KEY("diabetes" OR "type 1 diabetes" OR "type 2 diabetes")

AND

TITLE-ABSTR-KEY("self-care" OR "self management"

OR "self-management" OR "self care practices")

AND

TITLE-ABSTR-KEY("adult" OR "adults")

Filters were applied to limit results to research articles published in English between 2020 and 2025. The final ScienceDirect search was conducted in February 2025, yielding 564 records.

3.2 Eligibility criteria

This systematic review focused on studies that explored self-care practices among adults with diabetes mellitus worldwide. The review included studies relevant to identifying and describing self-care behaviours among adults (aged 18 years and older) with either type 1 or type 2 diabetes mellitus. To ensure consistency, only studies published in English were considered.

3.2.1 Inclusion Criteria

- Studies involving adults aged 18 years and above.
- Studies published in English.
- Studies conducted and published between 2020 and 2025.
- Studies investigating self-care practices in adults, with type 1 or type 2 diabetes mellitus.

3.2.2 Exclusion Criteria

- Studies not related to self-care practices for diabetes mellitus.
- Studies published before 2020.
- Studies published in languages, other than English.

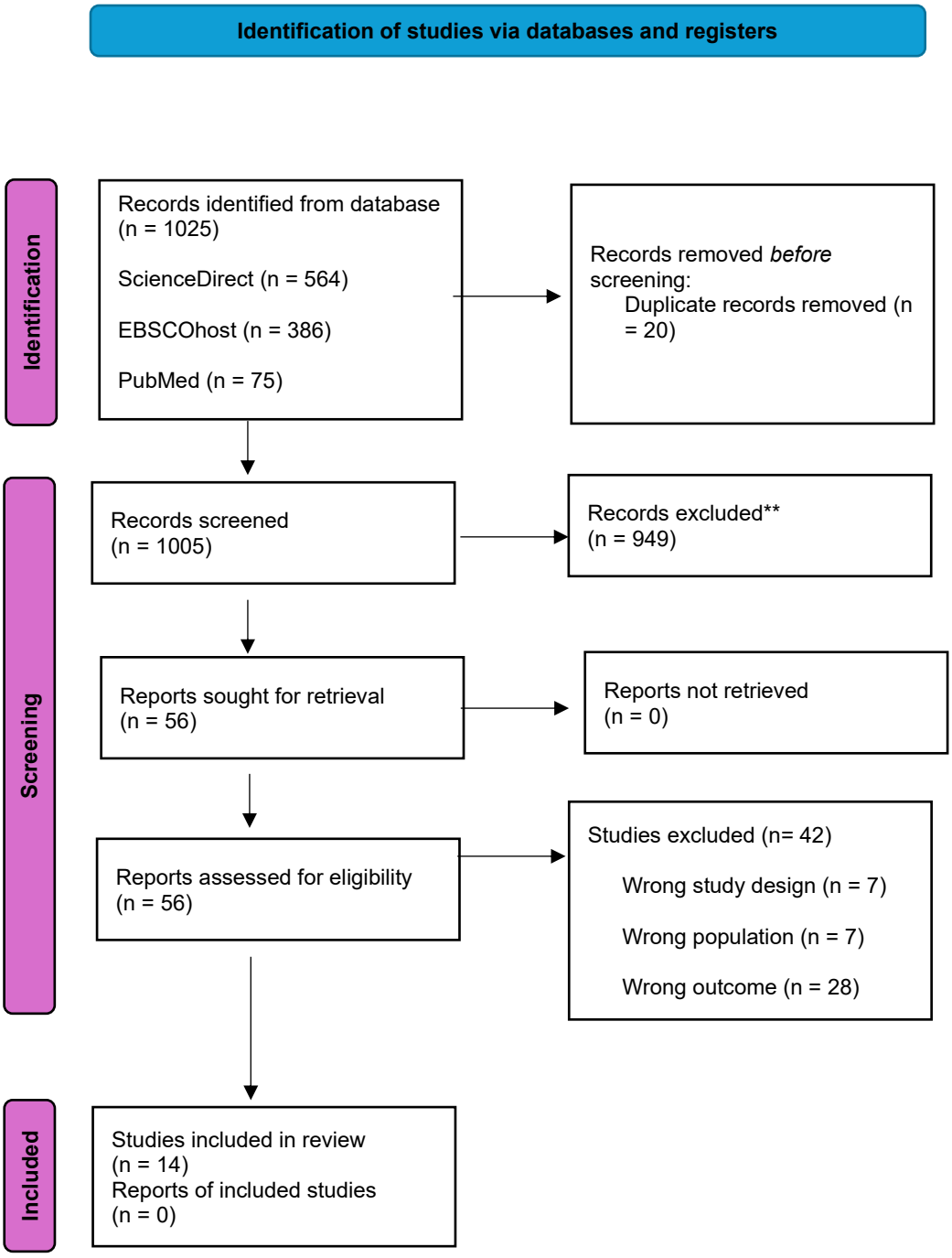
The selection of literature from the past five years was intentional to capture the most recent and relevant evidence on diabetes self-care practices among adults. Eligible study designs comprised quantitative (cross-sectional, descriptive), qualitative, and mixed methods approaches. The primary interest included - the types and extent of adherence to self-care behaviours, such as diet, medication adherence, physical activity, blood glucose monitoring, and foot care, as well as, the factors influencing these practices.

3.3 Study selection process

A systematic approach, guided by PRISMA 2020 guidelines, was used to identify and select relevant studies [12]. Two independent reviewers conducted the study screening to enhance objectivity and reduce bias. The initial search produced 1025 records from the selected databases, with 75 from PubMed, 386 from EBSCOhost, and 564 from ScienceDirect. The records were imported into EndNote reference management software. All the databases were last searched in February 2025. After removing 20 duplicate records, a total of 1,005 studies underwent screening by two independent reviewers to minimise bias.

The screening was conducted in three stages. The first stage involved screening titles to assess their relevance to the review topic. In the second stage, abstracts of the studies that passed title screening were evaluated against the eligibility criteria. This abstract screening led to the exclusion of 949 studies; consequently, 56 studies progressed to the third stage, which involved full-text screening. During this stage, the full articles were independently assessed to confirm their eligibility, based on the predefined inclusion and exclusion criteria. Ultimately, 14 studies were included in the review after excluding an additional 42 studies. Any discrepancies between the reviewers, at any screening stage, were resolved through discussions. The number of studies included and excluded at each stage, along with the reasons for exclusion during full-text screening, have been documented and are presented in the PRISMA 2020 flow diagram (see Figure 1) [13].

Figure_1. PRISMA 2020 flow diagram illustrating the systematic literature search and study selection process for self-care practices among adults living with diabetes mellitus



3.4 Data Extraction Process

Data extraction began concurrently with the screening process. All articles included after full-text screening were organised using EndNote for systematic management. A standardised data extraction form was designed and pilot-tested to capture key information consistently across studies. Two independent reviewers extracted data covering publication year, study design, population characteristics, methods, and main findings relevant to diabetes self-care practices. Any disagreements during the data extraction were discussed and resolved to ensure accuracy and completeness. Data extraction was conducted independently by two reviewers using a pre-tested extraction form. The information collected encompassed - study characteristics, participant demographics, outcomes associated with self-care practices and identified determinants.

For the quantitative studies, the primary effect measures were the proportions of adherence to key diabetes self-care practices, including - general adherence, diet management, physical activity, foot care, blood glucose self-monitoring, and medication compliance. These proportions served as descriptive indicators of the prevalence and degree of adherence within each study. In the qualitative and mixed-methods studies, thematic codes about self-care behaviours and their influencing factors, such as - diabetes knowledge, income, social support, and access to glucometers - were extracted and narratively synthesised. These thematic codes functioned as qualitative effect measures. Collectively, these outcomes from the varied study designs formed the foundation for the overarching thematic synthesis.

3.5 Appraisal of selected studies in this systematic review

The quality and validity of the studies included in this review were assessed using two established tools: the Critical Appraisal Skills Programme (CASP) and the Mixed Methods Appraisal Tool (MMAT), as summarised in Table 1. The CASP checklists were employed to appraise cross-sectional and qualitative studies, while the MMAT checklist was used for the evaluation of mixed-methods studies.

For cross-sectional studies, the CASP checklist focused on 10 questions, with each item scored as "yes," "no," or "unclear." The overall score for each study was calculated by summing the

number of "yes" responses, dividing by 10, and converting this to a percentage (see Table 2). The CASP checklist, also comprising 10 questions and scored similarly, was used for qualitative studies. The MMAT focused on seven criteria questions, including two screening questions, and the final score was obtained by dividing the number of "yes" answers by seven and converting the result into a percentage.

The included studies were critically appraised using the Critical Appraisal Skills Programme (CASP) and the Mixed Methods Appraisal Tool (MMAT), as shown in Table 1. As indicated earlier, the CASP checklists were applied to the cross-sectional and qualitative studies, while MMAT was used for mixed-methods studies.

Table 1. Quality appraisal of studies using Critical Appraisal Skills Programme (CASP) and Mixed Methods Appraisal Tool (MMAT), showing study design and overall assessment scores

Authors	Appraisal tool	Study design	Study assessment
(Brown et al., 2022) [14]	CASP	Qualitative	90 %
(Abdallah et al., 2024) [15]	CASP	Cross-sectional	70%
(Sezgünsay et al., 2025) [16]	CASP	Descriptive, cross-sectional	90%
(Wan et al., 2023) [17]	MMAT	Mixed method	85.7%
(Ang et al., 2024) [18]	CASP	Cross-sectional	90%
(Negash et al., 2023) [19]	CASP	Cross-sectional	80%
(Ahola et al., 2020) [20]	CASP	Cross-sectional	90%
(Bekele et al., 2024) [21]	CASP	Cross-sectional	90%
(Getie et al., 2020) [22]	CASP	Cross-sectional	80%
(Kassa et al., 2021) [23]	CASP	Cross-sectional	90%
(Jyotsana et al., 2024) [24]	CASP	Cross-sectional	70%
(Kassie et al., 2024)	CASP	Cross-sectional	60%

[25]			
(Chittooru et al., 2022) [26]	CASP	Cross-sectional	80%
(Lan et al., 2025) [27]	CASP	Cross-sectional	60%

3.6 Risk of Bias assessment

The quality of the included studies was evaluated using the Critical Appraisal Skills Programme (CASP) for qualitative and cross-sectional research and the Mixed Methods Appraisal Tool (MMAT) for mixed-methods' studies (refer to Table 1). To create a risk-of-bias (RoB) assessment aligned with PRISMA guidelines, CASP and MMAT criteria were aligned with four common RoB domains in observational research: selection bias, measurement bias, confounding, and reporting bias. For CASP, relevant criteria encompassed - participant recruitment and sampling (selection), rigor in data collection and analysis (measurement), addressing confounders and study limitations (confounding), and the transparency and clarity of reported findings (reporting). For MMAT, corresponding items covered appropriateness of sampling and design (selection), adequacy and integration of measurement tools (measurement), management of limitations and confounders (confounding), and openness in reporting (reporting). To ensure transparency and reproducibility, checklist results were translated into domain risk categories using these cutoffs: ≥80% positive responses indicated low risk, 60–79% moderate risk, and below 60% high risk. The appraisal was independently conducted by two reviewers (EMH and MNS), with any differences resolved through discussion. No formal assessment of reporting bias (such as publication bias) was undertaken, as the included studies were largely qualitative or cross-sectional, and heterogeneity precluded meta-analysis. The domain-level risk of bias judgments is reported in **Table 2** below.

Table 2. Risk of Bias Assessment of Included Studies

Authors	Appraisal tool	Study design	Selection bias	Measurement Bias	confounding	Reporting bias	Overall risk
(Brown et al., 2022) [14]	CASP	Qualitative	Low	Low	Low	Low	Low
(Abdallah et al., 2024) [15]	CASP	Cross-sectional	Moderate	Moderate	Moderate	Moderate	Moderate
(Sezgünsay et al., 2025) [16]	CASP	Descriptive, cross-sectional	Low	Low	Low	Low	Low
(Wan et al., 2023) [17]	MMAT	Mixed method	Low	Low	Low	Low	Low
(Ang et al., 2024) [18]	CASP	Cross-sectional	Low	Low	Low	Low	Low
(Negash et al., 2023) [19]	CASP	Cross-sectional	Low	Low	Low–Moderate*	Low	Low
(Ahola et al., 2020) [20]	CASP	Cross-sectional	Low	Low	Low	Low	Low
(Bekele et al., 2024) [21]	CASP	Cross-sectional	Low	Low	Low	Low	Low
(Getie et al., 2020)	CASP	Cross-	Low	Low	Low–	Low	Low

[22]		sectional			Moderate*		
(Kassa et al., 2021) [23]	CASP	Cross-sectional	Low	Low	Low	Low	Low
(Jyoti Jyotsana et al., 2024) [24]	CASP	Cross-sectional	Moderate	Moderate	Moderate	Moderate	Moderate
(Kassie et al., 2024) [25]	CASP	Cross-sectional	Moderate	Moderate	Moderate	Moderate	Moderate
(Chittooru et al., 2022) [26]	CASP	Cross-sectional	Low	Low	Low–Moderate*	Low	Low
(Lan et al., 2025) [27]	CASP	Cross-sectional	Moderate	Moderate	Moderate	Moderate	Moderate

3.7 Characteristics of studies

The researcher retrieved data from the selected databases, PubMed, EBSCOhost, and ScienceDirect. Among the 14 included studies, eleven employed cross-sectional designs, one used a mixed-methods approach, one was qualitative, and one incorporated both descriptive and cross-sectional elements. These studies took place in a variety of locations, including Africa (Ethiopia, Egypt, Nigeria), Asia (India, China, Singapore, Turkey), Australia, the United States, and Finland; this increased the global applicability of the results. No studies were excluded at the full-text review stage due to the inaccessibility of reports. The studies were extracted for comparative purposes and were limited to those conducted between 2020 and 2025 to ensure inclusion of relevant current evidence regarding self-care practices among adults living with diabetes mellitus. The comparison focused on several key components from the extracted studies - the author, publication year, study title, country of origin, sample size, methodology, and a summary of the findings. These study characteristics are presented in **Table 3** below.

Table 3. Characteristics of studies included in the review of Self-care Practices Among Adults with Diabetes Mellitus, detailing authors, publication year, country, study design, sample size, and key findings.

Author/Authors	Title of the study	Year	country	methodology	Sample size	findings
Brown et al., 2022 [14].	Culture and Self-Care: Practices in Jamaican Adults with Diabetes Mellitus Residing in South Florida.	2022	United States	Qualitative Research	13	• Participants frequently engaged in folk care practices, which involved using herbal preparations such as moringa and soursop leaf teas, alongside increased intake of fruits and vegetables, as part of their diabetes management. • Participants frequently used herbal treatments alongside prescribed medications; however, they voiced concerns about pharmaceuticals and tended to depend on folk care to reduce what they viewed as potential

						harm
Abdallah et al., 2024 [15].	Diabetes knowledge, health literacy and diabetes self-care among older adults living with diabetes in Alexandria, Egypt.	2024	Egypt	Quantitative Research	400	• Although higher educational levels, greater income, and consistent physical activity were linked to improved self-care, only health literacy and diabetes-related knowledge emerged as statistically significant predictors. • In total, 73.5% of older adults exhibited inadequate adherence to recommended self-care practices.
Sezgünsay et al., 2025 [16].	Diabetic foot care behaviour and self-efficacy levels in individuals with diabetic foot ulcers in Turkey.	2025	Turkey	Quantitative Research	108	• The study found that enhanced foot self-care was associated with regular physical activity, higher educational attainment, exposure to diabetes health education, and consistent foot examinations. • The study revealed that Women

						demonstrated significantly better foot self-care behaviours compared with their male counterparts.
Wan et al., 2023 [17]	Dietary management of type 2 diabetes mellitus among South Asian immigrants: A mixed-methods study.	2023	Australia	Mixed-Method Research	18	• Participants placed strong emphasis on reducing carbohydrate intake and subsequently consumed fruits, grains, and dairy products at levels lower than national dietary recommendations, based on the belief that carbohydrate control is vital for managing diabetes effectively. • Limited awareness of available support systems and resistance from family or friends emerged as the primary obstacles to adhering to dietary guidance, while familiarity with nutrition labels and regular blood glucose self-

						monitoring facilitated better dietary management.
Ang et al., 2024 [18].	Foot care behaviours and associated factors among patients with type 2 diabetes: A cross-sectional study.	2024	Singapore	Quantitative Research	580	• Approximately 73% of participants demonstrated good foot care practices, such as washing, daily inspection, and trimming toenails, whereas the remaining 27% engaged in poor foot care behaviours, including walking barefoot indoors and failing to dry between the toes. • The study revealed that adherence to foot care was shaped by factors such as the level of caregiver support, smoking status, stress associated with diabetes, and participants' knowledge of foot care.
Negash et al., 2023 [19].	Insulin injection practice and health-related	2023	Ethopia	Quantitative Research	319	• Participants exhibited moderate

	quality of life among individuals with diabetes at Tikur Anbessa Specialised Hospital, Ethiopia: a cross-sectional study.					competence in insulin handling, reflected by a median score of 36 out of 56 across storage, administration, and handling domains. Nonetheless, adherence to physical activity was limited to 39.8%, and only 30.7% complied with salt restriction guidelines. • Insulin injection practices were significantly affected by variables including age, educational attainment, occupation, type of diabetes, and the duration of the condition.
Ahola et al., 2020 [20].	Perceived Stress and Adherence to the Dietary Recommendations and Blood Glucose Levels in Type 1 Diabetes.	2020	Finland	Quantitative Research	100	• The study revealed that elevated levels of perceived stress were associated with poorer adherence to dietary recommendations, particularly reflected in reduced consumption of fish, fresh vegetables, low-fat milk, and

						vegetable oils. • Among obese or overweight individuals, elevated blood glucose levels persisted irrespective of stress levels, whereas in lean participants, higher stress was correlated with diminished glucose control.
Bekele et al., 2024 [21].	Poor self-care practices and contributing factors among adults with type 2 diabetes in Adama, Ethiopia.	2024	Ethiopia	Quantitative Research	404	• Approximately 54% of participants exhibited poor self-care across domains such as physical activity, dietary practices, glucose monitoring, and foot care • Sociodemographic characteristics—including being divorced, limited diabetes-related knowledge, a lack of awareness regarding fasting glucose levels,

						and experiences of social isolation—were found to heighten the risk of inadequate self-care. • Adherence varied according to medication type, with individuals using oral agents alone or insulin alone showing a greater likelihood of poor self-care compared with those prescribed a combination of oral and injectable therapies.
Getie et al., 2020 [22].	Self-care practices and associated factors among adult diabetic patients in public hospitals of Dire Dawa administration, Eastern Ethiopia.	2020	Ethiopia	Quantitative Research	513	• Overall, 55.9% of participants demonstrated good self-care, although adherence specifically to dietary recommendations and physical activity was comparatively low. • The likelihood of practising good self-care was enhanced by higher income levels, greater diabetes-

						related knowledge, supportive family environments, and access to a glucometer at home.
Kassa et al., 2021 [23].	Self-care practice and its predictors among adults with diabetes mellitus on follow-up at public hospitals of Arsi zone, southeast Ethiopia.	2021	Ethiopia	Quantitative Research	301	• Approximately 53.3% of study participants demonstrated good self-care practices, while 46.7% exhibited poor adherence to recommended self-care behaviours. • Higher levels of practising better self-care were observed among participants with higher income, family history of diabetes mellitus, no history of diabetes-related complications, younger age, those who had glucometers and diabetes diagnosis duration not exceeding 10 years.
Jyoti Jyotsana	Self-care practices and	2024	India	Quantitative	90	• Adherence levels were relatively

et al., 2024 [24].	influencing factors among type 2 diabetes mellitus patients: A hospital-based cross-sectional study.			Research		low for diet at 11.1%, while 55.91% adhered to recommended physical activity and 50.5% followed foot care guidelines. • High adherence was recorded for medication use at 84.9%, and for monitoring practices at 83.8%.
Kassie et al., 2024 [25].	Self-care practices and their associated factors among adult diabetes mellitus patients in public hospitals of Sidama region, Southern Ethiopia: a cross-sectional study.	2024	Ethiopia	Quantitative Research	437	• Total adherence stood at 48.9%, with specific adherence rates of 82.6% for medication, 60.7% for diet, 14.1% for blood glucose monitoring, 32.5% for physical activity, and 54.6% for foot care. • Optimal self-care was facilitated by higher educational attainment, robust social support, participation in diabetes education programmes, and access to a glucometer.
Chittooru et al.,	Self-care practices and		India	Quantitative	727	• The study evaluated adherence

2022 [26].	their determinants among the diabetic population in rural Andhra Pradesh, India: A cross-sectional study.			Research		across five key self-care domains: diet, physical activity, medication use, blood glucose monitoring, and foot care. • Of the participants, 32.6% demonstrated good adherence, 64.2% exhibited moderate adherence, and 3.2% showed poor adherence. • Poorer self-care was associated with being female, single or widowed, having no formal education, and experiencing low socioeconomic status.
Lan et al., 2025 [27].	Socio-demographic and clinical determinants of self-care in adults with type 2 diabetes: a multicenter cross-sectional study in Zhejiang province,	2025	China	Quantitative Research	495	• .Chinese adults with diabetes showed persistently low adherence, particularly in relation to blood glucose monitoring and the management of complications. • Predictors of self-care adherence

	China.					comprised gender, nationality, the presence of complications, insulin use, recent engagement in diabetes education, geographic location, and levels of self-efficacy.

3.8 Data Synthesis

Data extracted from the selected studies were systematically organised to facilitate thematic synthesis. Study details, such as - author, publication year, country, study design, sample size, and key findings, were compiled into tables to offer a thorough summary of the evidence. Quality assessment scores from CASP and MMAT were included to assess study validity, and risk-of-bias judgments, at the domain level, were mapped and reported to help interpret the results.

Due to the predominantly qualitative nature of the data and the heterogeneity of study designs, no quantitative transformation or imputation methods were applied. Any missing or unclear data points in the individual studies were documented but not statistically corrected; these limitations were instead acknowledged during the synthesis and discussions, to highlight gaps in the evidence.

Applying a framework approach, the extracted data were coded and grouped iteratively into broader themes that reflected common self-care behaviours and influencing factors among adults with diabetes mellitus. This method enabled the integration of varied qualitative and quantitative findings without the numerical aggregation typical of meta-analyses. No formal assessment of reporting bias (such as publication bias or selective outcome reporting) was undertaken, as the included studies were heterogeneous, hence, meta-analysis was not conducted. In the synthesis process, more emphasis was placed on studies assessed as low risk from bias, while findings from moderate-risk studies were interpreted cautiously and mainly used to support or contrast patterns found in higher-quality evidence. A meta-analysis was not performed because of the diversity in the study designs and outcome measures. The certainty of the evidence was not formally evaluated using the GRADE framework due to the heterogeneity of study designs, variability in outcomes measured, and the predominantly qualitative nature of the included research. Instead, the review prioritised findings from studies assessed as presenting a low risk of bias.

A thematic synthesis method was employed to integrate results from the included studies, as it is well suited for identifying common patterns and themes across diverse study designs and data types, including qualitative, quantitative, and mixed-methods research. Due to significant variability in study designs, outcome measures, and reporting styles, a meta-analysis was not feasible, and therefore, no statistical assessments of heterogeneity, such as subgroup analyses or meta-regression, were performed. Likewise, heterogeneity prevented conducting sensitivity

analyses to test the robustness of findings. Instead, transparency was maintained by thoroughly reporting study characteristics, quality assessment scores, and providing a narrative synthesis that combined qualitative and quantitative findings.

3.9 Thematic analysis of studies included for review

The researcher analysed all 14 studies included for review and employed thematic analysis steps as outlined by Farmer and Farmer (2022) [28]. The thematic synthesis revealed six recurring domains of self-care, including their influencing determinants and factors. The researcher read all 14 studies thoroughly and repeatedly to identify codes from all the studies that would build the themes across all the studies. The researcher searched for themes from all the studies which would meet the purpose of this systematic review. Finally, the researcher generated codes from the themes picked up from all 14 studies, and they formed a pattern which was thematically presented.

3.9.1. The themes are as follows:

- General adherence to self-care practices (Abdallah et al., 2024; Brown et al., 2022; Bekele et al., 2024; Getie et al., 2020; Kassa et al., 2021; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022; Lan et al., 2025). [15] [14] [21] [22] [23][24] [25] [26] [27].
- Diet management (Wan et al., 2023; Ahola et al., 2020; Bekele et al., 2024; Getie et al., 2020; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022). [17] [20] [21] [22] [24] [25] [26].
- Foot care (Sezgünsay et al., 2025; Ang et al., 2024; Bekele et al., 2024; Getie et al., 2020; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022). [16] [18] [21] [22] [24] [25] [26].
- Physical activity (Abdallah et al., 2024; Sezgünsay et al., 2025; Bekele et al., 2024; Getie et al., 2020; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022). [15] [16] [21] [22] [24] [25] [26].

- Self-monitoring glucose (Bekele et al., 2024; Getie et al., 2020; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022; Lan et al., 2025). [21] [22] [24] [25] [26] [27].
- Medication adherence (Brown et al., 2022; Negash et al., 2023; Bekele et al., 2024; Getie et al., 2020; Jyoti Jyotsana et al., 2024; Kassie et al., 2024; Chittooru et al., 2022). [14] [19] [21] [22] [24] [25] [26].

3.10 Registration

This review was not registered prospectively in PROSPERO or any other database. The authors did not establish a predefined protocol before the initiation of the study and although this could reduce transparency, every stage of the review process has been thoroughly documented, to guarantee reproducibility. No deviations were observed from any pre-specified protocol, as no formal protocol had been established before the commencement of this review.

3.11 Results

The full-text articles assessed for eligibility were 56, however, 42 were excluded for not meeting the inclusion criteria. A full list of excluded studies with specific reasons is provided in Supplementary Table 1. The review incorporated a total of 14 studies. Effect estimates with precision (for example, confidence intervals) were not extracted as some of the included studies were descriptive or qualitative in nature; instead, summary proportions and thematic findings were presented. For quantitative research, adherence proportions to core diabetes self-care behaviours, such as diet, physical activity, foot care, blood glucose self-monitoring, and medication adherence, were extracted and summarised. In contrast, the qualitative and mixed-methods studies contributed thematic codes representing self-care behaviours and associated influencing factors, including diabetes knowledge, social support, income, and access to glucometers, which were narratively synthesised. These effect measures collectively provided the framework for integrating findings from diverse methodological approaches, and their results are presented in the subsequent sections organised according to identified themes.

The six key themes were derived from selected studies that discussed self-care practices among adults living with diabetes mellitus.

3.11.1 General adherence to self-care practices

Individuals diagnosed with diabetes are required to adopt significant lifestyle changes, including dietary adjustments, regular physical activity, adherence to prescribed medications, foot care, and management of associated health conditions. These practices, although they are essential for improving health outcomes and preventing complications, adherence to them remains consistently low (Ahmad & Joshi, 2023) [5]. Research has shown that Chinese individuals with type 2 diabetes often display inadequate self-care behaviours (Lan et al., 2025) [27]. Similarly, Jyoti Jyotsana et al. (2024) [24] found that adherence to dietary, foot care, and exercise routines was notably poorer compared to medication adherence. However, this study was assessed as having moderate risk of bias, meaning that the findings should be interpreted cautiously when compared with those from higher-quality studies. In Egypt, Abdallah et al. (2024) [15] reported that 73.5% of older adults with diabetes exhibited poor self-care practices, as measured by the Summary of Diabetes Self-Care Activities. This prevalence rate exceeds findings from Ethiopia, where Bekele et al. (2024) [21] documented that 54% of adults engaged in insufficient self-care practices. Most of the studies reporting low adherence to diabetes self-care practices were assessed as having low to moderate risk of bias, suggesting that the evidence describing generally poor adherence to recommended self-care behaviours among adults with diabetes is relatively consistent across studies with acceptable methodological quality.

Several factors have been independently associated with poor self-care practices among individuals with diabetes, including, being divorced, insufficient social support, limited knowledge about diabetes, and non-membership in diabetic associations (Bekele et al., 2024) [21]. Regarding the prevalence of good self-care practices, Chittooru et al. (2022) [26] reported the lowest rate at 32.6% among adults in India, followed by 48.9% in a study conducted in Southern Ethiopia (Kassie et al., 2024) [25]. Similar adherence rates were observed in studies by Getie et al. (2020) [22] and Kassa et al. (2021) [23], with 55.9% and 53.3% of participants practising good self-care, respectively. Factors commonly linked to improved self-care practices include high income, high education levels, and the availability of a glucometer at home (Brown et al., 2022; Getie et al., 2020; Kassa et al., 2021; Kassie et al., 2024) [14] [22] [23] [25]. Additionally, individuals with strong social and family support were found to have

significantly higher odds of engaging in effective self-care practices (Getie et al., 2020; Kassie et al., 2024). [22] [25].

3.11.2 Diet management

Dietary management is a critical component of self-care practices in diabetes mellitus, as it represents a key lifestyle modification essential for achieving improved health outcomes. Effective dietary practices are associated with positive effects on blood glucose control, including reductions in fasting blood glucose and glycated haemoglobin levels (Su, Hong, Zhou, Jian, Xu, Zhang, Zhu, & Wang, 2022) [29]. These systematic reviews highlight varying levels of adherence to dietary management across studies; for instance, Bekele et al. (2024) [21] reported that 56.3% of participants exhibited poor dietary self-care practices. Similarly, Getie et al. (2020) [22] found that approximately 54.9% of participants in Eastern Ethiopia did not adhere to recommended dietary guidelines, also a study in India revealed that only 11.8% of participants followed good dietary practices (Jyoti Jyotsana et al., 2024) [24], a significantly lower rate compared to the 60.7% adherence reported by Kassie et al. (2024) [25].

Chittooru et al. (2022) [26] discovered that dietary modifications most frequently adopted by participants are - consuming green leafy vegetables, completely avoiding sweets and fried foods, refraining from binge eating, and skipping meals. Among these, eating green leafy vegetables, was the most followed practice, while the complete avoidance of fried foods was the least adhered to. In a separate study, Wan et al. (2023) [17] reported that South Asian immigrants in Australia consumed lower amounts of grains, fruits, and dairy, with carbohydrate intake falling below daily Australian recommendations. These individuals viewed reducing carbohydrate consumption as a critical strategy for managing diabetes, however, they faced challenges in consistently adhering to diabetes-specific dietary practices, citing a lack of knowledge about organisational support. They, instead, depended on nutrition labels and support from family and healthcare professionals (Wan et al., 2023) [16]. In the context of stress levels among individuals with diabetes, Ahola et al. (2020) [20] reported that perceived stress was linked to reduced adherence to dietary recommendations in participants with type 1 diabetes, around the consumption of fish, fresh vegetables, low-fat dairy products, and vegetable oil-based cooking fats. Additionally, their study found that overweight or obese individuals exhibited elevated blood glucose levels, irrespective of stress levels, whereas lean

participants demonstrated impaired glycemic control when experiencing stress. These findings indicate that being overweight, independently, elevates blood glucose concentrations, regardless of stress, while a significant relationship exists between stress levels and glucose concentrations in lean individuals. Although these findings highlight important patterns in dietary behaviour, several studies examining diet management were assessed as having moderate risk of bias, particularly due to reliance on self-reported dietary behaviour. As a result, adherence levels may have been either under-reported or over-reported. Despite these limitations, the consistency of findings across multiple studies suggests that dietary adherence remains a persistent challenge for many adults with diabetes.

3.10.3 Foot care

Foot care is a critical component of diabetes self-care, with adherence levels and practices varying across different regions. Research by Getie et al. (2020) [22] and Kassie et al. (2024) [25] revealed that 61.2% and 54.6% of participants, respectively, adhered to recommended foot-care practices. In contrast, Bekele et al. (2024) [21] reported that 50.4% of respondents in Ethiopia demonstrated poor adherence to foot care. Regular foot washing emerged as a common practice in studies examining foot care (Getie et al., 2020; Chittooru et al., 2022; Ang et al., 2024) [22] [26] [18]. Furthermore, foot inspection was identified as a practised activity in studies by Getie et al. (2020) [22], Chittooru et al. (2022) [26], and Jyoti Jyotsana et al. (2024) [24], highlighting its role in effective foot-care management.

Chittooru et al. (2022) [26] found that a significant proportion of participants adhered to recommended foot care practices, although several predictors were identified as significantly associated with foot care behaviours. This included smoking status, the presence of a caregiver, the occurrence of diabetic foot ulcers, diabetes-related stress, and foot care knowledge. Similarly, Sezgünsay et al. (2025) [16] identified a significant relationship between demographic factors, self-efficacy, and self-care behaviours; their study indicated that women exhibited better foot-care behaviours, compared to men. Additionally, Sezgünsay et al. (2025) [16] reported that - individuals with higher education levels, those who received education on managing diabetes, attended regular three-month follow-up examinations, and engaged in regular exercise - demonstrated improved foot-care behaviours. Many of the studies assessing foot care were rated as low risk of bias, increasing confidence in these findings. However, the

cross-sectional nature of the studies means that causal relationships between influencing factors and foot care behaviour cannot be established.

3.10.4 Self-monitoring blood glucose

Monitoring blood glucose levels is essential in diabetes mellitus as it enables individuals to evaluate their overall glucose levels and take timely actions to achieve optimal glycemic targets (Ahmad & Joshi, 2023) [5]; however, adherence to recommended self-monitoring practices varied significantly across studies. Getie et al. (2020) [22] reported the highest prevalence of poor self-monitoring practices, with 78.5% of participants failing to adhere to guidelines. Similarly, Bekele et al. (2024) [21] found that 40.8% of diabetic adults exhibited poor adherence to self-monitoring. In contrast, Jyoti Jyotsana et al. (2024) [24] documented the highest adherence rate, with 83.8% of participants following recommended self-monitoring practices. This was followed by Chittooru et al. (2022) [26], who reported a 55.1% adherence rate. Conversely, Kassie et al. (2024) [24] observed the lowest adherence, with only 14.1% of participants practising recommended self-monitoring. These findings highlight significant disparities in self-monitoring behaviours among individuals with diabetes. Research indicates that Chinese adults with diabetes demonstrated suboptimal practices, particularly in self-care monitoring (Lan et al., 2025) [27]. Their study further identified key factors influencing adherence to this practice, revealing that female patients were less attentive to self-care monitoring. Additionally, participants with diabetes-related complications and those using insulin exhibited lower adherence to self-care monitoring practices (Lan et al., 2025) [27]. Some studies reporting low monitoring rates were assessed as having moderate risk of bias, particularly due to sampling limitations and self-reported measures. These limitations may have influenced the reported prevalence of monitoring practices. Nevertheless, similar findings were reported across multiple studies, suggesting that inadequate self-monitoring of blood glucose remains a common issue among adults living with diabetes.

3.10.5 Medication adherence

In this review, medication adherence was relatively high across studies examining this self-care domain. Getie et al. (2020) [22] reported the highest adherence rate, with 91.7% of participants following prescribed medication regimens. Similarly, Jyoti Jyotsana et al. (2024) [24] and Kassie et al. (2024) [25] documented comparable adherence rates, with 84.9% and 82.6% of participants adhering to prescribed medications, respectively. Additionally, Chittooru et al. (2022) [26] found that 62.9% of participants adhered to their prescribed medication, highlighting varying but generally positive trends in medication adherence among individuals with diabetes. Negash et al. (2023) [19] investigated insulin injection practices and found that participants generally adhered to recommended guidelines, including injecting in the correct area (with the abdomen being the most preferred site), rotating injection sites, administering insulin at a 90-degree angle, and maintaining proper insulin storage practices. Bekele et al. (2024) [21], however, reported that participants relying solely on insulin injections had higher levels of poor self-care practices compared to those using both insulin and oral medications. Among the least commonly-followed practices identified by Negash et al. (2023) [19] was the use of alcohol to clean the top of the insulin vial and the injection site.

Brown et al. (2022) [14] identified a distinct self-care practice related to medication among Jamaicans, characterised by the use of folk care. This approach involves herbal remedies, such as bush tea, moringa, and soursop leaf teas, as well as the consumption of natural fruits and vegetables, which are culturally-rooted strategies for managing diabetes mellitus. These practices are perceived as affordable and are often recommended by trusted community members. Their study also noted that these remedies are available in forms like capsules and juice mixtures, which are used alongside conventional medications, however, participants expressed concerns about pharmaceutical drugs, fearing potential harm, which reinforced their reliance on folk care to mitigate perceived risks (Brown et al., 2022) [14]. Most studies reporting high medication adherence were assessed as low risk of bias, increasing confidence in the reliability of these findings. However, because medication adherence was often self-reported, there remains a possibility of social desirability bias, which may have resulted in overestimation of adherence rates.

3.10.6 Physical activity

Physical exercise plays a crucial role in managing diabetes by improving blood glucose regulation, enhancing insulin metabolism, preventing complications, and enhancing quality of life (Ahmad & Joshi, 2023) [5]. Sezgünsay et al. (2025) [16] similarly emphasised that exercise helps prevent diabetes-related complications, through better blood glucose control, however, adherence to physical activity remains low compared to other self-care practices. Kassie et al. (2024) [25] reported the lowest adherence rate, with only 32.5% of participants engaging in regular physical activity, followed by 39.7% in a study by Jyoti Jyotsana et al. (2024) [24]. Chittooru et al. (2022) [26] reported a slightly higher adherence rate of 45%, whereas Bekele et al. (2024) [21] found that 49.4% of participants exhibited poor self-care practices related to physical activity. In contrast, Getie et al. (2020) [22] reported higher adherence to physical exercise, with more than half of the participants engaging in recommended daily activities, such as, at least 30 minutes of exercise, every day of the week. Their study also noted that individuals who exercised regularly demonstrated significantly higher self-efficacy levels and better foot self-care behaviours compared to those who did not. Similarly, Abdallah et al. (2024) [15] observed that participants who engaged in regular physical activities exhibited improved overall self-care practices. However, many of the studies reporting low levels of physical activity were assessed as having moderate risk of bias, particularly due to the reliance on self-reported physical activity measures. These methodological limitations may have affected the accuracy of reported activity levels. Despite these limitations, the consistent identification of low physical activity across multiple studies suggests that insufficient engagement in exercise is a widespread challenge among adults with diabetes.

4. Discussion of findings

Across various nations, diabetes management relies on standardised self-care practices that encompass - medication adherence, dietary regulation, physical activity, foot care, and self-monitoring of blood glucose - however, the extent of adherence to these practices varied widely.

This review found that medication adherence was the most consistently-followed practice, whereas foot care and self-monitoring of blood glucose, showed moderate adherence. In contrast, physical activity and dietary management were the least practised components of self-care. A systematic review by Khosravizadeh, Ahadinezhad, Maleki, Yousefy and Momeni

(2024) [30] similarly highlighted significant disparities in self-care adherence among patients with type 2 diabetes across countries, with medication adherence being the most commonly-followed behaviour, while foot care and blood glucose monitoring were the least practised. These findings underscore global inconsistencies in diabetes self-care and point to contextual influences, such as demographic, cultural, socioeconomic, and healthcare system differences that shape adherence patterns, within individual countries.

In the context of medication adherence, this review identified unique cultural practices, particularly among Jamaican participants, who reported using both conventional medicine and traditional remedies, such as bush tea and soursop. This combination reflected a belief that herbal treatments are effective for diabetes management and mitigate perceived risks associated with pharmaceutical drugs. Similarly, Suglo and Evans (2020) [31] reported that individuals with diabetes often used both herbal and conventional medicines, driven by misconceptions that diabetes can be cured or is caused by supernatural factors, such as divine punishment or witchcraft. These findings highlight the persistence of diverse cultural perceptions surrounding diabetes and the need for culturally-sensitive health education and awareness programs that promote scientifically-grounded management approaches.

This review found that, despite these cultural variations, medication adherence remains the most consistently practised form of self-care, with most studies reporting high compliance rates compared to other domains. These findings align with those of Chin, Lau, Lim, Wong and Ujang (2023), Shaikh, Kumari and Bahmanshir (2023), and Shah, Barot, Patel and Shukla (2025) [33] [34], who also identified medication adherence as the most commonly-practised aspect of diabetes self-management. High adherence rates are likely associated with increased disease awareness, patient knowledge, and positive beliefs about treatment effectiveness. Supporting this, Wibowo, Yasin, Kristina and Prabandari (2022) [35] found that regular follow-up visits, diabetes-related knowledge, and positive attitudes toward medications significantly enhanced adherence levels.

Other domains of diabetes self-care, particularly diet management, foot care, physical activity, and self-monitoring of blood glucose, however, remain suboptimal. The limited engagement in these activities contributes to inadequate overall self-care. There are similar findings in previous research, where poor adherence in these areas, was consistently reported (Molalign, Weharei, Kidanu, Gebrekidan & Gebregiorgi, 2021; Zewdie, Moges, Andargie & Habte, 2022;

Okafor et al., 2024) [36] [37] [38].

This review further identified several determinants influencing self-care adherence, including education level, income, diabetes knowledge, social and family support, as well as access to glucometers. Individuals with better socioeconomic conditions, stronger support networks, and greater knowledge of diabetes were more likely to engage in effective self-care practices, whereas those lacking these factors, demonstrated poorer adherence. These observations are consistent with prior evidence demonstrating the positive influence of social support, diabetes education, and socio-economic status on self-care behaviours (Ahmad & Joshi, 2023; Zewdie et al., 2022; Emire et al., 2022) [5] [37] [39]. Conversely, the absence of diabetes education and the presence of diabetes-related complications were identified as major barriers to effective self-care (Zewdie et al., 2022) [37].

Collectively, these findings reinforce the dire need of improving diabetes education and addressing barriers linked to poor adherence. Structured, community-based education programs tailored to local contexts could enhance understanding, promote behavioural change, and support sustained engagement in self-care practices, among adults with diabetes mellitus.

5. Implications of findings

The findings from this systematic review underscore the urgent need for targeted public health interventions that promote comprehensive self-care practices among adults living with diabetes mellitus. Strategies should prioritise education and behavioural support while addressing barriers that impede adherence. The persistently low-adherence rates, observed across self-care domains highlight substantial gaps in diabetes knowledge and self-management skills (Khosravizadeh et al., 2024) [30]. Strengthening diabetes education initiatives that empower individuals to actively engage in recommended self-care practices will help reduce morbidity and mortality while preventing long-term complications associated with poor glycaemic control.

Cultural beliefs and practices play a crucial role in shaping perceptions of illness and treatment choices. Clinicians and health educators should consider these socio-cultural dynamics,

especially regarding the use of herbal remedies alongside prescribed medications (Suglo & Evans, 2020) [31]. Integrating cultural awareness into diabetes education programs will help address misconceptions and discourage practices that lack scientific validation, hence, may pose health risks. Such culturally-sensitive, evidence-based approaches are essential for improving adherence and ensuring the sustainability of self-care interventions.

Medication adherence remains the most consistently practised self-care activity, however, optimal diabetes outcomes depend on the collective engagement in all domains, including dietary management, blood glucose monitoring, foot care, and physical activity. Each of these behaviours contributes meaningfully to metabolic control, weight regulation, improved quality of life, and the prevention of diabetes-related complications (Regufe et al., 2024) [40]. Consequently, public health strategies should promote an integrated approach that encourages adherence to all self-care domains, rather than focusing on medication alone.

To achieve this, health systems should develop comprehensive diabetes education and support programs, incorporating peer-based and group-learning models that facilitate shared experiences and mutual learning. Such programs create a supportive environment where individuals can exchange insights and motivation, particularly from those who have successfully managed or avoided complications (Zewdie et al., 2022) [37].

Finally, future research should employ diverse and contextually-appropriate methodologies to identify and address determinants that influence self-care adherence among adults with diabetes mellitus. Understanding these factors will support the design of tailored, evidence-based interventions that will overcome specific barriers and promote sustainable self-care behaviours, thereby, improving overall health outcomes and quality of life for people living with diabetes.

Limitations

This review has multiple limitations. Firstly, it included only studies published in English, thereby, possibly excluding equally pertinent evidence from non-English sources. Secondly, the search was confined to three databases, which may have led to the omission of studies indexed in other sources. Thirdly, variability in study designs and measurement instruments hindered direct comparisons between studies. At the individual study level, a large number of included studies were cross-sectional, limiting the ability to infer causality and increasing vulnerability to confounding factors. Lastly, the review was not registered prospectively, which could affect its transparency.

Strengths

This review integrated recent evidence from 2020 to 2025, encompassing both qualitative and quantitative research, and utilised two recognized appraisal instruments (CASP and MMAT) to strengthen the methodological rigour. Independent screening and data extraction were performed by two reviewers to minimise the potential for bias.

Conclusion

Diet management, medication adherence, self-monitoring of blood glucose, physical activity, and foot care remain the most widely practised and researched self-care activities among individuals with diabetes mellitus, globally. Significant disparities, however, were observed in the level of adherence to these practices across different regions. Medication adherence emerged as the most practised self-care activity, followed by lower levels of adherence to foot care, self-monitoring of blood glucose and diet management; physical activity, however, was the least adhered-to domain. Each of these self-care practices was influenced by specific factors, predictors, and demographic characteristics that shaped the nature of their implementation. These findings underscore the need for further research to identify strategies that can enhance the adoption and consistency in implementation of these self-care practices. Additionally, addressing the factors that negatively impact self-care is crucial for developing effective interventions, essential for achieving better health outcomes among adults living with diabetes mellitus.

Credit author statement

HEM, a Master's student, conceptualised the study, selected the methodology, and drafted the manuscript. MNS, the student's supervisor, validated the results and proofread the manuscript for accuracy and coherence.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could influenced the work reported in this paper.

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Data availability statement

All data gathered and analysed in this review are presented within the published tables of this manuscript. Supplementary extraction forms and summaries of quality appraisals can be obtained from the corresponding author, upon a reasonable request.

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2.2 Manuscript two

Manuscript title: **Self-Care Practices and Influencing Factors Among Adults with Diabetes Mellitus in Rural Vhembe District, South Africa: A Qualitative Study.** (Under review)

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Self-Care Practices and Influencing Factors Among Adults with Diabetes Mellitus in Rural Vhembe District, South Africa: A Qualitative Study

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ABSTRACT

Introduction:

Diabetes mellitus remains a major public health challenge in South Africa, with rising mortality and complications despite the availability of effective self-care strategies. This study explored and described self-care practices and influencing factors among adults with diabetes in Rural Vhembe District.

Methods:

A qualitative exploratory and descriptive design was employed. Fifteen adult participants were purposively recruited, and semi-structured interviews were conducted in Tshivenda. Data saturation was reached at the eleventh interview. Farmer's six-step thematic analysis guided data analysis.

Results:

Participants reported strong adherence to medication regimens but limited engagement in structured physical activity, diet management, foot care, and blood glucose self-monitoring. Major barriers included financial constraints, lack of social support, comorbidities, fatigue, and chronic pain. Key facilitators were family support, home-based care worker involvement, and self-motivation, which primarily reinforced medication adherence.

Conclusion:

Although medication adherence was satisfactory, comprehensive diabetes self-care practices were inconsistent. Financial hardship emerged as the predominant barrier, while community-based support systems, particularly home-based care workers, played a critical enabling role. Strengthening rural diabetes education programmes and integrating structured community support mechanisms may improve holistic self-care and health outcomes.

Key words: Adults, Diabetes mellitus, Practices, Self-care.

1. INTRODUCTION

Diabetes mellitus is a major global public health concern. The World Health Organisation (2024) [1] reports that approximately 820 million people worldwide were living with diabetes in 2022, with the steepest increase occurring in low- and middle-income countries. This chronic metabolic condition, characterised by impaired insulin production or utilisation, continues to pose a substantial health burden. Diabetes is also a significant contributor to cardiovascular disease, which remains the leading cause of death among individuals living with diabetes (American Diabetes Association, 2024) [2]. In addition to its physical complications, diabetes has considerable psychological consequences, with many individuals reporting diabetes-related distress and burnout (International Diabetes Federation, 2024) [3].

Effective management of diabetes is essential to prevent complications and improve quality of life. Control of blood glucose, blood pressure, and lipid levels plays a critical role in reducing the risk of cardiovascular disease among individuals with diabetes (ADA, 2024) [2]. Key management strategies include maintaining a balanced diet, engaging in regular physical activity, adhering to prescribed medications, and attending routine health screenings to detect and prevent complications (WHO, 2024) [1]. The IDF (2024) [3] further emphasises the importance of early diagnosis, patient education, and sustained support for both healthcare providers and patients. However, many countries continue to lack structured diabetes education programmes, including school-based initiatives, highlighting persistent gaps in support for effective diabetes self-care.

Evidence from various settings suggests that diabetes self-care behaviours remain suboptimal. In China, inadequate self-care among adults with type 2 diabetes has been associated with an increased risk of complications (Hu et al., 2022) [4]. Similarly, a rural study conducted in South India reported that although medication adherence was generally maintained, important self-care behaviours such as physical activity and foot care were frequently neglected (Durai et al., 2021) [5]. Comparable findings were reported in Eastern Ethiopia, where medication adherence and foot care were more commonly practised than regular physical exercise and routine blood glucose monitoring (Shiferaw Letta et al., 2022) [6].

In Sub-Saharan Africa, improving diabetes management requires context-specific strategies that address both individual and systemic factors. Evidence indicates that multifaceted

interventions, including patient education, family involvement, and improved access to monitoring devices, are critical for strengthening diabetes self-management within the region (Ageru et al., 2024) [7]. Sociodemographic factors have also been shown to influence self-care behaviours, highlighting the importance of tailored interventions that reflect local contexts (Hu et al., 2022) [4]. In South Africa, a cross-sectional study conducted in Tshwane reported persistently poor glycaemic control among individuals with diabetes, emphasising the need to strengthen adherence to recommended self-care practices through enhanced primary healthcare education and support (Zwane et al., 2023) [8].

Despite the growing body of research on diabetes management, studies conducted in rural Vhembe District have primarily focused on the experiences and challenges faced by caregivers of individuals living with diabetes. To the best of our knowledge, limited research has examined diabetes self-care practices and the factors influencing these behaviours among adults living with diabetes in this rural context. This study therefore seeks to contribute to the existing body of knowledge by exploring and describing diabetes self-care practices and the contextual barriers and facilitators influencing these behaviours among adults living with diabetes in rural Vhembe District.

2. Methods

2.1 Study design and setting

A qualitative approach employing an exploratory, descriptive and contextual design was used to examine self-care practices among adults living with diabetes mellitus, as well as the barriers and facilitators influencing these behaviours. This design enabled an in-depth understanding of participants' experiences within their everyday context. This approach was considered appropriate because it enables the exploration of participants' lived experiences, perceptions, and contextual influences that quantitative methods cannot adequately capture. The study was conducted in a rural community in the Vhembe District of Limpopo Province, South Africa. Limpopo comprises five districts: Capricorn, Vhembe, Sekhukhune, Waterberg, and Mopani, with Vhembe purposively selected due to the high burden of diabetes-related mortality among adults.

2.2 Participants and recruitment

Participants were recruited through non-probability purposive sampling based on their eligibility and willingness to participate. Inclusion criteria consisted of male and female adults aged 25–64 years, residing in the selected community, diagnosed with either type 1 or type 2 diabetes mellitus. Individuals with mental incapacity, those who declined consent, or those unavailable during data collection were excluded. Recruitment took place within the community at the local traditional authority, where potential participants were informed about the study. Home-based care workers assisted in identifying and referring individuals who met the inclusion criteria. Although both male and female adults aged 25–64 years were eligible to participate, recruitment of male participants was not successful. The study was conducted in a small rural community with an estimated population of approximately 1,000 residents. During the recruitment period, only a limited number of males were available, and those identified did not meet the inclusion criteria.

2.3 Data collection methods

In-depth data was collected individually, from participants, through conducting semi-structured interviews. Data was collected after the researcher received ethical clearance, for the study, from the University of Venda and permission to conduct the study from the local traditional authority. Participants were provided with an information letter detailing the study to be conducted, and were informed that participation was on a voluntary basis. Individual semi-structured interviews were conducted at the homes of the participants, upon scheduled appointments with participants. Two central questions were developed to guide the interview - *Can you please tell me how you care for yourself every day at home? and Explain factors that influence your self-care?* These central questions were then followed by probing questions to get further information from participants.

The researcher conducted the interviews in the local language, Tshivenda, which was the language preferred by the participants. Data saturation was reached after interviewing Participant 11, where the researcher observed that information was being repeated; however, the researcher continued collecting data until Participant 15 to confirm that indeed data

saturation had been reached. Data collection took place from 03 December 2024 to 11 December 2024.

2.4 Data processing and analysis

Data were analysed using Farmer's six-step thematic analysis framework, which guided the systematic identification and development of themes. This framework involves familiarisation with the data, generation of initial codes, identification of themes, review and refinement of themes, definition and labelling of themes, and production of the analytic report. All interviews were audio-recorded, and field notes were taken to capture relevant non-verbal cues. The researcher transcribed the interviews verbatim in Tshivenda and subsequently translated them into English. In the first step, the researcher repeatedly listened to the recordings and read the transcripts to gain comprehensive familiarity with the data. During the second step, initial codes were generated through detailed examination of each transcript. In the third step, related codes were grouped to form preliminary main themes and sub-themes reflecting participants' self-care practices, barriers, and facilitators. These themes were then reviewed and refined to ensure internal coherence and accurate representation of the dataset. Thereafter, themes and sub-themes were clearly defined and labelled. The final step involved producing the written report of the findings based on the completed thematic framework. To enhance analytic rigour, an independent coder reviewed and re-coded the transcripts, confirming alignment between the data and the identified themes.

2.5 Measures to ensure trustworthiness

Trustworthiness was ensured through strategies addressing credibility, dependability, confirmability, and transferability. Credibility was enhanced through in-depth, face-to-face interviews conducted in participants' homes, prolonged engagement during data collection, and triangulation of audio recordings with field notes to verify consistency of information. Dependability was supported by maintaining a documented audit trail of methodological and analytic decisions and by subjecting the transcripts and coding process to review by the supervisor and an independent coder. Confirmability was strengthened through verbatim

transcription, preservation of audio recordings, and independent re-coding to ensure that themes were grounded in participants' accounts rather than researcher bias. Transferability was addressed by providing a detailed description of the rural study setting, participant characteristics, sampling procedures, and analytic process to allow readers to assess applicability to similar contexts.

3. RESULTS

Socio-Demographic Profile

Table 1 summarises the socio-demographic characteristics of the 15 participants, all of whom were female due to challenges in recruiting male participants (as discussed in the study limitations). Participants were aged between 29 and 64 years, with a mean age of 58 years. All participants were unemployed. Most had primary education, a few had secondary education, while some had Adult Basic Education and Training (ABET), a South African adult literacy programme, and none had tertiary qualifications. Age, gender, education level, and employment status were collected to contextualise participants' self-care practices and explore potential associations with the study findings.

Table 1: Socio-Demographic Profile of Participants (N=15)

Participant Number	Age	Gender	Education Level	Employment Status
Participant 1	63	Female	Adult Basic Education and Training (ABET)	Unemployed
Participant 2	64	Female	Primary	Unemployed
Participant 3	54	Female	Primary	Unemployed
Participant 4	56	Female	Primary	Unemployed
Participant 5	64	Female	Primary	Unemployed
Participant 6	64	Female	No Formal Education	Unemployed

Participant 7	46	Female	Secondary	Unemployed
Participant 8	29	Female	Secondary	Unemployed
Participant 9	62	Female	ABET	Unemployed
Participant 10	61	Female	Primary	Unemployed
Participant 11	60	Female	Primary	Unemployed
Participant 12	62	Female	Primary	Unemployed
Participant 13	64	Female	No Formal Education	Unemployed
Participant 14	63	Female	No Formal Education	Unemployed
Participant 15	58	Female	Secondary	Unemployed

Themes and Sub-Themes

Analysis of the interview data generated five main themes related to diabetes self-care practices and the factors influencing them. The themes include medication use, physical activity, diet management, barriers to self-care, and facilitators of self-care. Each theme comprised several sub-themes that further explained participants' experiences and perceptions of managing diabetes in their daily lives. The identified themes and corresponding sub-themes are presented in Table 2, followed by illustrative quotations from participants.

Table 2: Main Themes and Sub-Themes

Main Themes	**Sub-Themes**

Medication Use	• Adherence to Taking Medication as Prescribed. • Collection of Medication.
Physical Activity	• Household Activities • Farming • Exercise
Diet Management	• Common Meals Consumed Daily. • Demonstrating Understanding of a Diabetic Diet
Barriers to Self-Care	• Lack of Support • Financial Constraints • Comorbidities • Fatigue • Chronic Pain
Facilitators of Self-Care	• Family Support • Home-Based Care Workers • Self-Motivation

Theme 1: Medication Use

The study revealed that taking medication was the most common self-care measure practised by adults living with diabetes mellitus.

Sub-theme 1.1: Adherence to Taking Medication as Prescribed

Participants reported taking their medication immediately after eating their breakfast and were able to demonstrate their knowledge of taking medication as prescribed, which included the number of tablets they should take at a given period.

Participant 1 said - *"I wake up at 7 am, prepare soft porridge and eat it towards 8 am, so that I can take my medication, yes, and take my medication in the morning and evening."* While Participant 2 said - *"I wake up in the morning and eat soft porridge before I can take my medication, I take my medication in the morning and afternoon and evening, I also use the injectable medication to manage my diabetes, I wake up at 6 am and get injected with my medicine, then take another shot at 6 pm and take tablets at 10 pm."*

Participant 8 also reported using both tablets and injectable medication to manage her diabetes and explained the procedure as follows: *"I wake up in the morning, right, I take my medication at 7 am and inject myself 36 units, and in the evening, I inject 18 units and eat food according to instructions from the dietitian."*

Participant 6 reported taking medication for two different chronic diseases -*"When I wake up in the morning, I make soft porridge and eat and drink my medication, I take two, in the morning and evening, but not at the same time because I have two diseases, I don't drink them at the same time, the ones for diabetes I take them in the morning and evening."*

Participant 12 also reported taking medication for two different chronic diseases - *"When I wake up I eat food, maybe soft porridge or anything that I can eat and take my pills, I take it at 7; one tablet for BP once a day, for diabetes mellitus I take one in the morning and one in the evening."*

Sub-theme 1.2 Collection of Medication

The findings of the study highlighted that most of the participants collect their medication at a clinic in Malavhuwe township. Participants reported that the clinic is not far from their village; however, they must travel to the clinic by bus since it's not a walking distance. They also reported that they sometimes fetch their medication from their village's home-based care centre, when the mobile clinic comes to provide services.

Participant 9 said - "*I fetch my medication at Malavhuwe clinic, I fetch them by myself, just like the day before yesterday I went to fetch them, and they even told me that I should skip one month and come back again after one month.*"

Participant 10 highlighted the fact that they can either collect their medication when the mobile clinic is around or visit the Malavhuwe clinic.

"*We get medication when the mobile clinic comes to the village; I also go to Malavhuwe, and the home-based workers sometimes come and check on us if we still have our medication and are still doing well.*"

Majority of the participants reported that they send people who are closely related to them to collect medication on their behalf. Participant 1 said, "*My daughter is the one who sometimes fetches my medication from the clinic; however, there are days when I have to go to the clinic myself so they can draw blood from my body.*"

Participant 6 shared similar information and said - "….*especially when it's time for my blood to be drawn from my body, they do tell us that at that month we should not send anyone to collect; we should go there in person because they need to assess us.*"

Participant 13 also highlighted the same situation - "*I even send people to go collect the medication, otherwise if I have to be assessed at the clinic, I hire a car to take me there.*"

Two participants reported collecting their medication at a different location from the rest.

Participant 1 reported - "*I use Tshififi clinic, it is far because I travel by bus; Malavhuwe is the closest clinic; however, I just prefer Tshififi clinic because they provide excellent services,"*

Participant 8 reported - *"I just go to Dzingaye and fetch my medication."*

Theme 2: Physical Activity

The participants' responses regarding their daily routines at home for self-care underscored the physical activities they typically engage in, independently. These activities are integral components of the self-care practices employed by adults with diabetes mellitus.

Sub-theme 2.1. Household Chores

Household tasks, including sweeping the yard, mopping the floor, and preparing meals, were activities that participants indicated they engaged in upon waking or after having breakfast. Some participants noted, however, that they received assistance from their children or helpers in performing these essential household duties, which are crucial for maintaining cleanliness and ensuring that meals are prepared.

Participant 7 stated that she can carry out her household responsibilities without encountering any ill-effects from her illness.

"I wake in the morning and do my household chores without any problem and without experiencing any pain. Since I have developed this illness, I am not a person who usually complains about pain. The medication that I take treats me well, and I take it in time, and I feel free, there is no bodily problem or pain that I have ever experienced."

Participant 8 said - "*I sweep the yard, mop the floor inside the house, and do some cooking."*

Participant 9 also stated that she engages in household tasks, such as sweeping the yard and cooking.

"What will you do though, I just sweep the yard only and prepare to cook food and eat so that I can later sit down, when the sun is burning."

Many of the participants reported that they received assistance from their children, daughter-in-law or a helper to assist them conduct their household tasks.

Participant 3 said - *"I prepare to cook, it is not that I cannot start a fire, so it's easy if someone starts the fire for me and fetches water for me from the pipe so that I can cook."*

Participant 4 said - *"What more can we do because we are old, I have a daughter-in-law, she is the one who does a lot of work, I cannot be running around with pots, I have someone who cooks for me."*

Participant 14 reported that she receives assistance from both her child and a helper.

"*I go and sit down there by the kitchen and wash a pot and prepare to cook while being seated, yes, I can cook, this girl (daughter) can sweep, and I also have a helper, just that she skips some days. She at times comes and mops the floor and cleans the house."*

Sub-theme 2.2. Farming

The study's findings indicated that farming was a prevalent activity among the majority of participants. Most participants reported engaging in maize ploughing, as it was the appropriate season for this task, while some also mentioned cultivating green leafy vegetables referred to as "*morogo*."

Participant 7 replied - "*Yes, I wake up at around 5 am, you see this yard? I am the one who ploughed this maize, from 5 am I start with farming. After farming, it's just that the sun is burning, I make sure that I cook, then later I take a bath, but I have a daughter who usually assists with cooking while I'm busy farming."*

Participant 14 also said - *"I plough maize, cook food for myself, and take my medication, I eat with morogo that I have planted in my small garden."*

Participant 15 similarly said - "*I wake up in the morning and do small farming, I have my daughter-in-law who does household chores, but when she is not around, I cook for myself."*

Participant 12 indicated facing some challenges in performing physical activities, however, she explained that she attempts to plough maize by using a chair for support, hence, she works while seated.

"Ahh, what can I do, but I can plough maize, but being seated on a chair, Yes, I can try, starting from here to there (showing the researcher her garden) I did it myself, being seated on a chair."

Sub-theme 2.3. Exercise

The study's findings revealed that only a few participants reported incorporating exercises into their self-care routines, and those who did, mentioned performing minimal activities, such as morning warm-ups, when she wakes up.

Participant 1 responded - "*I firstly do some warm-up exercises using my hands and legs (participant was demonstrating the warm-up exercises), I don't do a lot of household chores, all I do is exercise by also moving around, going up and down to the toilet marching like I am a police (the participant and the research both laughed)."*

Participant 5 reported - *"When I wake up, I firstly do warm-up exercises, eat some pap and take my medication, one tablet in the morning, the big ones and late in the evening I take another big white tablet at half past seven, so, in the morning half past seven and in the evening, half past seven."*

Participant 11 reported engaging in limited exercises designed to rehabilitate her painful leg; she also utilises a crutch for support.

"In the morning when I wake up, isn't it that you can see I use a crutch, I wake up and start by doing minimal exercises of my legs to feel if I can walk, leave my bedroom to the living room, and if I can move then I will walk and get outside of the house and walk to the toilet and come back to take a bath."

THEME 3: Diet Management

Participants' responses concerning their daily food consumption were notably similar, particularly regarding their breakfast, which they consumed prior to taking their medication. These responses, hence, indicated a lack of variety in their diets, as they primarily relied on their staple foods. A small number of participants demonstrated an understanding of a diabetic diet, as they were able to articulate the types of foods they avoided and the appropriate ways to manage and dish up their meals, as adults with diabetes.

Sub-theme 3.1. Common Meals Consumed Daily

The majority of participants indicated that they prepared soft porridge for breakfast, while others reported consuming leftover food, specifically *pap* and *morogo.* White *pap* is a significant staple for Black Africans, and many participants indicated that they consumed it more than once daily, including during the evening meal. This pattern suggests that adults living with diabetes have a high starch intake, which is not ideal for managing diabetes mellitus.

Participant 1 reported - "*I wake up at 7 am, prepare soft porridge and eat it towards 8 am, so that I can take my medication."*

Participant 6 also reported - "*When I wake up in the morning, I make soft porridge and eat and drink my medication."*

Participant 9 repeated preparing soft porridge for breakfast before taking their medication.

"I cook soft porridge and eat it so that I can take my medication. We cook soft brown porridge (mabele), but when the brown maize is finished, we use the normal white maize meal to make soft porridge."

Almost half of the participants reported eating *pap* as their breakfast meal, and they usually eat their *pap* with *morogo.*

Participant 5 added - "When I wake up, I firstly do warm-up exercises, eat some pap and take my medication, one tablet in the morning, the big ones and late in the evening I take another big white tablet at half past seven - in the morning half past seven and the evening half past seven."

Participant 13 revealed that she prefers eating *pap* as their breakfast, rather than drinking tea

"*I drink my medication at 8, I wake up and eat pap, when it is 8, I drink my medication.*

I eat pap at any time, the pills are the ones that I take in a prescribed period, I eat pap, I am not a person who likes tea."

Participant 11 also revealed eating *pap* as breakfast and later as her evening meal.

"After taking a bath, I take a piece of pap, hayyi no, when I am done bathing, I firstly take the yard broom and start sweeping, then after go and sit down and take a piece of pap and eat and then drink my tablets, yes, I eat pap in the morning and I eat it again during the day and in the evening, I eat morogo (delele), cabbage and mochina, any morogo, I eat and I also eat meat."

Participants indicated that they eat pap in the morning, although, they had a clear understanding that it is not ideal to consume a lot of *pap*.

"I wake up and eat leftover pap, and I just take a small portion of pap. You don't have to eat a lot of pap; you have to eat a small piece, you eat a lot of pap, the sugar elevates, yes, you don't have to eat until your stomach gets full."

Sub-theme 3.2. Demonstrating Understanding of a Diabetic Diet

A few of the participants were able to articulate how they engage in self-care by managing their blood glucose levels through their dietary choices. They demonstrated an adequate understanding of the relationship between food intake and blood glucose levels.

Participant 8 demonstrated her understanding when she said:

"*(laughing), You can eat food 5 times (demonstrated with her fingers) because, ... diabetes makes one to eat 5 times, and when it makes one to eat 5 times, these other foods are not allowed because some of the foods are not good for your health, but you will be forced to eat because you will not be having everything that is needed, as you can see, here is pap but sometimes I feel like…, eix, it is better to make soft porridge or its better I just drink water, that's what is diabetes mellitus. Diabetes mellitus is a condition which is in a way that is not understandable, I know that I should have something in my mouth so that my saliva is well taken care of, and not consume sugar and food that does not have salt. Ahhh, they do tell us there that we should eat, but we should not overeat, as this body will react in a certain way. But if you notice, diabetes has a moment whereby you should eat a lot, but when you eat a lot you feel that the glucose has elevated; but I must realise that I must eat small portion of food, when I feel hungry I will eat another small portion of food, then it will get better."*

Participant 8 was also able to articulate how she takes her meals daily and even reported that she received these dietary instructions from a dietitian.

"I wake up in the morning right, I take my medication at 7 and inject myself 36 units and in the evening, I inject 18 units and eat food according to instructions from the dietitian - I must not consume salt, sugar; I must not consume fat; I must not drink cold drinks; with cold drinks I must drink the no sugar one. Maybe 4(meals) because I eat small small portions. I wake up and eat soft porridge, without sugar, at 12, I eat pap, maybe at 3 pm when I start to feel hungry, I eat. At 9 in the evening I eat for the last time and sleep."

Participant 4 also explained her understanding of being cautious about food intake when living with diabetes.

"*I just take care of this illness myself, by not eating food with fats, and these sugars, I don't pour a lot of it and make it too sweet, that's what I know. I wake up and eat lef- over pap, and I just take a small portion of pap, you don't have to eat a lot of pap, you have to eat a small piece, if you eat a lot of pap, the sugar elevates; yes, you don't have to eat until your stomach gets full; yes in the morning, you eat your left-over pap, so that you can drink your medication; you only take them once, not more than once; I don't know because they are different, some people do drink them even during the day, they are different right?"*

Participant 13 was aware of certain foods not to consume, yet, she reported that she does not adhere to the correct dietary instructions because it has been a while since she was diagnosed with diabetes mellitus.

"I eat everything; one day I went to the hospital and they laughe; they gave me a small small piece of pap being rapped, my chicken doesn't have salt, and I told them that I cannot tolerate this food, and they said, 'isn't it that I have diabetes' and I said 'yes', so I told them that I wouldn't get full with this pap, I must eat pap and get full, and they were shocked and said I want to kill myself and I said it doesn't matter. I had long been diagnosed with diabetes mellitus since 1990 and it was before this girl's father was born and I told them that they should let me eat. I would not just die of diabetes, otherwise the moment would have arrived for me to die because it has been a while since I had been diagnosed with diabetes, I have been diagnosed since 1990. Yes, I even tell people that if I wake up dead one day, they should not say its diabetes mellitus, my day to die would have just arrived, so I tell them to give me everything, I will eat."

THEME 4: Barriers to Self-Care

Many participants identified several barriers to effective self-care that they experience daily. These barriers encompass - a lack of social support, financial constraints, comorbidities, exhaustion, and pain.

Sub-theme 4.1. Lack of Support

The study's findings reveal a deficiency in necessary resources for self-care among participants. Some participants, for instance, reported living alone, which exacerbated the lack of assistance and support needed to perform, effectively, daily self-care activities.

Participant 8, despite owning a glucometer for home glucose monitoring, reported an inability to consistently monitor her glucose levels due to the unaffordable cost of replacing the testing strips. This situation exemplifies resource deficiency that hinders a crucial self-care activity.

"*I do sometimes test my blood glucose here at home, just that I have since run out of glucometer sticks and they are expensive, 195 rands. I bought it with the sticks, and I buy the sticks at the pharmacy."*

A few participants reported living alone, which has resulted in a lack of in-home support for performing daily self-care activities.

Participant 14 reported that she does not receive any form of support to carry out her self-care activities since lives alone.

"*No, I live alone, my children are working far away from home."*

Participant 6 reiterated the point - *"My husband has passed away, I no longer have a husband, and my child has her place. She comes to visit me sometimes because I live alone."*

Sub-theme 4.2. Financial Constraints

Financial challenges were commonly cited by participants as a barrier to effective self-care. Some of the participants, unemployed and dependent on the SASSA grant, indicated that this financial assistance provided was inadequate to cover essential household costs.

Participant 5 responded - "*I have financial difficulties since I lost my husband. The money I receive from SASSA grant for these children is not enough to cover the household costs because I live with my grandchildren; for instance, when there is no water, I have to hire a car and buy water, and the money doesn't cover for enough food. I cannot afford some of the food items that I need."*

Participant 11 said - "….. *ahh just for a short period, I don't do them for a long period because I struggle with walking properly. Yes, I can say there are things that makes it difficult for me to take good care of myself because most of the time I have to use money so that I can take good care of myself. Yes, I receive social grant but it is not enough to cover the cost of food and other essential things that I need. Once you just buy maize meal, ahh… you are left with nothing."*

Sub-theme 4.3. Comorbidities

Some of the participants reported managing multiple chronic conditions; they frequently mentioned experiencing symptoms associated with comorbid hypertension. Common complaints included, swelling of the limbs and stress. These reported symptoms negatively impacted their engagement in daily self-care activities.

Participant 12 responded - *"When I wake up, I eat food, maybe soft porridge or anything that I can eat and drink my pills, One tablet, for BP once a day, for diabetes mellitus I take one in the morning and one in the evening. What will I do? My legs don't work; they don't allow me to move around for a long perio; they are always swollen."*

Participant 10 said - *"I am someone who has stress, mhh, I also have a heart disease, ahhh, it's been a while since I have received medication for this disease, it's a heart disease, right? So it is from the heart, when you are not well settled within your heart, it reaches a point whereby it causes a disease. I just face the condition myself because when we have visited the clinic they do tell us…, do you see that I have this medication here with me, (participant showed me her hypertension and diabetic medication) so that I don't take time or forget to drink my medication. When I wake up, I drink my medication, so even if I experience any problem, they should know how a person like me should be treated."*

Sub-theme 4.4. Fatigue

Fatigue was a commonly-reported barrier, restricting participants from performing daily self-care activities. Participants described persistent feelings of weakness and exhaustion that impaired their ability to function effectively.

Participant 3 reported -*"My body becomes exhausted easily. I become exhausted easily, when I cook; I can take more than 5 hours."*

Participant 6 said - *"I just wake up and make soft porridge, get outside and move around the yard; there is nothing else that I can do. You know diabetes; it makes one to feel always weak. I just move around just to strengthen my body and then I rest."*

Sub-theme 4.5. Chronic pain

Feelings of chronic pain was a commonly mentioned obstacle that hindered participants' daily self-care activities. Pain was reported to be triggered by strenuous activities in some cases, while some participants described the pain as originating in their limbs.

Participant 5 explained that she usually experienced pain when she performed certain household activities at home.

"*My body usually becomes painful, especially on my shoulders when I have done a lot of household activities, but if I have not done a lot of household activities, I don't feel any pain, No, I don't think I experience any problems, it is only the aches on my shoulders that I complain about when I have done a lot of work here at home. Doing activities such as cutting wood and ploughing maize, causes my shoulders to become painful."*

Other participants complained of pain and swelling that occurred in their lower limbs.

Participant 3 said - *"I do cook sometimes, I would be lying if I say I cook regularly, it is very much difficult because I cannot even plant anything in my yard, isn't it because of this illness? My body is very painful and my knees limit my movement, even standing up is very difficult. I fail to stand up fast; I stand up slowly and if I just sit like this, I would not stand up. I will have to lean by this window frame so I can stand up. It is exceedingly difficult to stand up."*

Participant 13 also reported - *"I have a problem with my legs; they burn and they are painful. Some days they swell; they can swell extremely; yes, I cannot do some of the activities. I even send people to go collect the medication, otherwise if I have to be assessed at the clinic, I hire a car to take me there."*

Theme 5: Facilitators Of Self-Care

Participants in this study were able to identify the factors that made self-care easier for them. The facilitators identified were - family support, assistance from home-based care workers, and

personal motivation. These elements were seen as crucial to enabling participants engage in daily self-care, thereby, ensuring that they do not neglect their health needs.

Sub-theme 5.1. Family Support

Family support was constantly mentioned as a positive influence on participants' self-care, as this helped them maintain their daily health routines. This support focused on - help with household chores like cooking, sending children to collect medication, and assistance with medication management, such as reminders to take pills on time.

Participant 5 said - "*I get support from my grandchildren; they usually assist with household activities by going to the dam to fetch water."*

Participant 7 also reported - *"after farming, it's just that the sun is burning, I make sure that I cook, then later I take a bath, but I have a daughter who usually assists with cooking while I'm busy farming."*

Similarly, Participant 15 responded - "*I wake up in the morning and do small farming, I have my daughter-in-law who does household chores, but when she is not around, I cook for myself."*

Participant 1 stated that her daughter provides support by collecting her medication from the clinic.

"*Yes, my daughter is the one who sometimes fetches my medication from the clinic. Sometimes there are days when I have to go to the clinic myself so they can draw blood from my body."*

Participant 2 also mentioned that her daughter is the one who assists by injecting her with the diabetes medicine.

"*Yes, my grandchild assists me with a lot of things; injecting me with medicine, and I have a primary caregiver who comes and checks up on me."*

Participant 12 expressed how her children support her financially with medical expenses, although they do not live with her.

"*My children support me because, when I feel sick, they send me money to go visit the doctor. They say I shouldn't wait for clinic services but go straight to the doctor and get assessed, so that the doctor can give me medication."*

Participant 7 also narrated how her children support her in carrying out her self-care activities, such as reminding her to take her medication on time.

"You see that girl? (participant pointing at her daughter), she is the one who reminds me when it is time to take my medication. When she realises that it is time to take my medication, she will shout and say 'mom it is that time', then I know I will have to take my medication. There is no way it can hit 8 o'clock and she not call me to remind about my medication."

Sub-theme 5.2. Home-Based Care Workers

Most participants said they also get support and encouragement from home-based care workers, in addition to their families. They explained that these workers provide them with personal and health care. These workers check on them; help with daily chores participants cannot do themselves and collect medication for them.

Participant 1 said - "*Yes, these home-based workers come and provide me with the necessary support to take care of myself. They teach me how to exercise and remind me of dates that I should collect my medication."*

Participant 5 added - *"Yes, we usually receive support from home-based car; we usually go to the centre where they train us on certain exercises, teach us traditional dances."*

Participant 2 confirmed - *"Home-based workers usually come and assist us with some daily needs, such as cooking for us and checking up on us."*

Participant 13 also mentioned how home-based workers provided them with the necessary support that they may need.

"No, but these ladies (home-based care workers) do come and check up on me, they sweep and clean my yard and house, then they leave."

Participant 11 acknowledged how home-based care workers motivate her to continue caring for herself.

"Women from home-based care are the ones who motivate me, and educate me on what time to take my medication. They remind me on the date I should take my medication and alert us on when the mobile clinic will come to the village so we can go fetch our medication, if I can't walk, the hom- based care workers come and take my clinic medication card and go fetch the medication on my behalf."

Sub-theme 5.3. Self-Motivation

Participants explained that they see self-care as necessary, thereby, showing that they have come to terms with their illness. This understanding provides them with the motivation to take care of themselves. Some participants also mentioned that their children inspire them to practice self-care.

Participant 6 said - *"I get motivation from being in good health and tell myself that I should accept the situation, and I have accepted. Because with diabetes you are always weak, just to wake up and sit here ahh, I also live with high blood pressure and have eye problems as well."*

Participant 4 responded - *"Isn't it that as a person who is faced with this situation, you should feel that, what must I do. When I wake up, I drink my medication; there is no day that you will ever do any double up and say today I don't drink, because on that day you won't know what will happen when you have not taken your medication. There is no way you can skip and say today you are not taking your medication, because during the day things go wrong; it could get worse and most people die because of this."*

Participant 11 said – *"...ahh, isn't it that I am the one faced with the condition, so I just remind myself when it's time to take medication, so that I should continue to take my medication."*

Participant 8 indicated that her children served as her primary source of motivation for continuing with her self-care practices, emphasising her perceived responsibility as a parent to care for them.

"(laughed), I think about my children and realise that if I don't take care of myself and pass away, who will look after my children? That is why I take good care of myself because I do it for my children."

4. DISCUSSION

Adults living with diabetes in this study demonstrated stronger adherence to medication compared with other self-care behaviours, while engagement in physical activity and dietary management appeared more limited. This pattern suggests that medication use may be prioritised because it is strongly emphasised during clinical consultations and is often perceived by patients as the most immediate and essential component of diabetes management. In addition, the presence of structured routines and supportive reminders from family members

or mobile phone alerts may further reinforce consistent medication use. Similar findings have been reported by Jyotsana et al. (2024) [9], who observed higher adherence to medication than to lifestyle-related self-care practices. Studies by Gow et al. (2024) [10] and Onwuchuluba et al. (2021) [11] further highlight the importance of family support, healthcare provider engagement, and routine-based behaviours in facilitating medication adherence. While this level of adherence is encouraging, reliance on pharmacological treatment alone may limit optimal diabetes control if lifestyle-related self-care practices remain inadequate.

Regular attendance at clinic appointments and consistent access to prescribed medication suggest that primary healthcare services play an important role in supporting treatment continuity among adults living with diabetes. Although some participants relied on family members or others to collect their medication, this practice may reflect adaptive coping strategies within rural households rather than poor engagement with care. Similar patterns have been observed in rural settings, where patients frequently rely on facility-based monitoring and routine clinic visits for diabetes management (Durai et al., 2021) [12]. Evidence from rural sub-Saharan Africa further indicates that while self-monitoring can improve glycaemic control, access to monitoring tools and adequate training remains limited in many resource-constrained settings (Ng'ang'a et al., 2022; Ruderman et al., 2023) [13][14]. Consequently, although regular clinic assessments remain essential for treatment review and medication adjustment, restricted self-monitoring may reduce patients' ability to detect fluctuations in blood glucose levels and make timely self-management decisions. These findings highlight the need for strengthened diabetes education programmes within primary healthcare settings, as well as policies aimed at improving access to affordable self-monitoring tools and patient-centred support for home-based diabetes management in rural communities.

Physical activity among participants appeared to occur mainly through routine daily tasks such as household chores and farming rather than through structured exercise. Although these activities indicate that participants were not entirely sedentary, they may not consistently meet recommended levels of moderate to vigorous physical activity required for effective diabetes management. The predominance of incidental activity may reflect limited awareness of the role of structured exercise in glycaemic control, as well as contextual constraints common in rural settings, including demanding household responsibilities and limited access to recreational facilities. The World Health Organisation (2020) [15] recommends that adults with type 2 diabetes engage in 150–300 minutes of moderate-intensity aerobic activity per week, or 75–150 minutes of vigorous-intensity activity. Similar barriers to regular exercise have been

reported in previous research, including inadequate motivation, low physical fitness, and limited opportunities for structured activity among adults with type 2 diabetes (Açıl & Bahar, 2019; Chee et al., 2025) [16][17]. These findings highlight the need for strengthened patient education and community-based interventions that provide practical guidance on integrating structured physical activity into daily routines and improving access to safe opportunities for exercise in rural communities.

Dietary management among participants appeared limited, with daily meals largely reliant on staple foods such as pap (maize porridge) and morogo (green leafy vegetables). Similar patterns of poor adherence to recommended dietary practices have been reported in other populations living with diabetes (Mutyambizi et al., 2020) [18]. Although a few participants demonstrated some understanding of diabetes-appropriate dietary practices, including portion control and meal timing, most relied heavily on carbohydrate-rich staple foods. This pattern may reflect socioeconomic and structural constraints commonly experienced in rural communities, where limited income and food insecurity restrict access to nutritionally diverse foods. Previous research has similarly shown that many individuals living with diabetes struggle to adhere to recommended diets due to financial limitations, cultural dietary habits, and inadequate nutrition knowledge (Wilson et al., 2024) [19]. In addition, low income and household food insecurity have been identified as significant predictors of dietary non-adherence among people with type 2 diabetes (Abose et al., 2024) [20]. Addressing these challenges may require strengthening nutrition education and promoting affordable, locally available food options to support improved dietary self-management among adults living with diabetes in rural communities.

Consistent with the findings of this study, effective diabetes self-care is often constrained by socio-economic and structural factors beyond individual knowledge or motivation. Financial limitations, insufficient social support, comorbidities, fatigue, and chronic pain can impede adherence to recommended self-management practices (Tuobenyiere et al., 2023; Vicente et al., 2020; Woodward et al., 2024) [21] [22] [23]. Even when patients have access to tools such as glucometers, the cost of test strips and reliance on limited social support programs, including the South African Social Security Agency (SASSA) grant, frequently restrict access to essential resources like nutritious food. Systematic qualitative evidence further underscores that financial costs of healthy eating, healthcare, and supplies are common barriers among socio-economically deprived populations, indicating that such challenges are not unique to this sample but reflect broader socio-economic inequities affecting diabetes management globally (Woodward et al., 2024) [23]. These insights suggest that interventions focused solely on

individual education or behaviour change may be insufficient unless they are paired with policies that reduce socio-economic barriers. For example, subsidising essential diabetes supplies such as test strips, strengthening social protection programmes to improve access to nutritious food, and integrating community-based support systems that address comorbidities and psychosocial stressors could enhance self-care adherence.

Lack of support networks emerged as a key barrier to effective diabetes self-care, highlighting that successful management extends beyond individual effort and requires sustained psychosocial resources. Adequate family and social support is critical for adopting lifestyle changes and sustaining healthier habits, as managing diabetes often necessitates substantial adjustments to daily routines (Portela et al., 2022) [24]. In this study, participants living alone frequently lacked essential in-home support, consistent with evidence showing that perceived social support is significantly associated with better self-care behaviours, including glucose monitoring and diet adherence among adults with type 2 diabetes (Hasan et al., 2024) [25]. Interventional evidence further indicates that programs designed to enhance social support, self-efficacy, and empowerment can improve self-care management and glycaemic outcomes, underscoring the practical value of support-focused strategies (Ibrahim et al., 2025) [26]. Consistent with evidence that patients with robust family or social networks demonstrate better adherence (Robat et al., 2020) [27], these insights suggest that strengthening social support should be a priority in diabetes management. Public health strategies could include structured family-centred education programmes, community peer support groups, and interventions that actively engage existing social networks to address both psychosocial and practical barriers to self-care.

Many participants in this study reported managing multiple chronic conditions, most commonly diabetes alongside hypertension, which disrupted their self-care routines. Physical complications such as swollen lower limbs and restricted mobility further hindered adherence to daily diabetes management practices. These observations align with prior research indicating that comorbidities, including hypertension, chronic kidney disease, and hypercholesterolemia, frequently coexist with diabetes and, when poorly managed, increase the risk of severe health complications (Hirsch et al., 2024) [28]. A recent systematic review found that multimorbidity is highly prevalent among adults with type 2 diabetes and significantly complicates self-management, underscoring the broad burden of multiple chronic conditions and the need for coordinated care strategies (Ferede et al., 2026) [29]. Critically, these findings emphasise that comorbid conditions are not merely coexisting diseases but actively impede effective self-care

by creating physical, cognitive, and logistical challenges. From a public health perspective, this underscores the need for integrated care strategies that address multiple chronic conditions simultaneously, rather than focusing solely on diabetes.

Fatigue appears to be a significant barrier to effective diabetes self-management. Although participants described persistent exhaustion that limited engagement in routine activities and reduced their capacity to perform essential self-care tasks such as meal preparation and physical activity, the implications of this finding extend beyond individual experiences. Kusnanto et al. (2022) [30] reported that fatigue associated with diabetes significantly diminishes quality of life and negatively affects functional capacity and financial stability. Similarly, an integrative review by Kuo et al. (2022) [31] found that fatigue in adults with type 2 diabetes is associated with reduced engagement in critical self-management activities, including physical activity and dietary regulation, thereby contributing to poorer health outcomes. Furthermore, a structural equation modelling study demonstrated that higher levels of fatigue were significantly associated with poorer diabetes self-management and mediated the relationship between psychological factors such as depressive symptoms, sleep disturbances, and self-care behaviours (Kuo et al., 2023) [32]. These findings suggest that fatigue may contribute to a reinforcing cycle in which reduced energy levels limit adherence to recommended self-care practices, potentially worsening glycaemic control and overall well-being.

Chronic pain appears to be a substantial barrier to effective diabetes self-management, particularly when it limits mobility and reduces individuals' capacity to engage in physical activity. While participants reported that pain was often aggravated by routine activities such as household and farming tasks, the broader implication is that persistent pain may significantly disrupt the adoption and maintenance of recommended lifestyle behaviours. Aldossari et al. (2020) [33] demonstrated a strong association between diabetes and chronic pain independent of demographic and metabolic factors, suggesting that pain may represent a common yet under-recognised comorbidity among individuals with diabetes. Similarly, Wackström et al. (2020) [34] reported that severe pain among older adults with type 2 diabetes significantly restricts physical activity, thereby limiting engagement in an essential component of diabetes self-management. Supporting this perspective, a study examining the effects of chronic back pain among individuals with type 2 diabetes found that patients experiencing significant pain were less likely to meet recommended physical activity levels and were more likely to experience psychological distress, further complicating diabetes management (Nicolau et al., 2021) [35]. These findings suggest that chronic pain may create a compounding barrier in which reduced

mobility and physical discomfort limit participation in self-care behaviours essential for optimal diabetes control. From a public health perspective, these findings underscore the importance of integrating pain assessment and management into routine diabetes care.

Family support, home-based care services, and self-motivation emerged as important facilitators of diabetes self-care. Although participants described receiving practical assistance from family members, such as help with medication administration, household tasks, and reminders, the broader implication is that supportive family environments can enhance individuals' capacity to sustain recommended self-management behaviours. Bukhsh et al. (2020) [36] highlighted that family members often assist with medication management and recognition of hypoglycaemia, while Enikuomehin et al. (2021) [37] identified spouses, children, and siblings as key sources of emotional and practical support for individuals living with diabetes. Likewise, perceived support from family members is significantly associated with optimal diabetes self-management behaviours and improved glycaemic control among adults living with diabetes (Onyango et al., 2022) [38]. These results highlight the need for diabetes programmes that actively involve family members in patient education and self-management support.

Home-based care services emerged as an important facilitator of diabetes self-management. Although participants described receiving personalised assistance from home-based care workers, such as support with household tasks, medication collection, reminders for mobile clinic visits, and routine wellbeing checks, the broader implication is that community-based care providers can help bridge gaps in access to formal healthcare services, particularly in rural or resource-constrained settings. Bopape, Mothiba, and Bastiaens (2019) [39] similarly reported that home-based care workers in rural communities provide a range of supportive services, including nutritional education, medication assistance, personalised care, and patient referrals. Recent evidence further supports the value of community health workers in strengthening diabetes management. A systematic review by Werfalli et al. (2020) [40] found that community health worker-led self-management programmes in low- and middle-income countries improved diabetes-related behavioural and clinical outcomes by enhancing patient education, treatment adherence, and ongoing support. Furthermore, research conducted among community health workers in South Africa highlighted their critical role in providing diabetes education, monitoring patients' health status, and facilitating referrals within primary healthcare systems (Heyns et al., 2025) [41]. These findings highlight the important

contribution of home-based care workers in reinforcing daily self-care practices and supporting continuity of care for individuals living with diabetes.

Self-motivation, particularly when grounded in acceptance of the diagnosis, appears to play an important role in enabling individuals to actively engage in diabetes self-management. Although participants indicated that accepting their condition helped them take responsibility for daily self-care practices, this finding suggests that psychological readiness and internal motivation may be critical determinants of sustained behavioural change in chronic disease management. Amorim et al. (2019) [42] similarly emphasised that individuals with type 2 diabetes benefit from understanding their condition, maintaining motivation and a positive outlook, and receiving family and social support. Recent evidence further highlights the importance of motivational and psychological factors in diabetes care. For instance, a study examining the relationship between self-efficacy and self-care among individuals with type 2 diabetes reported that higher levels of self-efficacy were strongly associated with improved engagement in self-care behaviours such as physical activity, diet adherence, and glucose monitoring (Fereidooni, et al., 2024) [43]. Furthermore, research exploring cognitive beliefs and mindsets among people with type 2 diabetes found that stronger self-efficacy and positive health beliefs promote resilience and proactive self-management behaviours, which are essential for maintaining long-term glycaemic control (Lo et al., 2023) [44].

Limitations of the study

This study was conducted in a small rural community with an estimated population of approximately 1,000 residents. Recruitment of male participants was unsuccessful, as few were available during the data collection period and those identified did not meet the inclusion criteria. Consequently, all participants were female, limiting the ability to explore gender-based differences in self-care practices. Despite this limitation, the study objectives were achieved. The findings highlight the need for further research in other villages within the Vhembe District to generate more comprehensive, generalisable evidence.

Conclusion

The study found that while adults with diabetes mellitus generally adhere to medication regimens, there are notable gaps in implementing physical activity regimes, dietary management, foot care, and self-monitoring of blood glucose. Barriers such as - limited social support, financial constraints, comorbidities, fatigue, and chronic pain - hinder effective self-care, especially for those living alone or with limited resources. Facilitators like - family support, home-based care, and self-motivation - significantly contributed to medication adherence. Overall, there is a critical need to improve knowledge and implementation of comprehensive self-care practices among adults with diabetes. Efforts should focus on creating tailored educational initiatives and community-based support to close knowledge gaps, improve self-care abilities, and overcome obstacles, especially in areas such as, exercise, nutrition, and regular blood-glucose monitoring.

Author's contributions

H. E. M. led the conceptualisation, study design, data collection, analysis, interpretation, and was primarily responsible for drafting and revising the manuscript. N. S. M. provided supervision, contributed to the conceptualisation and study design, and critically reviewed and revised the manuscript. Both authors participated in the validation and proofreading of the final manuscript.

Ethics statement

Ethical clearance for the study was obtained from the University of Venda Research Ethics Committee (ethical clearance number FHS/24/PH/33/1811) prior to data collection. Permission to conduct the study in the selected rural community was also granted in writing by the local traditional authority. All participants received an information sheet outlining the purpose, procedures, and ethical considerations to be adhered to in the research; as well, the study protocol was explained in detail. Written informed-consent was obtained from each participant, and participation was entirely voluntary. Additional consent was secured for audio-recording the interviews. All data were treated with strict confidentiality; hard copies are stored securely

in a locked metal cabinet, while electronic files are password-protected and accessible only to the researcher and supervisor.

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Conflict of interest

The authors declare no conflict of interest.

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Data availability statement

Data that supports the findings of the study is available upon request from the corresponding author, H.EM.

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SECTION C
SUMMARY, LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

3.1. INTRODUCTION

This study explored the self-care practices adopted by adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province. This section provides a summary of the findings, as well as outlining the limitations, recommendations and conclusion of the study. The findings of the study guided the development of recommendations for future action.

3.2. SUMMARY OF THE STUDY

The purpose of the study was to explore the self-care practices, among adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo Province. The main research questions which underpinned this study were: *What self-care practices are employed by adults living with diabetes mellitus? What are the barriers and facilitators associated with implementing self-care practices among adults living with diabetes mellitus?* The first chapter of this study outlined the following components of the study: the introduction, background, purpose, objectives, research questions, theoretical framework, the rationale and significance of the study. Chapter two outlined the methodology of the study. A qualitative research approach was adopted with an exploratory, descriptive and contextual design.

The study employed a non-probability, purposive sampling technique, as the researcher specifically sought individuals within the population who met the inclusion criteria. A total of 15 participants were selected, with the sample size determined by the point of data saturation. Semi-structured interviews were conducted individually with participants in their homes to gather detailed information. The interviews were guided by the two primary questions, supplemented by probing questions to elicit clarity of points and for deeper insights. The collected data was securely stored and analysed using thematic analysis. Ethical principles were upheld throughout the research process to ensure protection and respect for the participants; in addition, the researcher ensured trustworthiness of the results through the concepts of credibility, dependability, confirmability, and transferability. This chapter also includes the recommendations based on the findings.

Medication use

The findings of the study indicated that all participants considered prescribed medications effective for managing their diabetes mellitus. Participants reported using only conventional medications, reflecting strong adherence to their prescribed regimens. Medication adherence stood out as a prominently practised aspect of self-care in this study, consistent with observations in multiple other studies. The availability of free healthcare services, including chronic medications at no cost, played a pivotal role in enabling participants to consistently access and adhere to their treatments. The absence of a permanent clinic in the village, seemed not to have any negative consequences as most participants reported no difficulties in obtaining medications, as they utilised healthcare facilities in neighbouring villages or mobile clinics that visited the area regularly. This commitment to adherence highlights the need for ongoing reinforcement by healthcare providers, to sustain this beneficial practice.

Diet management

Adherence to recommended dietary guidelines emerged as a challenge among participants, primarily due to insufficient knowledge about appropriate nutritional practices for individuals with diabetes mellitus. Financial constraints were identified as a significant barrier, limiting participants' ability to purchase diverse, nutritionally beneficial foods. These findings underscore the necessity of implementing targeted health education initiatives to equip adults with diabetes with evidence-based knowledge and practical strategies for effective dietary management. Allied healthcare professionals, particularly dietitians, could play a pivotal role in delivering educational interventions to enhance best practices in this critical self-care domain. This aspect holds particular urgency, as dietary management substantially influences glycemic control, through strategic food consumption.

Physical activity

The majority of participants reported engaging in household chores and farming as part of their daily routines and while it is commendable that these individuals do not lead entirely sedentary lifestyles, a significant knowledge gap was observed regarding the cruciality of structured exercise in diabetes mellitus management. Only a small proportion of participants mentioned performing morning warm-up exercises, as most of them demonstrated limited awareness of recommended physical activities for individuals with diabetes mellitus. These findings clearly indicate the necessity for the Department of Health to design and implement tailored physical fitness programs aimed at educating and promoting appropriate exercise regimens among adults living with diabetes mellitus.

Barriers to self-care

The primary barriers to self-care identified in this study were - insufficient family support, financial constraints, existence of comorbidities, chronic pain, and fatigue. These challenges were reported to interchangeably affect various self-care domains, particularly, dietary management and physical activity. The known impact of lack of familial support demonstrates the potential value of diabetes-specific support groups, in enhancing effective self-care practices. Financial limitations, a globally-recognised obstacle to self-care adherence, necessitate government-level interventions, hence, additionally, further research is required to develop cost-effective strategies for advancing self-care practices. Regarding comorbidities, chronic pain, and fatigue, which predominantly hinder physical activity, there is a critical need for research into management approaches and tailored strategies to enable individuals with these conditions to engage in accommodating physical activities.

Facilitators to self-care

The majority of participants reported receiving support from family members and home-based care workers; both of whom were identified as playing a significant role in assisting and encouraging individuals with diabetes to maintain self-care practices. Participants acknowledged that family members provided crucial assistance, such as collecting and administering medications, and assisting with necessary household chores. This underscores the necessity of integrating family members into diabetes care and education programs within healthcare settings. Home-based care workers were described as the most accessible healthcare providers in the village, regularly visiting participants to monitor their well-being, collect medications for some individuals, inform them about mobile clinic services, and assist with household chores, for those facing daily challenges. Their contributions highlight the critical role they play in supporting self-care management for adults with diabetes mellitus. Consequently, it is essential to provide these workers with specialised training in diabetes management to enhance their capacity to promote effective self-care practices. Additionally, while some participants demonstrated self-motivation in sustaining positive self-care behaviours, ongoing encouragement and reinforcement from healthcare professionals remain vital to maintaining participants' commitment to these practices.

3.3. CONCLUSION

The findings of the study reveal that adults with diabetes mellitus in Nweli Village engage in standard self-care practices, although knowledge gaps were identified. Most participants reported adherence to prescribed medications, physical activity, and dietary management, however, medication adherence was notably strong, whereas physical activity and diet management require improvement due to identified knowledge deficits and practical challenges. Barriers such as financial constraints, inadequate support, comorbidities, chronic pain, and fatigue significantly impacted self-care, particularly in the physical activity and dietary domains. These findings underscore the need for health education programs addressing these knowledge gaps, focusing on underutilised practices, such as, self-monitoring of blood glucose and foot care. Such programs should also involve family members and home-based care workers, who emerged as key facilitators of self-care practices in this population, to enhance overall diabetes-management efficacy.

3.4. RECOMMENDATIONS

The following recommendations are made based on the findings of the study:

- It is recommended that the National Department of Health design and implement structured diabetes self-management education programmes that can be delivered both at primary healthcare facilities and within community settings. These programmes should focus on improving patients' knowledge and practical skills related to diet, physical activity, medication adherence, foot care, and blood glucose monitoring. Education should be provided through regular group sessions at clinics as well as through community outreach activities.
- It is recommended that the Department of Health introduce systems within primary healthcare facilities to ensure that diabetic patients receive glucometers and a monthly supply of test strips together with their medication where clinically indicated. This will support regular self-monitoring of blood glucose levels and enable patients to identify early changes in their glycaemic control.
- Community-based healthcare workers should be actively involved in supporting diabetes self-management at the household level. Within South Africa, the Ward-Based Primary Health Care Outreach Team programme provides an important platform for delivering such services. Home-based care workers and community health workers should receive additional training in diabetes management and self-care support, enabling them to

provide health education, monitor adherence to treatment, and support patients during routine household visits.

- Families of diabetic patients should be included in diabetes education programmes, as they often provide the primary support system within the home environment. Educating family members about diabetes management, medication adherence, and appropriate dietary practices can improve the ability of patients to maintain recommended self-care behaviours.
- Clinics and hospitals should ensure that all diabetic patients are referred to a dietitian for dietary counselling tailored to their socioeconomic circumstances. Dietitians can assist patients in identifying affordable and culturally appropriate dietary options that support glycaemic control and reduce the risk of complications.
- Patients with diabetes who experience chronic pain or mobility limitations should also be referred to physiotherapists for assessment and management. Appropriate physiotherapy interventions may help patients engage in safe physical activity and maintain functional mobility, which is important for effective diabetes management.
- Patients with diabetes who suffer from chronic pain should also receive referrals to physiotherapists for possible management solutions, which would help them participate in physical activities that are relevant and manageable for their condition. Healthcare providers should ensure that patients receive education on the management of co-existing chronic conditions, as unmanaged comorbidities can interfere with the ability of individuals to perform recommended diabetes self-care practices.
- Community-based health outreach initiatives should be strengthened within rural villages to promote awareness of diabetes self-care practices and encourage early prevention of complications. These outreach activities may include community health talks, screening campaigns, and home visits conducted through primary healthcare outreach teams.
- This study examined self-care practices among adults with diabetes in one village within the Vhembe District. Further research should therefore be conducted in other rural communities within the district to compare findings and enhance the

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ANNEXURE A: ETHICAL CLEARANCE

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Ms EM Hamese

STUDENT NO:
24052229

PROJECT TITLE: **Self-care practices among adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo province.**

ETHICAL CLEARANCE NO: **FHS/24/PH/33/1811**

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Prof NS Mashau	UNIVEN, Public Health	Supervisor
Ms EM Hamese	UNIVEN, Public Health	Investigator-Student

Type: Masters Research
Risk: *Minimal risk to humans, animals, or environment* (Category 2)
Approval Period: November 2024 – November 2025

The Human and Clinical Trials Research Ethics Committee (HCTREC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project.
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project,
  - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
  - Any unethical principles or practices of the project are revealed or suspected.
  - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
  - The required annual report and reporting of adverse events was not done timely and accurately,
  - New institutional rules, national legislation or international conventions deem it necessary.

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: November 2024

Name of the HCTREC Chairperson of the Committee: Prof. M. Radzilani

Signature: _____

UNIVERS OF VEND
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ANNEXURE C: INFORMED CONSENT FORM

RESEARCH ETHICS COMMITTEE

UNIVEN Informed Consent

LETTER OF INFORMATION

Title of the Research Study: Self-care practices among adults living with diabetes mellitus, in a selected village of the Vhembe District, Limpopo province.

Principal Investigator/s/ researcher: (E.M. Hamese*, BCur*)

Co-Investigator/s/supervisor/s : (Prof. N.S. Mashau)

Brief Introduction and Purpose of the Study: Diabetes mellitus is the second leading cause of death in South Africa due to its adverse impact. It is a long-term condition that needs effective management to avoid complications and other related issues. The proposed study seeks to explore self-care practices among adults living with diabetic mellitus, in a selected village of the Vhembe District, Limpopo Province.

Outline of the Procedures: Participants who agree to sign the consent form will suggest a comfortable and convenient environment for the data-collecting interviews to be conducted. Every participant meeting the inclusion criteria will be interviewed and is expected to provide answers to the interview questions, however, if participants require clarification on any of the questions posed, they are welcome to request it. The researcher will use an interview guide

to direct the questions in collecting data, by asking relevant questions that meet the purpose of the study. The researcher will utilise an audio recording device; only after obtaining verbal consent from participants. The interview is expected to take around 20-30 minutes. Every individual will have this time frame to participate in the interview, however, if the participant consents and new information is being produced, additional time will be permitted for the session.

Risks or Discomforts to the Participant: This study is non-experimental, thus, it is not expected to pose any physical danger, however, participants will be allowed to pause the interview if they experience emotional reactions while responding to certain sensitive questions. Participants will also be guaranteed the option to choose not to respond to any questions, without any form of penalty, if they believe they infringe upon their rights.

Benefits: Participants will be made aware that participating in this study should be a voluntary decision; therefore, they should not anticipate any immediate advantages from being involved in the study. Participants will receive guaranteed indirect benefits in the form of an opportunity to learn about practising effective self-care, thereby, enhance their knowledge of diabetes mellitus.

Reason/s why a Participant May Withdraw from the Study: Participants may withdraw from the study, voluntarily, if they feel that they can no longer proceed with the study.

Remuneration: Participants will not receive any money or other perks related to their involvement in the study.

Costs of the Study: Participants are not expected to provide any form of financial contribution to this study

Confidentiality: Data obtained from participants will be kept confidential and secure; it will only be accessible to the researcher and supervisor. The results of this research will not be linked to the identity of participants who took part in the study.

Research-related Injury: The study will not utilise any form of instruments or heavy machinery that may cause any injury to participants; therefore, no physical research-related injury is expected to occur.

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

(Supervisor: Professor Ntsieni Mashau) Please contact the researcher (Hamese Elizabeth Mmapula, cell no: 0824782087), my supervisor (Tel no: +27 77 602 4331). University Research Ethics Committee Secretariat on 015 962 9058 / Vanecia.Khoza@univen.ac.za

Complaints can be reported to the University Research Ethics Committee Secretariat on 015 962 9058 / Vanecia.Khoza@univen.ac.za or Whistle blowing Ethics Hotline Tollfree Telephone number: 0800212755 Email.univenhotline@tipoffs.com.

General:

Potential participants must be assured that participation is voluntary and the approximate number of participants to be included should be disclosed. A copy of the information letter should be issued to all participants. The information letter and consent form must be translated and provided in the primary spoken language of the research population.

CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, (*Elizabeth Mmapula Hamese*) about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _,

- I have also received, read and understood the above written information (*Participant Letter of Information*) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis, will be anonymously processed into a study report.
- Given the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during this research which may relate to my participation will be made available to me.

Full Name of Participant Date Time Signature

I, …… …… ……
……..

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

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

Full Name of Researcher

…… Date…… Signature……

Full Name of Witness (If applicable)

…… Date …… Signature……..

Full Name of Legal Guardian (If applicable)

…… Date…… Signature……

Please note the following:

Research details must be provided in a clear, simple and culturally-appropriate manner and prospective participants should be helped to arrive at an informed decision by use of appropriate language (Grade 10 level- use Flesch Reading Ease Scores on Microsoft Word), selecting of a non-threatening environment for interaction and the availability of peer counseling (Department of Health, 2004)

If the potential participant is unable to read/illiterate, then a right thumb print is required and an impartial witness, who is literate and knows the participant (for example, parent, sibling, friend, or pastor) should verify in writing, duly signed that informed verbal consent was obtained (Department of Health, 2004).

If anyone makes a mistake completing this document, for example a wrong date or spelling mistake, a new document has to be completed. The incomplete original document has to be

kept in the participant's file and not thrown away, and copies thereof must be issued to the participant.

References:

Department of Health: 2004. *Ethics in Health Research: Principles, Structures and Processes*

http://www.doh.gov.za/docs/factsheets/guidelines/ethnics/

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ANNEXURE D: INTERVIEW GUIDE

TITLE: ***''Self-care practices among adults living with diabetes mellitus in a selected village of the Vhembe District, Limpopo province".***

Demographic Information

1. How old are you?
2. what level of education have you completed?
3. Are you married?
4. How long have you been diagnosed with diabetes mellitus?

Central questions

''Can you please tell me how you care for yourself every day at home"

''Explain factors that influence your self-care"

Guiding questions

1. What are the specific self-care activities you perform at home daily?
2. How much time do you typically spend on self-care activities at home each day?
3. Have you ever experienced any barriers to practicing self-care activities? If so, what were they?
4. Are there any specific resources or support systems that you find helpful in caring for yourself daily?
5. How do you currently stay motivated to maintain your self-care practices?

ANNEXURE E: INTERVIEW TRANSCRIPT

ENGLISH VERSION

PARTICIPANT 13

Gender: Female

Age: 64

Education level: No education/ Never went to school

Period of diagnosis: 34 years

Marital status: Not married

Employment status: Unemployed

R- Researcher

P- Participant

R: Can you please tell me how you care for yourself every day at home

P: I drink my medication at 8, I wake up and eat *pap*, when it hits 8, I drink my medication

R: How many tablets do you take?

P: Morning and evening, 8 in the morning and 8 in the evening

R: Ohh so then *pap*…

P: I eat *pap* at any time, the pills are the ones that I take in a prescribed period

R: Ohh, so you said you eat *pap* in the morning before taking your medication

P: I eat *pap*, I am not a person who likes tea

R: Ohh, so you eat *pap* in the morning and evening

P: Yes

R: So, you eat the brown one or the white

P: The white pap

R: So, which activities do you usually do here at home, from morning until evening?

P: I go and sit down there by the kitchen, and wash a pot and prepare to cook and cook while being seated, yes, I can cook.

R: Who assists you with other household activities?

P: This girl (granddaughter) can sweep, and I also have a helper, but she skips some days; she at times comes and mops the floor and cleans the house.

R: What barriers do you encounter that hinder you from practising self-care?

P: I have a problem with my legs

R: What is wrong with your legs?

P: They burn and they are painful, some days they swell, they can swell in an extreme manner.

R: Do you ever consult at the clinic?

P: I go to the clinic every month to collect my medication.

R: Do you report the problem with your legs, though?

P: Yes, they know.

R: So this problem is the one that restricts you from performing other activities?

P: Yes, I can't do some of the activities

R: Do you receive any form of support that assists you with practising your self-care activities, such as taking your medication on time?

P: I even send people to collect the medication; otherwise, if I have to be assessed at the clinic, I hire a car to take me there.

R: Do you have any people who supports you here at home?

P: It's just the two of us.

R: What motivates you to continue practising self-care?

P: I just have to continue taking my medication on time.

R: So you don’t experience any difficulties with taking your medication, and it treats you well?

P: No, I do get my medication, and they treat me well because I can feel that my body is in good health, it's just these legs.

R: So what type of food do you usually eat?

P: I eat everything, one day I went to the hospital and they laughed, they gave me a small small piece of pap being wrapped, my chicken doesn't have salt, and I told them that I can't tolerate this food, and they said isn't it that I have diabetes, and I said yes.

R: Ooh, they said you shouldn't consume salt and sugar?

P: Yes, so I told them that I wouldn't get full with this *pap*, I must eat *pap* and get full, and they were shocked and said I want to kill myself, and I said it doesn't matter.

R: Ooh (laughing)

P: I had long been diagnosed with diabetes mellitus since 1990 and it was before this girl's father was born and I told them that they should let me eat, I won't just die of diabetes, otherwise the moment would have arrived for me to die because it's been a while since I had been diagnosed with diabetes, I have been diagnosed since 1990

R: Ooo, so you were diagnosed in 1990?

P: Yes, I even tell people that if I wake up dead one day, they should not say it's diabetes mellitus, my day to die would have just arrived, so I tell them to give everything, I will eat it.

R: (laughing with the participant)

P: Just give me so that I can just eat.

R: So you don't usually experience any problematic symptoms related to diabetes?

P: No, even if I want tea, I do drink and do pour sugar, even with salt, I do pour and eat.

R: Do you receive any support from the community to practice your self-care activities?

P: No, but these ladies (home-based care workers) do come and check up on me.

R: Ohh, so what exactly do they do when they come to check up on you?

P: They sweep and clean my yard and house, so then they can leave.

R: Which clinic do you collect your medication from?P: I do go to the clinic myself, Malavhuwe, but most of the time I send someone to collect the medication.

R: So, where do you test your blood glucose levels?

P: There at the clinic.

R: Oh, thank you so much for your time, Grandma.

TSHIVENDA VERSION

R: Ndi khou humbela uri ni mmbudze uri ni ḓiṱhogomela hani ḓuvha ḽiṅwe na ḽiṅwe hayani .

P:Ndi nwa mishonga yanga nga 8, ndi vuwa nda la pap, i tshi rwa 8 ndi nwa mishonga yanga

R: Ni nwa tablet nngana

P: Matsheloni na madekwana, 8 nga matsheloni na 8 nga madekwana

R: ohh so then pap...

P: Ndi ḽa pap tshifhinga tshiṅwe na tshiṅwe, phili si ndi dzine nda dzi nwa nga tshifhinga tsho randelwaho.

R: ohh, so no amba uri ni ḽa pap nga matsheloni ni sa athu nwa mishonga yaṋu .

P:ndia ḽa pap, athi muthu wa u funesa tie

R:ohh, so u jia pap nga matsheloni na nga madekwana

P: Ee

R: so, u ḽa ya buraweni kana ya tshena .

P: Pap tshena

R: So ndi mishumo ifhio ine na anzela u i ita hafha hayani, ubva nga matsheloni u swika nga madekwana

P: Ndi ya nda dzula fhasi henefho tsini na kitchen, nda tanzwa khali nda lugisela u bika nda bika ndi tshi khou dzula, ee, ndi nga bika .

Ndi nnyi ane a ni thusa kha miṅwe mishumo ya hayani.

P: Hoyu musidzana (muduhulu) u a swiela na nne ndi na muthusi just u skip some days, u a da nga zwinwe zwifhinga a mopa fhasi na u kulumaga nndu

R: Ndi zwifhio zwithivheli zwine na ṱangana nazwo zwine zwa ni thithisa u ḓiḓowedza u ḓiṱhogomela .

P: ndi na thaidzo ya milenzhe yanga .

R: hu khou itea mini kha milenzhe yanu .

P: Dzi a fhisa nahone dzi a vhavha, maṅwe maḓuvha dzi a zwimba, dzi nga zwimba nga nḓila yo kalulaho .

R: Vho vhuya vha consulta kiliniki

P: Ndi ya clinic nwedzi munwe na munwe u dzhia mishonga yanga.

R: U vhiga thaidzo ya milenzhe yawe naho zwo ralo .

P: Ee vha a zwi ḓivha.

R: So thaidzo iyi ndi yone ine ya ni thivhela u ita minwe mishumo.

P: ee, ndi nga si kone u ita miṅwe ya mishumo

R: Naa vha wana thikhedzo ya mufuda ufhio na ufhio une wa vha thusa kha u ḓiḓowedza mishumo yavho ya u ḓiṱhogomela, u fana na u nwa mishonga yavho nga tshifhinga .

P: Ndi ita na u rumela vhathu uri vha ye u dzhia mishonga, arali zwi songo ralo arali ndi tshi tea u ṱoliwa kiliniki, ndi hira goloi ine ya ḓo nnyisa henefho .

R: Ni na vhathu vhane vha ni tikedza afha hayani .

P: Ndi rine vhavhili fhedzi .

R: Ndi mini zwine zwa ni ṱuṱuwedza uri ni bvele phanḓa ni tshi ḓiḓowedza u ḓiṱhogomela .

P: Ndi tea u isa phanḓa na u nwa mishonga yanga nahone nga tshifhinga .

R: So a ni tshenzheli vhuleme ha u nwa mishonga yaṋu, i a ni fara zwavhuḓi .

P: Hai, ndi a wana mishonga yanga nahone vha nnyita zwavhuḓi ngauri ndi a kona u pfa uri muvhili wanga u na mutakalo wavhuḓi, fhedzi milenzhe iyi fhedzi .

R: So ndi zwiḽiwa zwifhio zwine na anzela u zwi ḽa

P: Ndi ḽa zwoṱhe, ḽiṅwe ḓuvha ndo ya sibadela vha sea, vha mpha tshipiḓa tshiṱuku tsha pap tshi tshi khou rapiwa, khuhu yanga a i na muṋo, nda vha vhudza uri a thi koni u konḓelela zwiḽiwa hezwi, vha ri a si uri ndi na vhulwadze ha swigiri, nda ri ee.

R: Ooh, vho ri a no ngo fanela u ḽa muṋo na swigiri.

P: yes, so ndo vha vhudza uri a thi nga fuli nga heyi pap, ndi tea u ḽa pap nda fura, na vhone vho vha vho tshuwa vhari ndi khou ṱoḓa u ḓi vhulaha nda ri a zwi na ndavha .

R: ooh (a tshi khou sea)

P: Ndi kale ndo wanala ndi na vhulwadze ha swigiri ubva nga 90 and ho vha hu musi khotsi a hoyu musidzana vha sa athu bebwa ndo vha vhudza uri vha ntendele ndi ḽe, a thi nga fi nga vhulwadze ha swigiri, arali zwo vha zwi songo ralo tshifhinga tsho vha tshi tshi ḓo swika uri ndi fe ngauri ho vha ho no fhela tshifhinga tshilapfu ndi sa athu wanala ndi na vhulwadze ha swigiri, ndo wanala since90.

R: ooh, so no ṱoliwa nga 1990

P: Ee, ndi ita na u vhudza vhathu uri arali nda vuwa ndo fa ḽiṅwe ḓuvha, vha songo amba uri ndi vhulwadze ha swigiri, ḓuvha ḽanga ḽa u fa ḽo vha ḽi tshi ḓo vha ḽo no swika, ngauralo ndi vha vhudza uri vha ṋee zwoṱhe, ndi ḓo ḽa .

R:(a tshi khou sea na muṱanganedzi)

P: Kha vha nṋee fhedzi uri ndi kone u sokou ḽa .

R: So a vha anzeli u ṱangana na tsumbadwadze dzi re na thaidzo dzi tshimbilelanaho na vhulwadze ha swigiri .

P: Hai, naho ndi tshi toda tie, ndi a nwa nda shela swigiri, naho ndi na muṋo ndi a shela nda ḽa

R: Vha wana thikhedzo ifhio na ifhio u bva kha tshitshavha u itela u ḓiḓowedza mishumo yavho ya u ḓiṱhogomela.

hai, fhedzi avha vhafumakadzi (vhashumi vha ṱhogomelo ya hayani) vha a ḓa vha nṱola

R: Ohh, so vha ita mini zwavhukuma musi vho ḓa u ni ṱola.

P: Vha swiela na u kulumaga dzharaṱa yanga na nnḓu yanga, uri vha kone u ṱuwa.

R: ndi kiliniki ifhio ine vha dzhia mishonga yavho khayo

P: Ndi a ya kiliniki nne mune malavhuwe, fhedzi tshifhinga tshinzhi ndi rumela muthu uri a dzhie mishonga.

R: so vha linga ngafhi tshikalo tsha swigiri kha malofha

P: Hafho kiliniki.

R: ohk ndo livhuwa nga maanda tshifhinga tshanu makhulu.