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Original Research Article

Assessment of Diabetic Self-Management Practices of Patients with Diabetes Mellitus at Chilenje, Kanyama and Chawama First Level Hospitals in Lusaka, Zambia

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Abstract: ***Background*:** Diabetes mellitus is a rising global health problem which requires continuous self-management practice to prevent acute and chronic complications. However, studies show that few diabetic patients practice the recommended self-management practices. This study aimed at assessing self-management practices among diabetic patients at Chilenje, Chawama and Kanyama First Level Hospitals in Lusaka, Zambia. ***Methodology*:** A hospital based cross-sectional analytical design was used for this study. The study population included all adult patients with diabetes mellitus who receive care at Chilenje, Chawama and Kanyama First Level Hospitals in Lusaka District. Fish bowl sampling without replacement was used to select participants and sample size calculated was 167. Data were collected using a structured interview guide adapted from the Summary of Diabetes Self-care Activities. Descriptive statistics and regression analysis were performed using the Statistical Package for Social Sciences v26.0 at 5% level of significance. Ethical clearance and permission to collect research data were sought and granted accordingly. ***Results*:** This study had a total 167 participants. Overall, the study observed that 122 (73%) patients reported poor self-management practices while only 45 (27%) reported good self-management. Unacceptable fasting glucose level ranges vs. acceptable fasting glucose level ranges (AOR: 0.38; 95% CI: 0.15, 0.99) p- value = 0.049 and 5 – 9 years with diabetes vs. less than 5 years and more than 9 years with diabetes (AOR: 0.36; 95% CI: 0.14, 0.95) p- value 0.039 were statistically significant predictors of poor self-management practices among diabetic patients. ***Conclusion*:** This study showed that majority of diabetic patients had poor self -management practices. The study further observed that patients with unacceptable fasting blood glucose level ranges and those with diabetes for 5 – 9 years were more likely to have poor self-management practices. This certainly calls for concerted efforts aimed at targeting such individuals in order to raise awareness and promote behaviour change regarding the importance of self-management in diabetes.

Keywords: Diabetes, Self-management practices, Zambia, Diabetes self-care, Sub-Saharan Africa.

1.0 INTRODUCTION/BACKGROUND

Diabetes mellitus (DM) is one of the fastest-growing global health emergencies (Williams *et al.*, 2019). According to the International Diabetes Federation (IDF) Report in 2019, an estimated 463 million adults aged 20-79 years worldwide have diabetes and this figure is projected to be 578.4 million by 2030, 700.2 million by 2045 (Carmienke *et al.*, 2020, Williams *et al.*, 2019).

Diabetes Mellitus is a chronic disease, which has considerable effects on affected person's daily life (Fink *et al.*, 2019). The goal of DM management is to control glycaemic levels within acceptable ranges, with fasting blood sugar 4 to 7mmol and after meals 9mmol for type 1 and just under 8.5mmol for type 2. If not well managed, diabetes can lead to severe damage to the heart, blood vessels, eyes, kidneys and nerves, contributing to cardiovascular mortality (ADA 2017,

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Rawshani *et al.,* 2017). Self-care practices remain the mainstay management of diabetes as the majority of the disease management is carried out by patients themselves or their families (WHO 2016). The leading self-management practices include a healthy diet, physical activity, self-monitoring of blood glucose, adherence to medicine, problem-solving, healthy coping mechanisms, and reducing risk behaviors (Almutairi *et al.,* 2020; Karthik *et al.,* 2020).

Patients and their families are mostly responsible for managing diabetes on a day-to-day basis. Self-management is an individual's capacity to effectively deal with the symptoms, therapy, physical and mental effects, and lifestyle adjustments associated with living with a chronic condition on a daily basis (Almutairi *et al.,* 2020). Self-management is crucial for establishing glycemic control, enhancing quality of life, and reducing treatment costs (Edraki *et al.,* 2020, Karthik *et al.,* 2020). Research indicates that individuals with type II diabetes who practise effective self-management can achieve and maintain glycemic control, reducing the risk of complications such as damage to the heart, blood vessels, eyes, kidneys and nerves. Conversely, those who neglect self-care are more likely to experience complications (Karthik *et al.,* 2020, Oluma *et al.,* 2021). Providing self-management support to individuals with type II diabetes may enhance clinical outcomes, including fasting plasma glucose levels, lipid profiles, and blood pressure (Hisni *et al.,* 2019). Key self-management techniques involve maintaining a nutritious diet, engaging in physical activity, monitoring blood glucose levels, following medication regimens, problem-solving, employing healthy coping strategies, and minimising risky behaviours (Almutairi *et al.,* 2020, Karthik *et al.,* 2020). Additional self-care activities that have been recorded include monitoring weight/body mass index, regular foot care, and ocular examination (Almutairi *et al.,* 2020; Oluma *et al.,* 2021).

Diabetes self-management (DSM) reduces the burden of morbidity and mortality associated with DM. Despite the proven benefits of following DSM practices in reducing complications, improving blood glucose control, and enhancing quality of life, there is a widespread lack of adherence to self-care routines. Populations in poor and middle-income countries encounter difficulties accessing treatment and overcoming financial hurdles, hindering their ability to get or maintain lifelong therapy for chronic diseases (Lemos Macedo *et al.,* 2021). Therefore if DM patients practice self-management, they will achieve controlled glycaemic levels, reduce morbidity and prevent complications associated with DM. This will reduce the burden on health facilities in managing DM related morbidities using the limited funds for communicable diseases.

DSM is a significant process for the prevention of costly diabetes-related complications and diabetes-related mortality (Hooks, 2021, Hisni *et al.,* 2019). As diabetic patients practice self-management, there will be reduced hospital admissions and reduced resources channeled towards the management of diabetic emergencies, admissions, and complications (Hooks, 2021).

It is therefore crucial that patients learn self-management techniques in order to take personal responsibility for the management of their illness in daily life (Maina *et al.,* 2023). Despite the effectiveness of DSM, there is limited information on diabetes self-management among patients in the urban area of Lusaka district. This study seeks to assess self-management practices among diabetic patients presenting at selected First Level Hospitals in Lusaka District.

2.0 RESEARCH METHODOLOGY

2.0.1 Research Design

A cross-sectional analytical study design was selected for this study with a quantitative approach that allowed for objectivity and accuracy of findings.

2.0.2. Research Setting

The study was conducted in 2021 to 2023 at Chilenje, Chawama and Kanyama First Level Hospitals. First Level Hospitals cater for a population of between 80,000 and 200,000 people, they provide medical, surgical, obstetric and diagnostic services as well as treat patients with health center referrals.

2.0.3. Study Population

The population under study was Diabetic patients above 18 years old.

2.0.4. Sample Selection

Simple random sampling using the fish bowl without replacement method was used to select participants into the study. The selected sample was 167, they were selected as and when they presented to the hospitals under study.

2.0.5. Inclusion Criteria

The following inclusion criteria were observed:

a. Diabetic patients who had lived in Lusaka District particularly in the catchment area for the study sites in the last 6 months or more.
b. Diabetic patients diagnosed 6 months or more prior to the study. Clinically, it is established that by this time a patient would have understood their condition, its management and complications.

2.0.6. Exclusion Criteria

Diabetic patients with the following characteristics were excluded from the study:

- Patients who were in a state of diabetic emergency or other form of emergency during data collection.

- Patients who declined to participate in the study.

2.0.7. Data Collection Tool

This tool was adapted from the Summary of Diabetes Self-care Activities (SDSCA). The SDSCA is a validated self-report measure with five components of diabetes self-management (i.e. diet, exercise, blood sugar testing, medication and foot care).

2.0.8. Data Collection Technique

The collection of data was done at the three study sites as eligible patients came for medical services. The interview process commenced by giving a self-introduction after which the purpose of the interaction was elaborated. Consent from the participants was obtained to collect data. After assurance of confidentiality, written consent was obtained. For those who were unable to write, a thumbprint was obtained. During the interview process, the researcher read out the questions and clarified for those who had difficulties in understanding the questions. At the end of each interview, the researcher thanked each participant. The interviews lasted 15 to 20 minutes with each participant.

2.0.9. Ethical and Cultural Considerations

Ethical clearance was obtained from the University of Zambia Biomedical Research Ethical Committee (UNZAREC, ref no. 2866-2022) and written permission from the Lusaka provincial Health Office and the National Health Research Authority (Ref no. NHRA-R-868/01/08/2022). Information sheets explaining the study and expected benefits were given to participants, thereafter-informed written consent was obtained.

Participants were assured that treatment would not be withheld should they opt-out of the study. Participants were assured that they could stop the interview at any point when it becomes too distressful; a counsellor was available in case a participant required one during the interview.

2.0.10. Data Analysis

Completed questionnaires were checked for completeness and consistency. Data was coded and entered for analysis in the Statistical Package for Social Sciences (SPSS) version 26.0 program for Windows. The data was stratified and analyzed according to the sections of the data collection tool. Using SPSS inferential statistical analyses were performed. The Chi-square test and Mantel-Haenszel estimates for odds ratios were used to assess statistical significance of associations between variables and to select the variables to take into the final analysis using multivariable logistic regression. The binary logistic regression was used for multivariable analysis to assess the relationship between measures of diabetes self-management practices. Statistical tests were performed at the significance level of 0.05 and 95% confidence. Results obtained were presented in the form of tables and figures.

3.0. RESULTS

The study included 167 Diabetic patients from the Chilenje, Chawama and Kanyama First Level Hospitals in Lusaka, Zambia.

3.0.1. Socio-Demographic Characteristics of Respondents

The socio-demographic characteristics considered in this study included; Age, sex, marital status, level of education, economic status and alcohol consumption. The results are shown in table 1.

Table 1: Socio-demographic characteristics of respondents

Variable	Category	Frequency	Percentage
Age	≥65	19	11.4
	45 – 64	65	38.9
	18 – 44	83	49.7
Total		**167**	**100**
Sex	Male	82	49.1
	Female	85	50.9
Total		**167**	**100**
Marital status	Single	72	43.1
	Married	95	56.9
Total		**167**	**100**
Education	None/Primary	49	29.3
	Secondary	62	37.1
	Tertiary	56	33.5
Total		**167**	**100**
Economic status	High	20	12
	Low	31	18.6
	Middle	116	69.5
Total		**167**	**100**
Alcohol consumption	Yes	61	36.5
	No	106	63.5
Total		**167**	**100**

Table 1 above shows that close to half (49.7%) of the respondents were in the age range 18 – 44 years while the rest were in the range 45 - 65 years (38.92%) and 65 years and above (11.38%). Slightly over half (50.9%) of the study participants were females with the rest of the study participants been males (49.1%). Over half (56.89%) of the study participants were married. Majority (37.13%) of the study participants had only gone as far as secondary level of education, The study also revealed that close to seventy percent (69.46%) of the study participants were in middle class while close to nineteen percent (18.56%) and close to twelve percent (11.98%) were from the low and high class respectively. Over half (63.47%) of the study participants indicated that they did not consume any alcohol while the remainder did consume alcohol (36.53%).

3.2 Clinical Factors

The clinical factors that were studied were duration of illness and the fasting blood sugar range obtained from the participant file in the recent past three months as shown in table 2.

Table 2: Clinical Factors

Variable	Category	Frequency	Percentage
Fasting blood sugar range	Normal	28	16.77
	Abnormal	139	83.23
Duration of illness	≥10 years	46	27.71
	5 – 9 years	58	34.94
	>5 years	62	37.35

The results showed that abnormal estimated fasting blood sugar levels was quite prevalent (82.33%) among the study participants. The results further revealed that majority (37.35%) had lived with diabetes for 4 years or less while very few (27.71%) had lived with it for a minimum of 10 years.

3.3 Social Support

Social support was measured using three domains which included; someone special, friend and family. The results are shown in table 3.

Table 3: Social Support

Variable	Category	Frequency	Percentage
Support from someone special	Good	147	88.02
	Poor	20	11.98
Support from friend	Good	158	94.61
	Poor	9	5.39
Family support	Good	159	95.21
	Poor	8	4.79
Overall social support	Good	161	96.4
	Poor	6	3.6

With regards to social support data was collected on support from someone special, support from friends and family. Over three quarters (88.02%) of the study participants indicated that the support they received from someone special was good. The study revealed that majority did report that support from friends (94.61%) and family (95.21%) was good. Overall the socio-support was good (96.4%).

3.4 Prevalence of Good Self-Management Practices among Diabetes Patients

The focus of the study was to assess the self-management practices among patients with Diabetes Mellitus. The activities assessed included; medication, foot care, blood sugar testing, participation in exercise and healthy eating plan (Table 4).

Table 4: Prevalence of Self-Management Practices among Respondents

Variable	Response	Frequency	Percentage
Took medication	Poor	22	13.2
	Good	145	86.8
Foot care	Poor	144	86.2
	Good	23	13.8
Tested for sugar	Poor	104	62.3
	Good	63	37.7
Participated in exercise	Poor	138	82.6
	Good	29	17.4
Followed healthy eating plan	Poor	109	65.3
	Good	58	34.7

Variable	Response	Frequency	Percentage
Overall self-management practices	Poor	122	73
	Good	45	27

The results showed that majority (86.8%) of the respondents were compliant to diabetic medication. The least self-management activity performed was foot care (13%) Overall, the study observed that over 7 in 10 (73.0%) patients reported poor self-management practices while only less than 3 in 10 (27.0%) reported good self-management.

3.5 CHI Square Test Results

The chi square test was performed to determine the association between the dependent variable and independent variables. There was no association between SMP and age (p- value = 0.865), SMP and sex (p-value = 0.365), SMP and marital status (p- value = 0.275), SMP and level of education (p-value = 0.083). A significant association was noted between SMP and economic status (p –value =0.037) and SMP and alcohol consumption (p-value = 0.028). Further there was an association between SMP and estimated blood sugar levels. (p –value =0.038), an association was also seen between SMP and duration of illness. (p-value = 0.0371). No association was noted between SMP and social support (p –value 1.000). The results of the multiple regression analysis are shown in table 5.

Table 5: Multiple logistic regression of Factors Influencing Self-Management Practices among Respondents

Variable	Category	Self-Management Practice		COR (95% CI)	*p*	AOR (95% CI)	*p*
		Poor n (%)	Good n (%)				
Economic status	High	10 (8.20)	10(22.2)	1		1	
	Low	25 (20.50)	6(13.3)	0.24 (0.06, 0.91) *	0.0226	0.56 (0.11, 2.95)	0.495
	Middle	87 (71.30)	29 (64.4)	0.33 (0.12, 0.90)	0.0229	0.51 (0.16, 1.60)	0.246
Alcohol consumption	Yes	38 (31.10)	23 (51.1)	1		1	
	No	84 (68.90)	22 (48.9)	0.43 (0.21, 0.88) *	0.0178	0.65 (0.28, 1.50)	0.31
Duration of illness	≥10	29 (63.04)	17 (36.96)	1		1	
	5 to 9	48 (82.76)	10 (17.24)	0.70 (0.31, 1.58)	0.3865	0.36 (0.14, 0.95) *	0.039
	<5	44 (70.97)	18 (29.03)	0.36 (0.14, 0.91) *	0.0234	0.87 (0.36, 2.10)	0.758
Fating blood glucose range	Acceptable	16 (13.10)	12 (26.70)	1		1	
	Unacceptable	106 (86.90)	33 (73.30)	0.42 (0.18, 0.98) *	0.0381	0.38 (0.15, 0.99) *	0.049
Level of education	None/Primary	40 (81.63))	9 (18.37)	1		1	
	Secondary	47 (38.50)	15 (33.3)	1.42 (0.56, 3.61)	0.4611	1.28 (0.42, 3.93)	0.662
	Tertiary	35 (28.70)	21(46.7%)	2.67 (1.05, 6.75) *	0.0312	1.61 (0.46, 5.64)	0.456
Age	18 - 44	62 (50.80)	21 (46.7)	0.95 (0.30, 2.97)	0.9274		
	45 - 64	46 (37.70)	19 (42.2)	1.16 (0.36, 3.69)	0.8057		
	=>65	14 (11.50)	5 (11.1)	1			
Sex	Male	63 (51.60)	19 (42.2)	1			
	Female	59 (48.40)	26 (57.8)	1.46 (0.73, 2.93)	0.2816		
[Marital status	Single	49 (40.20)	23 (51.1)	1			
	Married	73 (59.80)	22 (48.9)	0.64 (0.32, 1.28)	0.2064		
Social support	Good	118 (96.7)	43 (95.6)	1			
	Poor	4 (3.3)	2 (4.5)	0.89 (0.30, 2.62)	0.8349		
COR: Crude odds ratio							
AOR: Adjusted odds ratio							
*p < 0.05							
1: Reference group							

3.6 Multiple Logistic Regression of Factors Influencing Self-Management Practices among Respondents

Using the multiple regression analysis two factors were found to be independently associated with SMP, having controlled for confounders that were statistically significant. Normal fasting blood glucose range vs. abnormal blood glucose range (COR: 0.42; 95% CI: 0.18, 0.98) was statistically significant (p value = 0.049) having controlled for the economic status, duration of illness and alcohol intake which were statistically significant as shown in Table 5. Another factor that was independently significant was duration of illness between 5 – 9 years with diabetes vs. outside this category (less than 5 years and more than 9 years with diabetes (COR: 0.36; 95% CI: 0.14, 0.91) p-value = 0.039 as shown in Table 5.

4. DISCUSSION OF RESULTS

4.0 Introduction

Self-management practices remain the mainstay in the management of diabetes as the majority of the disease management is performed by patients themselves or their families. The goal of DM management is to control glycaemic levels within acceptable ranges, hence delaying or preventing the complications of DM.

Statistics show that the number of DM admissions in Zambia has remained relatively high over the years, coupled with significantly high rate of mortality associated with DM. (WHO) Diabetes self-management is a significant process for the prevention of costly diabetes-related complications and diabetes-related mortality. This study has provided valuable insight into the self- management practices among patients with Diabetes Mellitus at selected First Level Hospitals in Lusaka District.

4.1 Demographic Characteristics of Respondents

The study assessed the demographic characteristics of respondents. It was revealed that of the total 167 study participants, majority 50.9% (85) respondents were females and the male respondents accounted for 49.1 % (82). Similarly a study by Adarmouch *et al.,* (2020) in Morocco reported female predominance (68.7%). On the contrary a study by Abdullah M. A *et al.,* (2019) in Saudi Arabia, reported male predominance 52.3%. It is however consistent with our study showing minimal variance between the male and female (52.3% male and 47.7% female). This shows that in Zambia the disease affects both sex at a ratio of almost 1 to 1. The findings further show that the majority of the respondents were aged 18-44 years accounting for 49.7 %(83). On the contrary Mutyambizi *et al.,* (2020) in South Africa found out that majority of the patients (44.3%) were aged between 41 and 60 years old. This shows that the patients with diabetes in Zambia are relatively younger compared to South Africa. In our study, the age group 45-64 years accounted for 38.9% (65) and the lowest proportion of the respondents were aged 65 years and above accounting for 11.4% (19). This could mean that most patients were diagnosed with the disease early in life were dying before the age 65 years.

In terms of marital status, our study showed that the married respondents were the majority, accounting for 56.9% (95) this is consistent with a study by Gurmu *et al.,* (2018) in Ethiopia who reported that Majority of the respondents were married accounting for 67.3% and the single respondents accounted for 43.1% (72).

The findings show that majority of the respondents had attained secondary education level while the respondents with no education were the least of the total study respondents. Contrary to a study in Morocco by Adarmouch *et al.,* (2020) which showed most of the respondents were illiterate. This shows that in our study the illiterate or those with no form of education were the least with DM compared to Morocco that had the majority with the disease who were illiterate. This could mean that in Zambia there is easy accessibility to education for everyone compared to Morocco.

Regarding the economic status, the findings indicate that the majority of the respondents were in the middle class accounting for 69.5 percent. Respondents in the low and high economic status accounted for 18.6 percent and 12.0 percent, respectively. A significant association was also noted between economic status and SMP. Mutyambizi *et al.,* (2020) reported that self-care practices of dietary diversity were all concentrated amongst patients with higher socio-economic status. The results from our study may suggest that efforts to improve DSMP should focus on addressing economic inequalities.

Our study revealed that majority of the respondents who had poor SMP did no consume alcohol. Our study may suggest that regardless of the alcohol consumption status, patients will choose not to perform the SMP activities. Alessi S.M *et al.,* (2020) found an association between alcohol consumption and clinical outcomes.

The findings show that majority of the respondents, had Diabetes Mellitus for less than 5 years. Respondents that had the disease for more than 10 years were the minority in this study. DM being a chronic condition, the notion is that people who have lived with the disease for more than 10 years would be more, but to the contrary. The implication could be that those that had lived with the disease longer may have died, mortalities which could be attributed to poor self-management practices.

4.2 Prevalence of Diabetes Self-Management Practices among Diabetes Patients

Self-management practices play a key role in the management of DM. This study assessed the prevalence of DSMP which revealed that majority of the respondents were found to have poor self-management practices. This is similar to a study in Ethiopia where over half of diabetic patients in the nation do not follow the suggested self-management practices (Habebo *et al.,* 2020). The high prevalence of poor self-management practices among individuals with diabetes at the three facilities included in the study is a significant issue. This situation could significantly impact both society and individual patients by raising health care costs and highlighting deficiencies in healthcare services, particularly health education services, within healthcare facilities (Habebo *et al.,* 2020). If appropriate interventions are not implemented to address this issue, poor self-management negatively impacts the quality of life for individuals with diabetes. Many diabetes-related adverse health outcomes, such as complications, morbidities, and mortalities, are often the result of inadequate self-management practices.

This prevalence in our study is however relatively smaller than that observed in the research conducted in Ethiopia (49.8%) (Habebo *et al.,* 2020). This disparity may be due to variations in sample size and study settings (Habebo *et al.,* 2020). The significant disparity may also be due to the patients' lack of understanding of the importance of all diabetes self-

management practices, lifestyle disparities, cultural and socioeconomic inequalities. Our study also reports a much higher prevalence when compared to a previous Vietnamese study by Nguyen *et al.,* (2022) which revealed that self-management was on the average. Another Ethiopian study by Mohammed *et al.,* (2019) revealed inconsistency with our study regarding self-management practices that reported that only 39.3% of patients had poor self-care.

4.3 Factors Associated with Self-Management Practices among Respondents

4.3.1 Duration of Illness

The current study showed that on the duration of illness of Diabetes Mellitus, there was a negative impact of a respondent that was ill for 5-9 years and having poor self-management practices. This further implies that the newly diagnosed had perceived the dangers of not complying with self-management practices. Contrary to our study Smoorenburg *et al.,* (2019) reported that patients experience 'active' self-management when recently diagnosed. As time progresses and no problems occur, patients do not experience their disease-related behaviour in self-management. Modarresi *et al.,* (2020) reported that duration of DM above 10 years was one of the factors that caused good self- care. Contrary to the findings in our study and the study in the Netherlands. Several other studies have reported findings, indicating that this period is important in management of diabetes as most patients are diagnosed or face the highest risk for diabetes in this period range (Alyaemni, 2019; Gurmu *et al*., 2018). A study by Gurmu *et al*., 2018, revealed that the longer duration of diabetes were important predictors of good diabetes self-care practice. This is contrary to our study whose results show poor adherence to self- management practices in patients who had lived with the illness for 5 to 9 years.

There was no statistically significant association between the duration of diabetes for less than five years and the adoption of successful self-management behaviours among diabetic patients. Statistically, the presence of diabetes for 5 to 9 years was a statistically significant contributor to inadequate self-management practices among diabetic patients. Patients with chronic diabetes have the opportunity to gain knowledge from everyday occurrences, in addition to the consultations conducted by healthcare professionals during follow-up appointments (Gurmu *et al.,* 2018). Patients with a longer duration for diabetes exhibited a greater propensity to adhere to self-monitoring and self-care regimens, according to Xie *et al.,* (2020). This may be attributed to their regular attendance at clinics for check-up appointments. This implies that individuals with a brief history of diabetes should be given additional care, as they might be devoid of critical information regarding the disease and the efficacy of self-care strategies (Gurmu *et al.,* 2018). Individuals who have had diabetes for an extended period of time demonstrate improved abilities in managing the disease and have effectively modified their way of life to accommodate it (Ji *et al.,* 2020). Individuals with diabetes exhibit greater adherence to their diets as the disease progresses (Arda Sürücü *et al.,* 2018). From an ecological standpoint, the individual's circumstances have an impact on the long-term effectiveness of self-management (Habibi Soola *et al.,* 2022). Hence, it is critical to consider varying degrees of support when devising long-term strategies for behaviour modification with these individuals.

4.3.2 Estimated Fasting Blood Glucose Ranges for the Recent Past Three Months

Fasting blood glucose levels in the recent past three months provide a picture of how an individual faired in terms of glycaemic control. This is in the absence of HbA1c which serves as an indicator of glucose homeostasis. Our study identified abnormal estimated blood glucose levels as a statistically significant risk factor for poor self-management behaviours among respondents. This contradicts the findings of the study by Lin *et al.,* (2022) which revealed no significant correlation between the self-management total score and HbA1c levels in the senior population. Fabriz d, *et al.,* (2020) reported an association between self-care management and glycated hemoglobin in both patients with and without insulin therapy. The results from our study is an indication that results of SMP could be seen from the association with abnormal fasting blood glucose levels. Not performing activities of SMP does not help in achieving controlled glycemic levels. If patients perform the SMP activities as recommended, the goal of DM management would be achieved and it would be seen from the results of glycated hemoglobin or estimated fasting blood glues levels in the absence of glycated hemoglobin.

4.3.3 Alcohol Consumption

Alcohol consumption has a negative effect on a patient with DM. Its association with DSMP was assessed and it was reported that abstinence from alcohol was not a statistically significant risk factor for effective self-management behaviours among diabetic patients. Alessi S.M *et al.,* (2020) reported an association between alcohol consumption and clinical outcomes of DM. Lu *et al.,* (2021) discovered that adherence to appropriate diabetic self-management was not associated with health risk factors including alcohol use, lack of exercise, or other chronic conditions. The observed result might be attributed to the moderate levels of alcohol consumption among all respondents and the low adherence to self-management of diabetes, factors that could impede the identification of statistically significant differences between groups.

4.3.4 Economic Status

The current study measured the association between SMP and economic status, it was reported that low and middle socioeconomic statuses were not statistically significant risk factors for diabetic patients

to engage in effective self-management practices. Weledegebriel *et al.,* (2021) found that the individuals with a higher annual average income had a reduced probability of participating in substandard self-care behaviours. Consistent findings have been reported by (Ayele *et al.,* 2019), indicating that individuals with greater financial resources have easier access to the healthy lifestyle recommendations for diabetic patients, as well as the means to purchase their medication and home glucose monitoring. In addition to increasing the affordability of treatment and care, a higher socioeconomic status correlates with a stronger motivation to pursue routine care (Tang *et al.,* 2016).

Furthermore, self-management of diabetes may be hindered by the financial implications, especially when out-of-pocket expenditures are required for essential medical supplies (Adu *et al.,* 2019). The primary challenges that patients encounter pertain to the management of medications, diabetic supplies, and healthful eating (Campbell *et al.,* 2017). To optimise health outcomes and prevent complications, individuals diagnosed with diabetes must adhere to a regimen of consistent self-care and medical monitoring. Failure to do so may result in escalated financial obligations (Adu *et al.,* 2019). Physicians have the ability to inform patients about the resources at their disposal that can assist them in surmounting financial obstacles that impede compliance with treatment regimens. These resources may encompass guiding patients towards specific charitable assistance initiatives or social programmes in order to alleviate financial hardships and facilitate more convenient access to vital services.

4.3.5 Level of Education

Despite the lack of statistical significance in the current study, secondary and higher education levels were found to have a protective effect against inadequate self-management behaviours in diabetic patients. The findings of this research indicated that participants who had completed secondary school and those who had been managing diabetes for a duration exceeding ten years exhibited robust self-care practices. Individuals with diabetes who possess a greater level of education are, on average, more engaged in self-care activities, according to research conducted in other settings (Abuadas, 2015). Diabetes knowledge may increase with the duration of diabetes and with a higher level of education, which has been linked to enhanced self-efficacy (Kassahun *et al.,* 2016; Yang *et al.,* 2017).

According to a research investigation carried out by Takele *et al.,* (2021), those with limited formal education exhibited a greater propensity to adhere to diabetes self-care practices. Irrespective of their level of education, patients may adopt self-care practices after receiving guidance from healthcare professionals or the environment. The potential influence of social desirability bias should also be considered, given that the questionnaire was administered through an interviewer.

It can be concluded that formal education has a positive effect on how the patients comprehends the information given to them by health care providers regarding DSM. It would also enable them to access literature on SMP which they can use to improve their DSM.

5.4 CONCLUSION

Diabetes mellitus pose a serious challenge to patients. Establishing the SMP is of vital importance to health care providers to give tailored health education on SMP. The findings of this study demonstrated that majority of diabetic patients had poor self -management practices. These results must be a starting point for the implementation of continuous health education regarding SMP regardless of the duration one has lived with the illness.

The study further observed that patients with abnormal fasting blood glucose ranges and those with diabetes for 5 – 9 years were more likely to have poor self-management practices.

Alcohol and economic status were statistically significant before regressing for confounders. This certainly calls for concerted efforts aimed at targeting such individuals in order to raise awareness and promote behaviour change regarding the importance of self-management in diabetes.

5.6 STUDY LIMITATIONS

A number of limitations were noted in this study including the following:

i. The study was recall biased as the data collected was based on what the patients could recall. However, patients' files were checked to verify some information.
ii. The glucose control HbA1c could not be measured as most patients could not afford the test. Alternatively fast blood sugar levels reading for the recent past three months were collected from patients file. This was the closest estimate to HbA1c.

5.7 RECOMMENDATIONS

The study makes the following recommendations:

i. The health care providers should intensify self-management counseling to patients that have lived with the illness between 5 to 9 years because it was noted that SMP was poor in patients of this population.
ii. Glycosylated hemoglobin instead of fasting and random blood sugar levels should be a focus of attention for health care providers as it gives a wider scope of ascertaining blood glucose for 3 months.
iii. Health practitioners should offer tailored health education to on -going glycemic control.

5.5 UTILIZATION AND DISSEMINATION OF RESULTS

Summaries of the research findings will be written and communicated to MOH, Nursing and Midwifery Council of Zambia, Diabetes Association of Zambia, Lusaka Provincial Health Office, Chilenje, Chawama and Kanyama First Level Hospitals, published and presented in the Nursing scientific conferences and symposium. Bound copies will be distributed to UNZA School of Nursing, the National Health Research Authority Medical Library and the School of Nursing Sciences Library. Presentation of the research findings will also be disseminated at the University of Zambia Post Graduate Forum.

The results of the study were presented to the School of Nursing Sciences, University of Zambia (UNZA). The results were later presented at the postgraduate graduate fora. Three copies of the bound research report were submitted to the School of Nursing Sciences Library, National Research Authority and Main Library UNZA, and Lusaka Provincial Health Office.

The report summaries will also availed to stakeholders involved in the care and management of DM patients including Chawama, Chilenje and Kanyama First Level Hospital so that the hospitals could use them to render evidence-based care to the patients.

The findings are expected to be used to formulate protocols that incorporate interval routine assessment of SMP in all with DM. The in cooperation will aid in achieving the goal of DM management and further improve the quality of life for patients.

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APPENDICES

APPENDIX I: DATA COLLECTION TOOL

QUESTIONNAIRE NO: ……
SERIAL NUMBER.....
Date: dd/mm/yyyy

THE UNIVERSITY OF ZAMBIA
SCHOOL OF NURSING SCIENCES
DEPARTMENT OF CLINICAL AND BASIC SCIENCES

QUESTIONNAIRE

ASSESSMENT OF SELF-MANAGEMENT EDUCATION AND SUPPORT AMONG PATIENTS WITH DIABETES AT CHILENJE, CHAWAMA AND KANYAMA FIRST LEVEL HOSPITALS IN LUSAKA DISTRICT

INSTRUCTIONS:

1. Do not write your name on this questionnaire.
2. For questions with alternatives, Circle the chosen response.
3. For the open-ended questions, write your response in the space provided.
4. Answer all questions.
5. Write all responses honestly and clearly.

SECTION A: SOCIO-DEMOGRAPHIC DATA

1. Indicate your age group in years: ……
2. What is your gender?
   a) Male
   b) Female
3. What is your marital status?
   a) Single
   b) Married
   c) Divorced/separated
   d) Widowed
4. What is your highest level of education?
   a) Primary
   b) Secondary
   c) Tertiary
   d) None
5. Which of the following best describes your economic status?
   a) Low (unable to meet financial obligations with ease)
   b) Middle (able to meet financial obligations)
   c) High (able to meet financial obligations with surplus)
6. Do you take alcohol
   a) Yes
   b) No

SECTION B: CLINICAL FACTORS

7. How long have you had your diabetes ……..
8. Glycosylated haemoglobin ……

SECTION C: SELF-CARE PRACTICES

9. Diet

a. How many of the last seven days have you followed a healthy eating plan?

1	2	3	4	5	6	7

b. On average over the past month, how many days per week have you followed your eating plan?

1	2	3	4	5	6	7

c. On how many of the last seven days did you eat five or more servings of fruits and vegetables?

1	2	3	4	5	6	7

d. How many in the last seven days did you eat high fat foods such as red meat or full fat dairy products?

1	2	3	4	5	6	7

e. On how many of the last seven days did you space the carbohydrates evenly through the day?

1	2	3	4	5	6	7

10. exercise

a. On how many of the last seven days did you participate in at least 30 minutes of physical activity? (Total minutes of continuous activity, including walking)

1	2	3	4	5	6	7

b. on how many of the last seven days did you participate in a specific exercise session (such as swimming, walking, biking) other than what you do around the house or as part of your work)

1	2	3	4	5	6	7

11. blood sugar testing

a. how many of the last seven days did you test your sugar

1	2	3	4	5	6	7

b. on how many of the seven days did you test your blood sugar the number of times recommended by your health care provider

1	2	3	4	5	6	7

12. foot care

a. how many of the last seven days did you check your feet

1	2	3	4	5	6	7

b. how many of the last seven days did you inspect the inside of your shoes

1	2	3	4	5	6	7

c. on how of the last seven days did you wash your feet

1	2	3	4	5	6	7

d. on how many of the last seven days did you soak your feet

1	2	3	4	5	6	7

e. on how many of the seven days did you dry between your toes after washing

1	2	3	4	5	6	7

13. medications

a. On how many of the last seven days, did you take your recommended diabetes medication?

0	1	2	3	4	5	6	7

b. On how many of the last seven days did you take your insulin injections?

0	1	2	3	4	5	6	7

c. On how many of the last seven days did you take your recommended number of diabetes pills?

0	1	2	3	4	5	6	7

SECTION D: SOCIAL SUPPORT

14.

Significant others	**yes**	**no**
There is a special person with whom I can share joys and sorrows		
There is a special person who is around when I am in need		
There is a special person who cares about my feelings		
I have a special person who is a source of comfort to me		
family		
I get the emotional help and support I need from my family		
My family is willing to help me make decisions		
My family really tries to help me		
I can talk about my problems with my family		
friends		
My friends really try to help me		
I can count on my friends when things go wrong		
I have friends whom I can share my happiness with		
I can talk about my problems with my friends		

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