

Information Needs and Self-Care Practices of Diabetic Patients in Mbala, Northern Province, Zambia

Chisha Jones Simuyemba¹, Patricia Katowa-Mukwato Patricia², Kabwe Chitundu³,
Michael Mumba Kanyanta²

¹Faculty of General Nursing, Mbala College of Nursing and Midwifery, Mbala, Zambia

²Department of Basic and Clinical Nursing Sciences, University of Zambia, Lusaka, Zambia

³Department of Mental Health and Psychiatric Nursing, University of Zambia, Lusaka, Zambia

Email: cjonessimuyemba@gmail.com

How to cite this paper: Simuyemba, C.J., Patricia, P.K.-M., Chitundu, K. and Kanyanta, M.M. (2023) Diabetic Patients in Mbala, Northern Province, Zambia. *Journal of Biosciences and Medicines*, 11, 136-146. <https://doi.org/10.4236/jbm.2023.113014>

Received: January 17, 2023

Accepted: March 25, 2023

Published: March 28, 2023

Copyright © 2023 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Introduction: Diabetes mellitus (DM) is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. It is “a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both” manifested by carbohydrates, fat and protein metabolism abnormality. If untreated high blood sugar can damage the nerves, eyes, kidneys, and other organs. The purpose of this study was to assess the information needs and self-care practice of Diabetic Patients in Mbala, Northern Province Zambia. **Methods:** This was an analytical cross-sectional study where 105 respondents aged 18 years and above participated in the study. Participants were randomly selected. A structured interview schedule and a check list were used to collect data. Statistics Package for Social Sciences computer software package version 23.0 was used to analyze data. Chi square and fisher’s exact tests were used to test the significance of the association between Knowledge of Diabetes Mellitus, attitude towards self-care practices, self-care practices among Diabetic patients and the need for information among Diabetic patients. A 95% confidence interval and P value of 0.05 were used to ascertain the degree of significance. Multivariate binary logistic regression model to determine predictors of self-care practices and need for information was also used. **Result:** On analyzing the dependent variables, more than half (61.9%), had high need for information and three quarters (85.7%) of respondents had poor self-care practices. Slightly more than half (58.1%) had high knowledge levels majority (78.1%), had a negative attitude. Significant associations were found $P < 0.05$ between knowledge levels and self-care

practices (P-value 0.017), and between attitude and self-care practices (P-value 0.005). Information needs were also associated with knowledge (P-value 0.040) while attitude (P-value 0.198) showed no association with information needs of Diabetic patients. On multivariable logistic analysis patients with low knowledge levels were 0.080 times less likely to achieve good self-care practices (OR: 0.080, CI: 0.009 - 0.623, $P < 0.020$) and those with a negative attitude were 0.174 less likely to achieve good self-care practices (OR: 0.174, CI: 0.049 - 0.584, $P < 0.006$). Patients who had low knowledge levels were 2.263 times more likely to have a high need for information compared to those who had high knowledge levels, and this effect was significant (OR: 2.263, CI: 0.957 - 5.104, $P < 0.05$). **Conclusion:** Negative attitudes and lack of information among Diabetic patients were the main reasons associated with poor self-care practices. Particular attention should therefore be given to ensuring that Diabetic patients are given adequate information on Diabetes self-care in order to improve the quality of life.

Keywords

Information Needs, Self-Care Practices, Knowledge, Attitude, Diabetes Mellitus

1. Introduction

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces [1]. It is “a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both” manifested by carbohydrates, fat, protein metabolism abnormality [2]. If untreated high blood sugar can damage the nerves, eyes, kidneys, and other organs [3]. The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. According to the Lancet [4], the number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. Diabetes prevalence has been rising more rapidly in middle- and low-income countries. The prevalence is higher in urban (10.8%) than rural (7.2%) areas, and in high-income (10.4%) than low-income countries (4.0%). One in two (50.1%) people living with diabetes do not know that they have the disease. The global prevalence of impaired glucose tolerance is estimated to be 7.5% (374 million) in 2019 and is projected to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045 [5].

According to the Gebremariam, *et al.*, 9th Edition, an estimated prevalence in Africa is 19.4 million adults aged 20 - 79 years living with diabetes in the IDF Africa Region in 2019, representing a regional prevalence of 3.9%. Africa is the region with the highest proportion of undiagnosed diabetes, with 60% of adults currently living with diabetes unaware of their condition [6]. The International

Diabetes Federation (IDF) Africa Region (AFR) includes 49 diverse sub-Saharan countries and territories and currently represents 34 diabetes organizations in 29 countries.

The prevalence of Diabetes in Zambia is 4.1% in males, and 4.4% in females with a total of 4.2% of the total population of 16,212,000 [4]. Zambia is one of the 47 countries of the IDF African region. According to IDF African region, Zambia has a total adult population of 8,001,400 and the Prevalence of diabetes in adults is at 3.4%. The Total number of cases of diabetes in adults is 273,800 [5].

Due to the chronicity of the condition, a person with diabetes should cooperate in all phases of the control and treatment and should be able to do self-care activities. Self-care is crucial for the control of diabetes and includes self-monitoring of blood glucose, diet, setting insulin dosage, and doing regular physical activity [7]. As a chronic condition, Diabetes can be managed effectively however, if poorly managed it can lead to potential complications that include heart disease, stroke, kidney damage, and nerve damage [8]. Effective management required adequate information on part of the patients, and positive self-care practices

According to a study conducted by Saleh *et al.* [9], whose aim was to assess the effect of diabetes education on knowledge improvement and attitudes towards type 2 diabetes and related self-care activities in the patients, the study suggested that Diabetes-related self-care activities depend on the ability of patient to manage his/her daily life. Evidence shows that the individuals with diabetes often have inadequate knowledge of the nature, risk factors and associated complications. In fact, people with DM communicate a particularly high need for information, higher than people with cancer or cardiovascular diseases, for example. It can therefore be concluded that people with DM do not feel adequately informed about their condition or regarding medication use. Therefore, it was important that a study be conducted to determine the information needs on diabetes and self-care practices among diabetic patients in Mbala, Northern Zambia.

2. Materials and Methods

2.1. Study Design, Setting, and Participants

An analytical cross-section design was used to investigate an association between information needs, self-care practices and knowledge and attitude among Diabetic patients.

The study was conducted at Mbala General Hospital in Mbala as it is a third level Hospital that provides specialized health care in various disciplines including diabetes management in Mbala. The study population comprised all confirmed Diabetic patients male and female, and above was surveyed over a period of two months (from December 2021 to February 2022) at Mbala General Hospital. They were considered eligible if they had been on DM treatment for at least more than 6 months, had blood glucose test results and consented to par-

ticipate. The study excluded patients who were very sick and could not stand the interview, mentally ill and Diabetic patients who were not residents of Mbala. The study was conducted from January 2021 to February 2022.

2.2. Data Collection Procedure

Ethical clearance and permission were sought from the University of Zambia Biomedical Research Ethics Committee (UNZABREC REF. No. 1662-2021) and interviews were conducted over a period of 10 weeks. Participants were assured of anonymity and confidentiality by interviewing them in privacy individually after consenting to participate with their signature. The researcher administered a questionnaire in face-to-face interviews that lasted about 30 minutes.

2.3. Instruments

A modified structured interview schedule was adopted from the Diabetes Self-Management Questionnaire (DSMQ) by Schmitt, *et al.*, 2013 and Diabetes Management Self-efficacy Scale, by Messina *et al.*, 2018 to assess the information needs and self-care practice of Diabetic Patients in Mbala, Northern Province, Zambia. The tools are widely used and well-validated for measuring Diabetic patients' information needs and self-care practices. The instrument comprised of a series of questions that were closed-ended. The interview schedule contained questions under six sections; Section A: Demographic Characteristics (age, marital status, employment status, education level and income of the people within the population), Section B: Social-economic factors, Section C: knowledge on Diabetes Mellitus. Knowledge on Diabetes among DM patients was graded as high if the patient scored above 3 questions on Section C and was graded as low if the patient scored 3 and below on questions in Section C. Section D: Attitude towards Diabetes and self-care practice. Attitude towards Diabetes and self-care practice among DM patients was graded as positive if the patient scored above 3 questions on Section D and was graded as negative if the patient scored 3 and below on questions in Section D. Section E: information needs to Diabetic Patients. Information needs to Diabetic patients were graded as high if the patient scored above 4 questions on Section E and was graded as low if the patient scored 4 and below on questions in Section E. Section F: self-care practices of Diabetic patients. Self-care practices of Diabetic patients were graded as good if the patient scored above 2 questions on Section F and was graded as poor if the patient scored 2 and below on questions in Section F.

2.4. Data Analysis

Data were analyzed using the IBM® Statistical Package for Social Sciences (SPSS®) for Windows version 23.0. The Chi-square test was used to determine an association between predictor variables (demographic factors, knowledge of Diabetic patients on DM, Attitude of DM patients towards self-care practices) and the outcome variable (information needs of Diabetic patients and self-care prac-

tices among DM patients). For those categorical variables, a Fisher's exact test was used. The Confidence Interval (CI) of (95%) was set and set level of significance at 5%. The binary logistic regression analysis was used to determine the true predictor of information needs and self-care practices.

3. Results

The interview was conducted with 105 participants of whom more than half 57.1% of the participants were males. Slightly more than half 51.4%, of respondents were aged between 41 to 60 years. More than half 64.8%) were married as presented in **Table 1**. **Table 2** shows that majority 61 (58.1%) respondents had high knowledge levels, whereas **Table 2** shows that majority 82 (78.1%), had a negative attitude. **Table 2** shows that majority 65 (61.9%), had high need for information and majority 90 (85.7%), had poor self-care practices.

Table 1. Demographic characteristics of the patients (n = 105).

Characteristics	Frequency	Percent
Gender		
Male	60	57.10%
Female	45	42.90%
Age		
<21 years	8	7.60%
21 - 40 years	25	23.80%
41 - 60 years	54	51.40%
61 - 80 years	11	10.50%
>80 years	7	6.70%
Marital status		
Married	68	64.80%
Divorced	9	8.60%
Widowed	12	11.40%
Single	16	15.20%
Residence		
Urban	69	67.70%
Rural	36	43.30%
Employment status		
Formal employment	34	32.40%
Self-employed	37	35.20%
Not employed	32	30.50%
Retired	2	1.90%

Table 2. Overall knowledge levels on DM (n = 105).

Characteristics	Frequency	Percent
High knowledge levels	61	58.10%
Low knowledge levels	44	41.90%
Overall attitude towards DM self-care practices (n = 105)		
Positive attitude	23	21.90%
Negative attitude	82	78.10%
Overall information needs among DM patients (n = 105)		
High need	65	61.90%
Low need	40	38.10%
Overall self-care practices (n = 105)		
Good	15	41.30%
Poor	90	85.70%

Table 3 shows that there was a statistically significant association between knowledge levels and self-care practices of Diabetic patients, between attitude and self-care practices of Diabetic patients and between information needs and knowledge levels of Diabetic patients. However, there was no statistically significant association between information needs and attitude of Diabetic patients.

Table 4 shows the binary logistic regression model was tested for multicollinearity, Hosmer and Lemeshow test of fitness for data, and omnibus test of model coefficients and classification accuracy. The dependent variable was self-care practice: Good (1) and Poor (0). The results of the binary logistic regression analysis showed that holding other variables constant, patients who had low knowledge levels were 0.080 times less likely to achieve good self-care practices compared to those who had high knowledge levels, and this effect was highly significant (OR: 0.080, CI: 0.009 - 0.623, $P < 0.020$). Further analysis showed that patients who had a negative attitude were 0.174 less likely to achieve good self-care practices compared to those who had a positive attitude and this effect was highly significant (OR: 0.174, CI: 0.049 - 0.584, $P < 0.006$).

Table 5 shows the binary logistic regression model was tested for multicollinearity, Hosmer and Lemeshow test of fitness for data, and omnibus test of model coefficients and classification accuracy. The dependent variable was information needs: Good (1) and Poor (0). The results of the binary logistic regression analysis showed that holding other variables constant, patients who had low knowledge levels were 2.263 times more likely to have a high need for information compared to those who had high knowledge levels, and this effect was significant (OR: 2.263, CI: 0.957 - 5.104, $P < 0.05$).

Table 3. The relationship between self-care practices, information needs and other factors (n = 105).

Characteristics		Self-care practices		P Value
		Good	Poor	
Knowledge	High knowledge levels	14 (23%)	47(77%)	0.017
	Low knowledge levels	1 (2.3%)	43(97.7%)	
Attitude	Positive attitude	8 (34.7%)	15 (65.2%)	0.005
	Negative attitude	7 (8.5%)	75 (91.5%)	

Characteristics		Information needs		P Value
		High need	Low need	
Knowledge	High knowledge levels	33 (54.1%)	28 (45.9%)	0.04
	Low knowledge levels	32 (72.7%)	12 (27.9%)	
Attitude	Positive attitude	12 (52.2%)	11 (47.8%)	0.198
	Negative attitude	53 (64.6%)	29 (35.4%)	

Table 4. Binary logistic regression analysis of self-care practices by knowledge and attitude.

Variables	Indicators	Odds ratio	Adjusted Estimates		P value
			95% CI		
			Lower	Upper	
Knowledge	High knowledge levels	Ref			0.02
	Low knowledge levels	0.08	0.009	0.623	
Attitude	Positive attitude	Ref			0.006
	Negative attitude	0.174	0.049	0.584	

Table 5. Binary logistic regression analysis of information needs by knowledge and attitude.

Variables	Indicators	Odds ratio	Adjusted Estimates		P value
			95% CI		
			Lower	Upper	
Knowledge	High knowledge levels	Ref			0.05
	Low knowledge levels	2.263	0.957	5.104	

4. Discussion of Findings

Results revealed that majority 57.1%, were males while 42.9% were female. The results correspond with the study that was conducted by Takele [9] which showed that more than half of the respondents (55.8%) were males. These results are in line with a study conducted by Nordström, *et al.* [10], which revealed the

prevalence of type 2 Diabetes is higher in males (14.6%) than in women (9.1%). Therefore, the results of these studies showed a higher number of males than in females. Consistence was also found with a study conducted by Alodhayani, *et al.* [11], whose results showed female patients having more self-care management practices than male patients (B: 0.20; 95% CI: 0.10 - 0.96 (P = 0.015)). therefore, it is highly likely that the high number of males compared to females could be associated with poor self-care practices among males thus, the higher number of male re-attendances and admissions to the hospital.

According to the study results, there was an association between knowledge and self-care practices among Diabetic patients. Therefore, in this study, respondents with high knowledge also had good self-care practice. These findings are similar to the findings of Saleh, *et al.* [12], whose study reviewed a significant relationship, existed between basic knowledge and glucose monitoring among newly diagnosed type 2 DM patients. Results also revealed an association between attitude of Diabetic patients and self-care practices among Diabetic patients. Therefore, majority of respondents who had a negative attitude also had poor self-care practices. These findings are similar to the findings of Kassa [13], whose studies revealed 26.8% of the respondents had good attitude towards diabetes mellitus self-care.

With regard to the dependent variable (information needs), a statistical significant association was found with knowledge. In this study, it was revealed that there was an association between knowledge on DM and the need for information among Diabetic patients. However, the sole respondent with high knowledge also demonstrated low need for information. Therefore, in this study, the majority of respondents with low knowledge had high need for information. Regarding attitude, there was no association with the need for information among Diabetic patients. Therefore, in this study, whether one had a positive or negative attitude, it did not influence the need for information.

On multivariable logistic analysis patients with low knowledge levels were 0.080 times less likely to achieve good self-care practices (OR: 0.080, CI: 0.009 - 0.623, P < 0.020) and those with a negative attitude were 0.174 less likely to achieve good self-care practices (OR: 0.174, CI: 0.049 - 0.584, P < 0.006). Patients who had low knowledge levels were 2.263 times less likely to achieve good self-care practices compared to those who had high knowledge levels, and this effect was highly significant (OR: 2.263, CI: 0.957 - 5.104, P < 0.055).

These findings are similar to the findings of Saleh, *et al.* [12], whose study reviewed that total basic knowledge (TBK) and business profession were significant independent predictors of good practice. Similarly, in a study conducted by Watcharanat, *et al.* [14], results revealed that the knowledge about diabetes, attitude towards diabetes, and social support towards diabetes positively affected self-care behavior towards diabetes with the statistical significance of 0.05.

The binary logistic regression test was used to analyze the combined impact of dependent (self-care practices) (information needs) and independent variables

(knowledge) and (attitude). All variables (dependent and independent variables) were coded. The results of the logistic regression analysis according to **Table 4** showed that holding other variables constant, patients with low knowledge levels were 0.080 times less likely to achieve good self-care practices, this effect was highly significant with the odds ratio of (OR: 0.080, CI: 0.009 - 0.623, $P < 0.020$). Further analysis showed that patients with a negative attitude were 0.174 less likely to achieve good self-care practices, this effect was highly significant with the odds ratio of (OR: 0.174, CI: 0.049 - 0.584, $P < 0.006$). These findings are similar to the findings of Saleh, *et al.* [12], whose study reviewed that total basic knowledge (TBK) and business profession were significant independent predictors of good practice. Similarly, in a study conducted by Watcharanat, *et al.* [14], results revealed that the knowledge about diabetes, attitude towards diabetes, and social support towards diabetes positively affected self-care behavior towards diabetes with the statistical significance of 0.05.

In another analysis to determine predictors of need for information using multivariate binary logistic regression model at 95% level of significance, it was discovered that knowledge predicted need for information of patients (**Table 5**). Thus, patients who had low knowledge levels odds ratio (2.263) were more likely to have a high need for information (**Table 5**).

With regard to the dependent variable (information needs) and independent variable (knowledge), results of the logistic regression analysis according to **Table 5** showed that holding other variables constant, patients who had low knowledge levels were 2.263 times more likely to have a high need for information, this effect was highly significant with the odds ratio of (OR: 2.263, CI: 0.957 - 5.104, $P < 0.05$).

5. Conclusion

The study identified two factors (negative attitude) and (lack of information) as being significant in influencing self-care practices among Diabetic patients. This implies that, in order to improve self-care practices, there is a need for promoting a positive attitude and provide adequate information on Diabetes self-care in order to improve the quality of life.

6. Limitations of the Study

The study sample size ($n = 105$) was limited, thus generalization of results should be done with caution as it only represented views of patients who accessed medical services from Mbala general hospital. The sample size comprised patients from the rural and peri-urban settings hence the result may not be generalized for the rest of Zambia. The case may be different for patients in urban towns, as urban hospitals have availability of specialized health professionals to provide sufficient information on DM and self-care practices. The data collecting tool used comprised closed ended questions and this could have limited the respondents from giving more required information.

Acknowledgements

Thanks to my fellow students for their guidance and support, without which, I would have not succeeded with this study. Also thanks to my family, for supporting me to undertake studies for Master of Science in Clinical Nursing at the School of Nursing Sciences.

Conflicts of Interest

The authors declare no conflict of interest regarding the publication of this article.

References

- [1] WHO (2018) World Diabetes Day 2016.
<https://www.afro.who.int/health-topics/diabetes>
- [2] American Diabetes Association (2005) Standards of Medical Care in Diabetes. *Diabetes Care*, **28**, s4-s26. https://care.diabetesjournals.org/content/28/suppl_1/s4
https://doi.org/10.2337/diacare.28.suppl_1.S4
- [3] Watson, S. (2018) Everything You Need to Know about Diabetes.
<https://www.healthline.com/health/diabetes>
- [4] The Lancet (2016) Number of Adults with Diabetes Reaches 422 Million Worldwide, with Fastest Increases in Low and Middle Income Countries. ScienceDaily.
<https://www.sciencedaily.com/releases/2016/04/160406074921.htm>
- [5] Saeedi, P., Petersohn, I., Salpea, P., *et al.* (2019) Global and Regional Diabetes Prevalence Estimates for 2019 and Projections for 2030 and 2045: Results from the International Diabetes Federation Diabetes Atlas, 9th Edition. *Diabetes Research and Clinical Practice*, **157**, 107843.
<https://www.sochob.cl/web1/wp-content/uploads/2020/02/Global-and-regional-diabetes-prevalence-estimates-for-2019-and-projections-for-2030-and-2045-Results-from-the-International-Diabetes-Federation-Diabetes-Atlas-9th-edition.pdf>
<https://doi.org/10.1016/j.diabres.2019.107843>
- [6] Gebremariam, G.T., Biratu, S., Alemayehu, M., *et al.* (2019) Health-Related Quality of Life of Patients with Type 2 Diabetes Mellitus at a Tertiary Care Hospital in Ethiopia. *PLOS ONE*, **17**, e0264199.
<https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0264199#sec018>
<https://doi.org/10.1371/journal.pone.0264199>
- [7] Borji, M., Otaghi, M. and Kazembeigi, S. (2017) The Impact of Orem's Self-Care Model on Quality of Life in Patients with Type II Diabetis. *Biomedical & Pharmacology Journal*, **10**, 213-220.
<https://biomedpharmajournal.org/vol10no1/the-impact-of-oremsself-care-model-on-the-quality-of-life-in-patients-with-type-ii-diabetes-in-ilam/>
<https://doi.org/10.13005/bpj/1100>
- [8] Pietrangelo, A. (2017) The Effects of Diabetes on Your Body.
<https://www.healthline.com/health/diabetes/effects-on-body#1>
- [9] Takele, M.G., Weharei, M.A., Kidanu, H.M., *et al.* (2021) Diabetes Self-Care Practice and Associated Factors among Type 2 Diabetic Patients in Public Hospitals of Tigray Regional State, Ethiopia: A Multicenter Study. *PLOS ONE*, **16**, e0250462.
<https://journals.plos.org/plosone/article?id=10.1371%2Fjournal.pone.0250462>
<https://doi.org/10.1371/journal.pone.0250462>

- [10] Nordström, A., Hadrévi, J., Olsson, T., Franks, P.W. and Nordström, P. (2016) Higher Prevalence of Type 2 Diabetes in Men than in Women Is Associated with Differences in Visceral Fat Mass. *The Journal of Clinical Endocrinology & Metabolism*, **101**, 3740-3746. <https://academic.oup.com/jcem/article/101/10/3740/2764924>
<https://doi.org/10.1210/jc.2016-1915>
- [11] Alodhayani, A., Almutairi, K.M., Vinluan, J.M., *et al.* (2021) Association between Self-Care Management Practices and Glycemic Control of Patients with Type 2 Diabetes Mellitus in Saud Arabia: A Cross-Sectional Study. *Saudi Journal of Biological Sciences*, **28**, 2460-2465.
<https://www.sciencedirect.com/science/article/pii/S1319562X21000486#>
<https://doi.org/10.1016/j.sjbs.2021.01.047>
- [12] Saleh, F., Afnan, F., Ara, F., *et al.* (2017) Diabetes Education, Knowledge Improvement, Attitudes and Self-Care Activities among Patients with Type 2 Diabetes, Bangladesh. *Jundishapur Journal of Health Sciences*, **9**, e36058.
<http://jjhsci.com/articles/15066.html>
<https://doi.org/10.17795/jjhs-36058>
- [13] Kassa, R.N., Hailemariam, H. and Habte, M.H. (2021) Self-Care Knowledge, Attitude and Associated Factors among Outpatients with Diabetes Mellitus in Arsi Zone, Southeast Ethiopia. *PLOS Glob Public Health*, **1**, e0000097.
<https://journals.plos.org/globalpublichealth/article?id=10.1371%2Fjournal.pgph.0000097>
- [14] Watcharanat, P., Khuancheree, K. and Lee, B. (2021) Factors Associated with Self-Care Behavior of Elderly Patients with Type 2 Diabetes in Thailand. *The Open Public Health Journal*, **14**, 494-497.
<https://openpublichealthjournal.com/VOLUME/14/PAGE/494/FULLTEXT/>
<https://doi.org/10.2174/1874944502114010494>