

INDIVIDUAL FACTORS CONTRIBUTING TO UTILIZATION OF DIABETIC MEDICATIONS AMONG PATIENTS AGED 45 YEARS ATTENDING THE DM CLINIC AT MPIGI HCIV IN MPIGI DISTRICT. A CROSS-SECTIONAL STUDY

Precious Bronia N Matovu¹, Jimmy Okwany^{1*}, Dr. Jane Frank Nalubega¹
Mildmay Institute of Health of Sciences

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Abstract

Background

Diabetes is a chronic metabolic disorder characterized by elevated blood sugar levels due to the body's inability to produce or effectively utilize insulin. The study aims to assess the individual factors contributing to the utilization of Diabetic medications among patients aged 45 years attending the Diabetic clinic at Mpigi District.

Methodology

The study employed a cross-sectional observational study design. Simple random sampling was used to select participants the study involved simple random sampling. A sampling frame was prepared, consisting of eligible patients attending the diabetic clinic at Mpigi HCIV. Quantitative data was analyzed using appropriate statistical techniques such as descriptive statistics like frequencies, percentages, means, and standard deviations, which were calculated to describe

Results

Most 33 (66%) participants were above the age of 50, Most 29 (58%) participants reported taking antidiabetic medication for below 1 year, 39(78%) individuals reported currently taking medication, 23 participants demonstrated good drug adherence (6-8), accounting for 46%, 23 participants stated they understood well, comprising 46%, 37(74%) participants could specify and name the medications they were currently taking. 27 (54%) participants were very confident in their management regimen. 35(70%) individuals reported no concerns affecting their drug uptake. 32(64%). participants stated they had not experienced any side effects, making up 64%.

Conclusion

Individual factors influencing medication utilization among individuals with diabetes in Uganda were Age, education, income, and social support are critical determinants of adherence to diabetic medications. Gender, cultural beliefs, and health literacy also play significant roles in medication utilization.

Recommendations

Patient Education Implement comprehensive patient education programs to improve health literacy, enhance understanding of diabetes, and increase awareness of the importance of medication adherence to address that 46% of participants had a good understanding of the purpose and benefits of their medication.

Keywords: Diabetic Medications, Patients Aged 45 Years, Diabetes Mellitus Clinic, Mpigi District.

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Corresponding Author: Jimmy Okwany

Email: jimmy.okwany@mihs.ac.ug

Mildmay Institute of Health of Sciences.

Background

Diabetes is a chronic metabolic disorder characterized by elevated blood sugar levels due to the body's inability to produce or effectively utilize insulin. The prevalence of utilization and adherence to anti-diabetic medication in Uganda ranges from 28.9% to 38.1%, with higher rates among females, the elderly, and those with longer duration of diabetes. A 2019 study at Mbarara Regional Referral Hospital found 38.1% of patients were non-adherent to anti-diabetic medication. The most common reasons were high

medication costs (25.5%), lack of understanding of prescriptions (19.4%), and unavailability of drugs (16.3%) (Kalyango et al., 2008a). Understanding these factors is crucial for healthcare providers to develop tailored interventions to improve medication adherence and overall diabetes management. A 2015 study in Eastern Uganda found a non-adherence rate of 16.7%, with the main factors being side effects, regimen complexity, forgetfulness, education level, and income (Bagonza et al., 2015b). Earlier in 2008, findings at Mulago Hospital in Kampala found

28.9% non-adherence, associated with female gender, illiteracy, low socioeconomic status, poor handwriting on prescriptions, and long intervals between clinic visits (Kalyango et al., 2008b). Health literacy plays a significant role in the utilization of diabetic medication. Low health literacy levels have been associated with poor understanding of medication instructions, leading to improper administration and non-adherence thus underutilization (Kirk et al., 2019). Patients with limited health literacy may struggle to comprehend the importance of diabetic medication and the potential consequences of non-adherence

Patients' beliefs and perceptions about diabetes and its treatment can significantly impact medication utilization. Negative beliefs about the necessity and effectiveness of medication have been linked to lower adherence rates (Cameron et al., 2018). Additionally, fear of potential side effects or concerns about medication dependency can deter patients from taking their prescribed medications as recommended. Older age (over 60 years) is consistently associated with higher non-adherence, with odds ratios ranging from 5.47 to 6.26 13. This may be due to reduced cognitive function or affordability issues (Bagonza et al., 2015a). Psychological factors, such as depression and anxiety, have been found to influence medication utilization among individuals with diabetes (Gonzalez et al., 2016). Patients experiencing these mental health conditions may struggle with self-care, including medication adherence, due to reduced motivation and increased emotional distress. Self-efficacy or an individual's belief in their ability to manage their diabetes effectively, has a profound impact on medication utilization. Higher levels of self-efficacy have been associated with improved adherence to diabetic medications (Williams & Bond, 2010). Patients with greater confidence in their ability to adhere to their medication regimen are more likely to follow their treatment plan consistently. The study aims to assess the individual factors contributing to the utilization of Diabetic medications among patients aged 45 years attending the Diabetic clinic at Mpigi District.

Methodology

Study Design and Rationale

The study employed a cross-sectional observational study design. This design involves collecting data at a single point in time from a sample of participants to examine associations between variables by collection and analysis of quantitative data, providing a more comprehensive understanding of the research topic. The rationale of this design was to capture the complexity of factors that impact medication utilization and to explore the perspectives of both patients and healthcare providers which is a snapshot of medication utilization patterns and associated factors among diabetic patients at Mpigi HCIV.

Study Area

The study was conducted in the Mpigi district, Uganda. Mpigi is located in the Central Region of Uganda. It is approximately 37 kilometers southwest of Kampala, the capital city of Uganda. The study area specifically focused on the diabetic clinic within Mpigi HCIV (Health Center IV), which serves as the primary healthcare facility for diabetes management in the district.

Study Population

The study population comprised diabetic patients who were currently receiving treatment at Mpigi HCIV. The inclusion criteria encompassed patients above 45 years and both genders, and healthcare providers involved in the care and management of diabetic patients, including doctors, nurses, and pharmacists.

The study excluded patients who were unable or unwilling to participate in the research.

Sample Size Determination

The sample size (n) was calculated as below,

$$n = \frac{QR}{O}$$

Q= Total number of days that will be spent on data collection (10)

R= maximum number of respondents to be worked on per day (5)

O= maximum time that will be spent on each respondent (1 hour)

$$n = \frac{(10 \times 5)}{1}$$

$$n = 50$$

Therefore, the sample size was 50 participants

Sampling Techniques

Simple random sampling was used to select participants from the diabetic patient population at Mpigi HCIV. This involved randomly selecting participants from the sampling frame. Each eligible patient had an equal chance of being selected, ensuring fairness and reducing bias in the sample, enabling the findings to be generalized to a larger population.

Sampling procedure

The sampling procedure for the research study involved simple random sampling. A sampling frame was prepared, consisting of eligible patients attending the diabetic clinic at Mpigi HCIV. Participants were randomly selected from the sampling frame, ensuring each eligible patient had an equal chance of being chosen. The selected patients were contacted and invited to participate, obtaining their informed consent. Data was collected using appropriate methods. Simple random sampling ensures fairness and

minimizes bias, allowing for the generalizability of findings to the broader population of patients attending the clinic.

Data Collection Methods

Data will be collected using a combination of quantitative surveys and qualitative interviews. The surveys will provide quantitative data on medication adherence, knowledge about diabetic medications, and perceived barriers to utilization. Qualitative interviews will explore the perspectives of healthcare providers on the factors influencing medication utilization.

Data Collection Tools

The quantitative data was collected using questionnaires administered to diabetic patients. The questionnaires were designed to gather information on medication adherence, knowledge about diabetic medications, perceived barriers to utilization, and socio-demographic details. The qualitative data was collected through in-depth interviews with healthcare providers, using open-ended questions to explore their perspectives and experiences. The questionnaires underwent pilot testing to ensure clarity and appropriateness before full-scale data collection.

Data Collection Procedure

The data collection procedure involved approaching eligible diabetic patients and seeking their voluntary participation in the study. Participants were informed about the purpose and nature of the study, and their consent was obtained before data collection. Surveys were administered to patients, and interviews were conducted with healthcare providers. All data collection was conducted in a private and confidential setting.

Study Variables.

The study variables were categorized as independent and dependent variables. The independent variables encompassed the level of knowledge about diabetes and its management, demographic factors (age, gender, education level, income), duration of diabetes, previous diabetes education, access to healthcare resources, perceived barriers to medication utilization (cost, side effects), social support, and healthcare provider communication. These variables served as factors that could influence the dependent variable, which is medication utilization (adherence or non-adherence). Additionally, the presence or absence of diabetes-related complications was considered an outcome

variable that is dependent on medication utilization. Through the use of surveys, interviews, and structured questionnaires, the study aimed to explore the associations between these variables and medication utilization to enhance diabetes management outcomes in Mpigi HCIV

Quality Control

To ensure data quality, standardized data collection tools were used, and pilot testing was conducted to assess the clarity and appropriateness of the questionnaires and interview guides. Regular supervision and monitoring were implemented to ensure adherence to the research protocols and data quality standards. Additionally, data entry was conducted by trained personnel, and data cleaning procedures were implemented to detect and correct any errors or inconsistencies in the data.

Data Analysis and Presentation

Quantitative data was analyzed using appropriate statistical techniques such as descriptive statistics like frequencies, percentages, means, and standard deviations, which were calculated to describe the characteristics of the study population and medication utilization patterns and regression analysis. The qualitative data from the interviews was transcribed verbatim and subjected to thematic analysis to identify key themes and patterns. The findings from both quantitative and qualitative analyses were integrated to provide a comprehensive understanding of the factors influencing medication utilization. The results were presented using tables, charts, and narrative descriptions to facilitate data interpretation and communication.

Ethical Considerations

Ethical considerations were upheld throughout the research process. The study obtained ethical clearance from the relevant institutional review board or ethics committee. Informed consent was obtained from all participants, ensuring their voluntary participation and confidentiality. Participants had the right to withdraw from the study at any time without facing any negative consequences. The research team also adhered to data protection and privacy regulations when collecting, storing, and analyzing the data.

Results

Socio-demographic Characteristics of the Respondents

Table 1: socio-demographic characteristics of the participants (n=50)

VARIABLE	CATEGORY	FREQUENCY	PERCENTAGE
AGE	45-50	17	34
	Above 50	33	66
		50	100
GENDER	Male	34	68
	Female	16	32
		50	100
EDUCATION LEVEL	None	1	2
	Primary	32	64
	Secondary	10	20
	Tertiary	7	14
		50	100
MARTIAL STATUS	Married	27	54
	Single	14	28
	Divorced	9	18
		50	100
INCOME LEVEL	High	19	38
	Low	31	62
		50	100

Table 1: 17 participants fell within the age group of 45-50, accounting for 34%, whereas most that is 33 participants were above the age of 50, making up 66% of the group. The majority, 34 participants identified as male, representing 68%, and 16 participants identified as female, comprising 32% of the group. 1 participant reported having no formal education, accounting for 2%, however, the majority that is 32 participants had a primary education, making up 64%, 10 participants held a secondary education, representing 20%, 7 participants had a tertiary education, comprising 14% of

the group. Most that is 27 participants were married, accounting for 54%, 14 participants were single, making up 28%, and 9 participants were divorced, representing 18% of the group. 19 participants reported having a high income, comprising 38%, and the majority that is 31 participants had a low income, making up 62% of the group.

Individual Factors That Affect Utilization of Antidiabetic Drugs

Table 2: Some of the Individual Factors That Affect the Utilization of Antidiabetic Drugs

Variable	Category	Frequency	Percentage
DURATION ON ANTI-DIABETIC MEDICATION	Below 1 year	29	58
	Above 1 year	21	42
CURRENTLY TAKING MEDICATION	Yes	39	78
	No	11	22
RATE DRUG ADHERENCE (0-10)	Poor (0-2)	11	22
	Fair (3-5)	14	28
	Good (6-8)	23	46
	excellent (9-10)	2	4
UNDERSTAND THE PURPOSE AND BENEFITS OF MEDICATION	Poorly	11	22
	Well	23	46
	Very well	16	32
CAN SPECIFY AND NAME MEDICATIONS CURRENTLY TAKEN	Yes	37	74
	No	13	26
CONFIDENCE IN MANAGEMENT REGIMEN	Not confident	8	16
	Moderately confident	15	30
	Very confident	27	54
ANY CONCERNS THAT HINDER ONE DRUG UPTAKE	Yes	15	30
	No	35	70
EXPERIENCED ANY SIDE EFFECTS	Yes	18	36
	No	32	64

Year, accounting for 58%, while 21 participants had been taking antidiabetic medication for above 1 year, which constituted 42% of the group. 39 individuals reported currently taking medication, representing 78% of the total, 11 individuals stated they were not taking medication, comprising 22% of the group. 11 participants were classified as having poor drug adherence (0-2), making up 22%, 14 participants fell into the fair category (3-5), constituting 28%, 23 participants demonstrated good drug adherence (6-8), accounting for 46%, 2 individuals were in the excellent category (9-10), representing 4%. 11 participants reported understanding poorly, making up 22%, 23 participants stated they understood well, comprising 46%, 16 individuals mentioned understanding very well, accounting for 32%. 37 participants could specify and name the medications they

were currently taking, representing 74%, 13 participants could not specify their medications, comprising 26%. 8 participants expressed not being confident in their management regimen, accounting for 16%, 15 participants reported being moderately confident, making up 30%, 27 participants were very confident in their management regimen, representing 54%. 15 participants had concerns that hindered their drug uptake, comprising 30%, and 35 individuals reported no concerns affecting their drug uptake, accounting for 70%. 18 participants reported experiencing side effects, representing 36%, and 32 participants stated they had not experienced any side effects, making up 64%. Figure 1; Individual reasons for none adherence as mentioned by the participants

Table 2: Most of the 29 participants reported taking antidiabetic medication for below 1

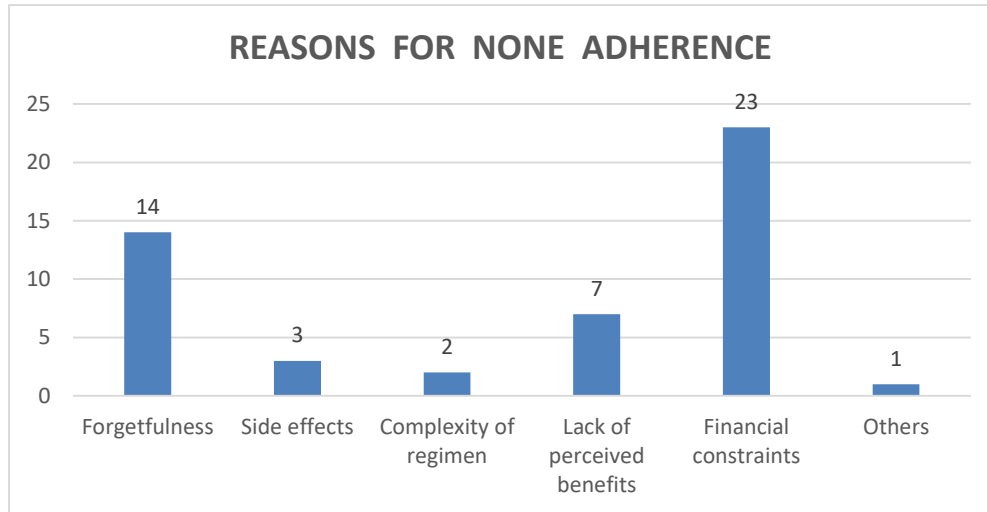


Figure 1, reasons for non-adherence were as follows: Forgetfulness was reported in 14 cases, Side effects were reported in 3 cases, The complexity of the regimen was mentioned in 2 cases, Lack of perceived benefits was reported in 7 cases, financial constraints affected 23 cases, there was only 1 case where patient mentioned other reasons for non-adherence.

Discussion Individual Factors Influencing Medication Utilization

The study found that 66% of the participants were above the age of 50, indicating that older individuals constituted the majority of the sample. This aligns with the literature review's assertion that older age is associated with higher non-adherence rates. In the study, older participants were more likely to exhibit non-adherence, potentially due to cognitive challenges, affordability issues, and increased prevalence of comorbidities (Bagonza et al., 2015a). While the study did not directly analyze gender differences, the literature review suggests that gender can influence medication utilization. Some studies indicate that women tend to have better medication adherence and uptake (Brundisini et al., 2020). The study and the literature review both underscore the significance of education in medication adherence. The study revealed that 64% of participants had only primary education, emphasizing that patients with higher education levels tend to have better health literacy, understanding of medication instructions, and adherence to treatment plans (Lee et al., 2019). Income is identified as a significant factor in both the study and the literature review. The study showed that

62% of participants reported low income, indicating financial constraints that can lead to medication non-adherence (Silva et al., 2021).

The literature review discusses the influence of cultural beliefs on medication utilization. While not explicitly explored in the study, it indirectly suggests that cultural factors, such as traditional remedies and language barriers, may impact medication adherence (Kong et al., 2020).

The importance of social support in medication adherence is highlighted in both the study and the literature review. The study found that patients with strong social support networks like the married accounting for 54% are more likely to adhere to their medication regimen, which aligns with the literature review's recommendation of encouraging family involvement and support groups to enhance adherence (Okumura et al., 2018). The literature review emphasizes the role of health literacy in medication adherence, with better knowledge about the condition and medications associated with higher adherence rates (Abdoli et al., 2017). The study indirectly supports this by indicating that understanding medication instructions is a factor in medication adherence, with 46% of participants reporting a good understanding of the purpose and benefits of their medication.

Conclusion

Individual factors influencing medication utilization among individuals with diabetes in Uganda were Age, education, income, and social support are critical determinants of adherence to diabetic medications.

Gender, cultural beliefs, and health literacy also play significant roles in medication utilization.

Study Limitation

Several limitations were encountered during the research study. Firstly, the study was conducted in a specific health center and was not generalizable to other healthcare settings. Secondly, self-report measures used for medication adherence and knowledge may have been subject to recall bias or social desirability bias. Additionally, the qualitative findings may have been influenced by the perspectives and experiences of the selected healthcare providers.

Recommendation

Patient Education Implement comprehensive patient education programs to improve health literacy, enhance understanding of diabetes, and increase awareness of the importance of medication adherence to address that 46% of participants had a good understanding of the purpose and benefits of their medication.

Develop culturally sensitive interventions that address cultural beliefs and norms related to medication utilization like the use of traditional medicine. Involving community leaders and employing clear communication in various languages can enhance adherence.

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Abbreviation

DM: Diabetes Mellitus
HCIV: Health center IV

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Conflict of interest

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Author Biography

Precious Bronia N Matovu, Jimmy Okwany
Mildmay Institute of Health of Sciences

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Email: info@sjpublisher.org or studentsjournal2020@gmail.com
Website: <https://sjpublisher.org>
Location: Scholar's Summit Nakigalala, P. O. Box 701432, Entebbe Uganda, East Africa