

FACTORS CONTRIBUTING TO NON-ADHERENCE TO RECOMMENDED ANTI-DIABETIC MEDICATIONS AMONG DIABETIC PATIENTS AT WALUKUBA HEALTH CENTRE IV, JINJA CITY; A CROSS SECTIONAL STUDY.

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ABSTRACT.

Background:

Purpose of the study: The study was to determine the factors contributing to non-adherence to recommended anti-diabetic medication among diabetic patients at Walukuba Health Center IV, Jinja City.

Objectives of the study: To assess the individual factors contributing to non-adherence to recommended anti-diabetic medication among diabetic patients at Walukuba Health Centre IV, Jinja City. To determine the socio-economic factors contributing to non-adherence to recommended anti-diabetic medication among diabetic patients at Walukuba Health Centre IV, Jinja City. To identify the health facility-related factors contributing to non-adherence to recommended anti-diabetic medication among diabetic patients at Walukuba Health Centre IV, Jinja City.

Study methods/design:

The study employed a cross-sectional study; data was collected using a sample size of 50 (type 1 and 2 diabetic patients) who were selected from an outpatient diabetic clinic using simple random sampling, selected patients were taken diabetes treatment for more than one month and had given informed consent to participate. Non-adherence was assessed using patients' information

Results:

Factors that were independently associated with non-adherence were; age above 59 years (52%), forgetfulness (44%), laziness (28%) towards the treatment, busy working schedules (22%), medicines being expensive (60%), lack of counseling and sensitizing from the hospital (84%) and illiteracy (40%).

Conclusion:

Generally, the factors contributing to increased cases of non-adherence to anti-diabetic treatment were major, lack of counseling, sensitization about the medication regimen from the health workers, high treatment costs due to out-stocks at the government facilities, and age above 59 years.

Recommendations:

Adherence to diabetic treatment was suboptimal, there is a need to still improve it through availing counseling and drugs at the facility so that they do not have to buy them, giving shorter time between visits to the health centers, and strategies helping patients understand their drug regimens.

Keywords: Non-adherence, Anti-diabetic medication, Diabetic patients, Walukuba Health Center IV, Jinja City

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BACKGROUND TO THE STUDY.

According to IDF, 2021, an estimated 537 million adults aged 20–79 years worldwide (10.5% of all adults in this age group) have diabetes and by 2030, 643 million, and by 2045, 783 million adults aged 20–79 years are projected to be living with diabetes. Thus, while the world's population is estimated to grow by 20% over this period, the number of diabetes is estimated to increase by 46% (International Diabetic Federation., 2021).

However, few recent studies in Uganda have been conducted on associated factors and prevalence of non-adherence to anti-diabetic treatment with a study also on adherence to anti-diabetic medication among patients in

Mbarara regional hospital and in Iganga-Bugiri general hospitals in Eastern Uganda which are referral hospitals in the health care hierarchy revealed that of the 521 participants, 433 (83.3%) were adherent and of 257 participants recruited, (98, 38.1%) of the participants were non-adherent to their antidiabetic medication which based more on Age above 60 years (AOR = 6.26, 95% CI = 1.009–39.241, P = 0.049) and duration of diabetes mellitus above 5 years as the key factors to non-adherence whose cases are special and limits the understanding of diverse factors and effects of non-adherence to anti-diabetic recommendations on the population that do not have access to well-established hospitals with more services and personnel (Bagonza . J, 2015; Faisal. K,

2022). DM is therefore a chronic health problem that has distressing complications such as hypoglycemia, stroke, diabetic neuropathy, diabetic retinopathy, and diabetic foot in the long term which can be overcome by control of glucose levels through strict adherence to prescribed drugs, diet plans, and regular exercises to minimize the complications (Abebe .S .M, 2014; Rwegerera . G, 2014; Bagonza . J, 2015). However, no studies on non-adherence at a medical facility in semi urban area have been conducted, hence raising a need therefore to identify factors related to anti-diabetic medication non-adherence at Walukuba Health Center IV a medical facility located in the city suburbs and accessed by patients who are mostly the residents of the area where the research is to be carried. This study aims to assess the factors contributing to non-adherence to recommended medication among diabetic patients in the Diabetic clinic at Walukuba Health Centre IV, Jinja City.

METHODOLOGY.

Study Design.

The study design was a descriptive cross-sectional study and quantifiable because the study was conducted over a short period and did not make follow-ups of the participants. The required information was collected from the study participants only once throughout the research.

Study area.

The study was conducted at Walukuba Health Centre IV in Jinja City eastern Uganda because it has got patients diagnosed with Diabetes Mellitus who visit the facility. The Health Centre also has departments like ART clinic, Laboratory department, In-patient department, Out-patient and Maternity. This study will be carried out from August to November 2023.

Study population.

The study population involved Diabetic patients who visited and attended the diabetic clinic at WHC IV for diabetic medication.

Sample size determination.

The sample size was determined using the formula below; Burton's formula (1952)

$S=2(QR) T$ where

S= required sample size

Q= number of days the researcher spends while collecting data

R= maximum number of respondents per day

T= maximum time the interviewer spends on each participant. $2 \times 5 \times 10 \times 0.5 = 50$

Therefore, the researcher used 50 respondents.

Sampling technique.

The study employed a random sampling technique to select the sample of all eligible and consenting participants taking anti-diabetic drugs at Walukuba Health Centre IV in Jinja District. This was because it was cheap, convenient, and a reliable method for obtaining unbiased information, and it ensured that each member of the target population had an equal and independent chance of being included.

Sampling procedure.

At the diabetic clinic, the study was supported and directed by the Doctor to the patients with Diabetes Mellitus attending the diabetic clinic for medication that was willing to participate in the study and the researcher applied random sampling.

Data collection method.

The study was supported and directed by the Doctor to the patients with Diabetes Mellitus attending the diabetic clinic for medication. Therefore, the study employed a quantitative data collection method. Data was collected using an administered questionnaire containing both closed and open-ended questions. This was because it related to assessing numerical results, was easy to administer, cheap, and was straightforward. Additionally, data obtained with the quantitative data collection method was more measurable and expressible in numerical form. The study interviewed respondents and translated questions to English, Lusoga, and Luganda with the help of the research assistants to give a clear understanding of the questionnaires to the respondents.

Data collection tool.

The study used a semi-structured questionnaire with both open and closed questions written in English and later translated to Luganda/Lusoga for data collection that the respondents filled in upon understanding the study. It involved several questions covering individual, socio-economic, and health-related factors. This was because questionnaires were easy to administer, cheap for data collection, and much data was easily obtained in a short period at a relatively low cost.

Data collection procedure.

An introductory letter was obtained from Kampala School of Health Sciences seeking permission for data collection and it was taken to Walukuba Health Centre IV, Jinja City and permission was then obtained from the Doctor in charge of WHC IV to collect data upon self-introduction. The researcher introduced himself to the Diabetic patients receiving drugs at Walukuba Health Centre IV before administering questionnaires. Consent forms were issued to the respondents asking them to participate in the study. Then questionnaires were used as data collection tools and distributed to the respondents randomly and the answering to the questionnaires was explained to each respondent

who then answered the questionnaires and returned them for data analysis. The study ensured that the data filled in by participants was correct before leaving the study site.

Study variables.

They were both dependent and independent variables,

Independent variables.

In this research, the independent variables were the individual, socio-economic, and health-related factors contributing to non-adherence.

Dependent variables.

The dependent variables were non-adherence to Anti-Diabetic medication.

Quality control.

Ample time was given for Data collection and analysis, to ensure the validity, reliability, and relevance of the study which was done by the supervisor. The questionnaires were translated into Luganda and Lusoga and then back to English to check whether the meaning remained the same.

Pre-testing of research tool.

The pre-testing of the research tool was carried out a week before the actual data collection process at the diabetic clinic. This aided the study to improve on the questions of the questionnaire and eliminate questions that were not necessary in the study and other relevant applicable questions to be added. This helped the study to identify the responses of the respondents, improving the validity and reliability of the data collection tools and methods

Training of research assistants.

One research assistant was recruited and trained about the topic, its objectives and questionnaires, and the filling in of the questionnaires before Data was collected. She was good at English communication, Lusoga, and Luganda, equipped with skills such as mobilizing respondents, sampling process, distribution and collection of questionnaires before pretesting of the questionnaire where she assisted and she was compensated after her service offered.

Inclusion criteria.

All diabetic patients at Walukuba Health Centre IV consented and accepted to participate in the study. Those who were accessible at the time of the study and those who were feeling fine to participate.

Exclusion criteria.

All diabetic patients who did not consent to those who were below 18 years old were excluded from the study.

Adherence to Standard Operating Procedures (SOPs)

Throughout this study, respondents and research assistants adhered to the hospital's SOPs such that the study had to run smoothly without interference from the diabetic clinic operations.

Data analysis and presentation.

Data was collected and summarized on paper using a pen, tallied, and kept in the file until the researcher obtained all the required data. It was then processed and analyzed by the researcher using Microsoft Excel and Microsoft Word programs. Further interpretations of the data were done, to elaborate more on all possibilities as per the results. This was done by the specific objectives of the study. The data collected was then presented in the form of pie charts, frequency distribution tables, graphs, and Percentages.

Ethical considerations.

Ethics are moral principles that guide researchers to conduct and report research without deception or intention to harm the participants of the study. Therefore an introductory letter to collect data was picked from the Kampala School of Health Sciences and the letter was then presented to the in-charge Diabetic clinic of Walukuba Health Centre IV for authorization, who granted permission for obtaining data, The significance of the research was well explained to the patients before obtaining their consent using a topic, objectives and sign or thumbprint and then obtained consent from the respondents before collecting data using consent forms and a decision to either participate or not was respected so that the study was conducted at free will. All collected data was kept confidential that is; no name was indicated on the questionnaires and data was only accessed by the researcher alone.

RESULTS.**Bio Data.****Table 1: Shows the distribution of respondents according to their bio-data. N=50 respondents**

Variables	Frequency (F)	Percentages (%)
Age		
18-30	5	10
31-44	9	18
45-58	10	20
59 above	26	52
Gender		
Male	20	40
Female	30	60
Marital status		
Married	28	56
Widowed	10	20
Divorced	8	16
Single	4	8
Religion		
Moslem	15	30
Catholic	9	18
Anglican	6	12
Others (Christians)	20	40
Number of children		
One	7	14
Two	15	30
Three and more	28	56
Occupation		
Self-employed	11	22
Unemployed	14	28
Employed	25	50
Education level		
Never went to school	20	40
Secondary	15	30
Primary	5	10
University	10	20
Tribe		
Muganda	8	16
Musoga	20	40
Munyankore	10	20
Others	12	24

From table 1, most (52%) of the respondents were within the age bracket of 59 years above followed by (20%) in the age bracket of 45-58 years whereas the least (10%) were within the age bracket of 18-30 years.

According to table 1, the majority (60%) of the respondents were female and the minority (40%) of the respondents were male.

Furthermore, the majority (56%) of the respondents were married whereas the minority (8%) were single.

The results from table 1, also show that most (40%) of the respondents were Christians by religion while the least (12%) were Anglicans.

However, the majority (56%) of the respondents had three children and above whereas the minority (14%) had one child.

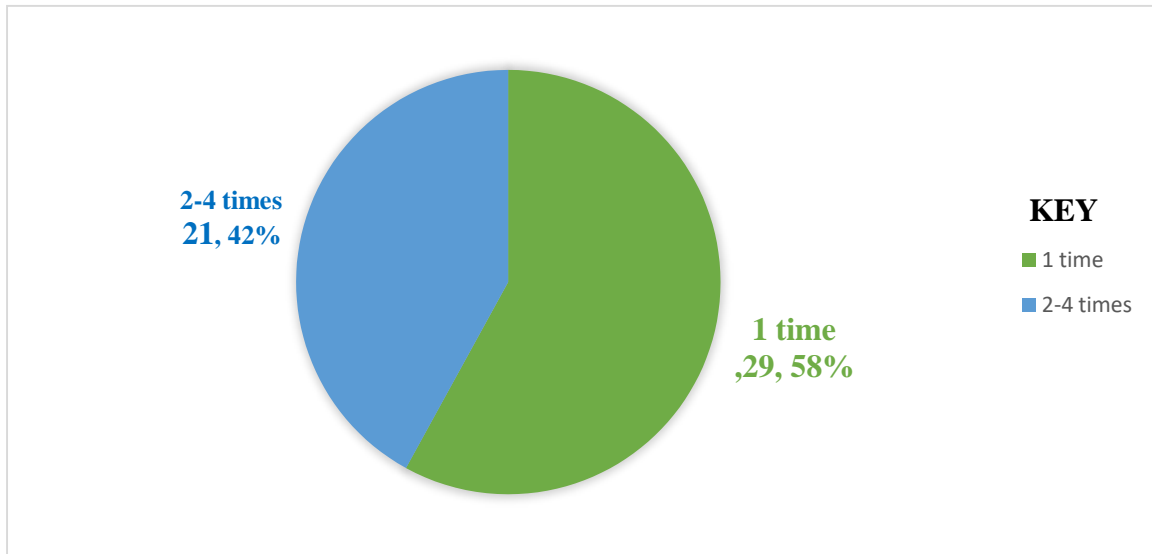
Remarkably, most (50%) of the respondents were employed whereas the least (22%) were self-employed.

According to table 1, the majority (40%) of the

respondents had never received any formal education whereas the least (10%) had attained primary education. And finally, most (40%) of the respondents were Basoga by tribe whereas the least (16%) were Baganda by tribe.

Individual factors contributing to non-adherence to recommended Anti-diabetic medication among Diabetic patients.

Figure 1: showing respondents' responses regarding several visits to the facility for medication. N=50



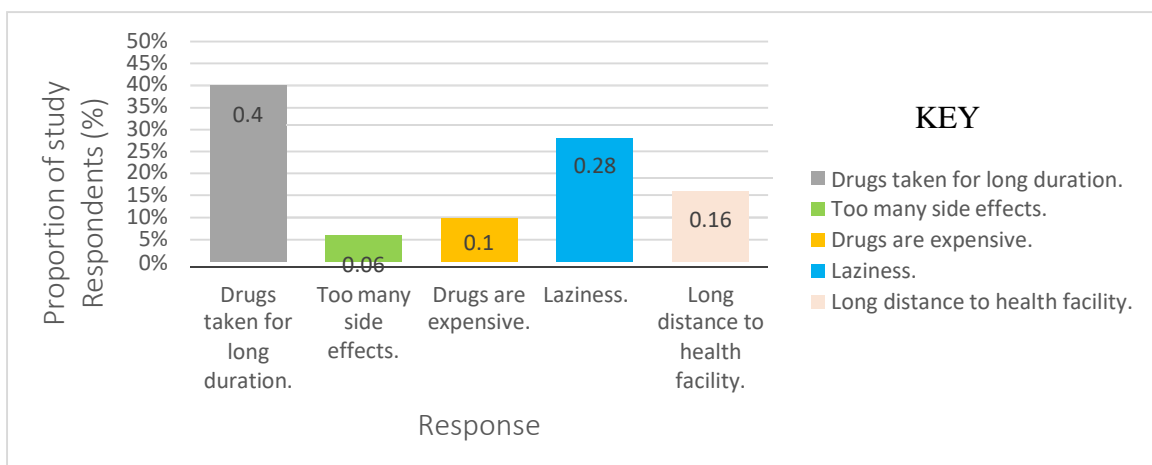
From figure 1, most (58%) of the respondents reported visiting the hospital once a month while the least (42%) of the respondents reported visiting the hospital 2-4 times.

Table 2: showing respondents towards monthly income. N= 50

Monthly income range	Respondents (N)	Percentages (%)
100,000 – 150,000/=	8	16
150,000 – 250,000/=	15	30
250,000/= above	27	54
Total	50	100

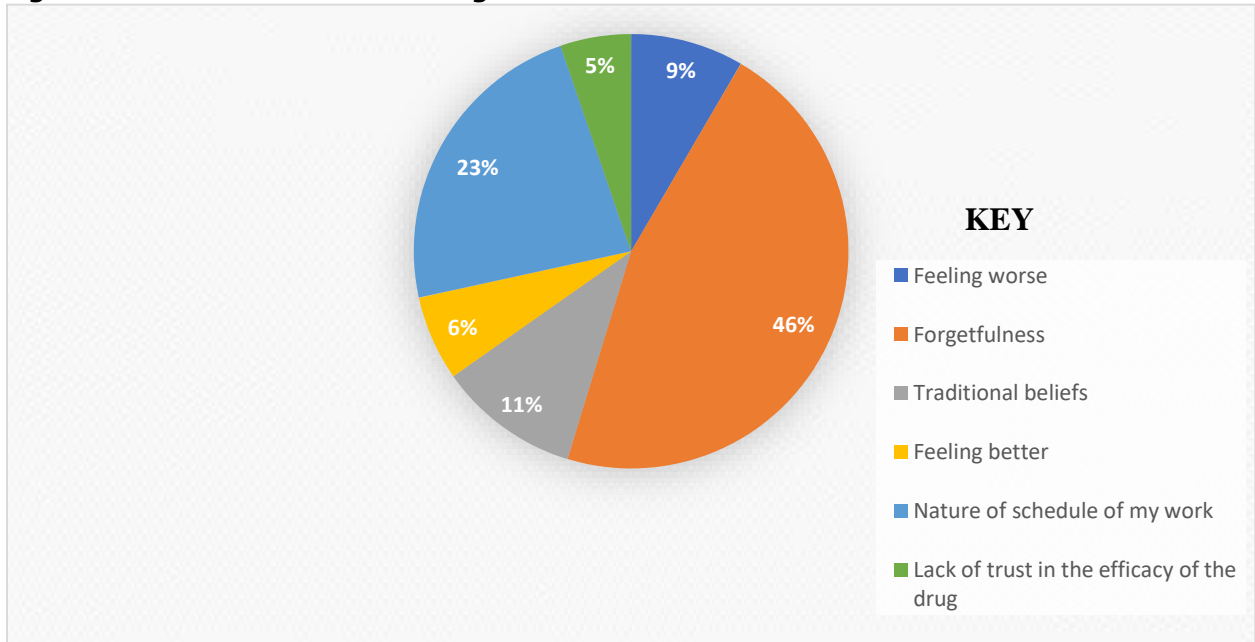
From table 2, most (54%) of the respondents reported receiving a salary of 250,000shs and above whereas the least (16%) of the respondents reported receiving a salary between 100,000shs- 150,000shs.

Figure 2: showing respondents towards thinking why some people are non-adherent to anti-diabetic medication. N=50



From figure 2, of the 50 respondents, 40% (20) of the respondents think patients are non-adherent to anti-diabetic treatment and this is because of the long duration of taking drugs followed by 28% of the patients being lazy towards following their treatment due to busy work schedules.

Figure 3: shows factors contributing to non-adherence to anti-diabetic medication. N=50



From figure 3, the majority of 22 of the respondents attributed (44%) forgetfulness as the major factor contributing to non-adherence followed by the nature of work schedules (22%) due to employment terms and regulations as suggested by 11 of the respondents.

Socio-economic factors contributing to non-adherence to recommended anti-diabetic medication among Diabetic patients.

Table 3: showing respondents towards the price of anti-diabetic drugs at local pharmacies/drug shops. N= 50

Variables	Respondents (N)	Percentages (%)
Affordable	8	16
Moderate	10	20
Expensive	30	60
Very cheap	2	4
Total	50	100

From Table 3, most (60%) of the respondents revealed that medicines are expensive whereas the minority (4%) reported that drugs are very cheap.

Table 4: shows the responses of respondents on how they find buying their medication with or without prescriptions and the corresponding reasons. N=50

Suggestions	Reasons
With prescription	It is easy because we know the drugs we are meant to use and when to swallow them. (key informant 1) It is easy since it is not a daily thing and doctors give us instructions on how to use the drugs and how to store them (key informant 2).
Without prescription	It is hard because I don't know the cost of the drug and how to use them since am of advanced age (key respondent 3). Because of lack of financial support from home, and distance to getting to the pharmacy to purchase the drugs, it becomes hard (key informant 4). I am old so and have no caretakers at home to understand which drugs am to use since they are grandchildren in lower primary hence it is hard (key informant 5).

Health-related factors contributing to non-adherence to recommended anti-diabetic medication among diabetic patients.

Figure 4: showing the respondents who have ever received counseling from the hospital and those who have never received counseling. N=50

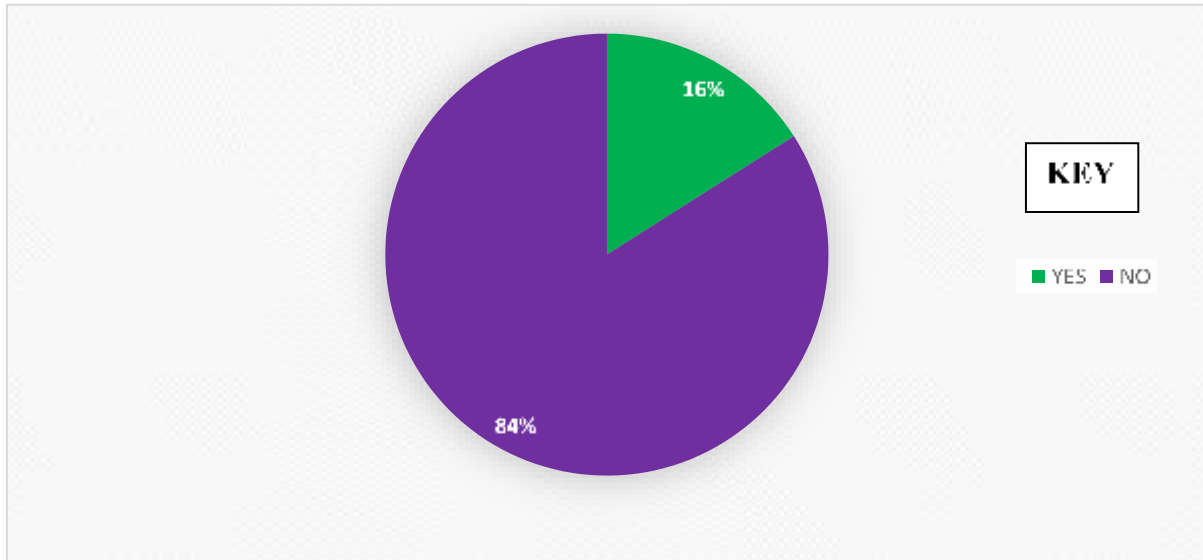


Figure 4, it shows that the majority (84%) of the respondents had not received counseling and sensitizing from the hospital while the minority (16%) of the respondents had received counseling from the hospital.

Table 5: showing the respondents on the time spent at the hospital when visited for check-up and review. N=50

Time Range	Respondents (N)	Percentage (%)
30 – 1hour	13	26
1hour – 3hours	9	18
Less than 30minutes	28	56
Total	50	100

Table 5, indicates that many respondents about 56% (28) of the respondents spent less time at the facility and about 18% (9) of the respondents spent 1 hour to 3 hours at the facility on every visit.

Table 6: showing the distribution of respondents according to getting medicines after a checkup at the facility. N=50

Response	Respondents (N)	Percentages (%)
Always	22	44
Sometimes	10	20
Most of the time	15	30
No	3	6
Total	50	100

From table 6, the majority (44%) of the respondents reported that they always get medicines after check-ups whereas the minority (6%) of the respondents reported that they do not receive medicines after check-ups.

DISCUSSION OF RESULTS.

Individual Factors Contributing to Non-Adherence to Recommended Anti-Diabetic Medication among Diabetic Patients.

From this study, the majority (52%) of the respondents attributed non-adherence to age above 59 years and duration of diabetes mellitus disease. This is in line with a study conducted on prevalence and factors associated with non-adherence to antidiabetic medication among patients at Mbarara Regional Referral Hospital Mbarara (Faisal . K, 2022) whose results showed that age above 60 years and duration of diabetes mellitus above 5 years since diagnosis were independently associated with antidiabetic medication nonadherence hence age above 59 years of the patient is a significant contributing factor to non-adherence to anti-diabetic medication. This is supported by a study carried out in Adama Referral Hospital (Gelaw . B, 2014) on nonadherence and contributing factors among ambulatory patients with antidiabetic medications where 270 patients were interviewed and patients with duration of diabetes ≤ 5 years (82.07%) were more compliant to their medication than those with >5 years (60.8%).

Also, from the results, respondents reported forgetfulness (44%) as a key factor for non-adherence followed by busy working schedules (22%) and laziness (28%) towards the treatment This is supported by a study conducted on factors contributing to noncompliance with diabetic medications and lifestyle modifications in patients with Type 2 DM in the Eastern Province of Saudi Arabia by (Alfulayw, 2022) which included a total of 426 participants and showed that 148 (34.7%) were not adherent to their medication, and this was attributed to forgetfulness, lack of knowledge and difficulty in following a healthy diet hence forgetfulness to adhere to medication is a significant still contributing to non-adherence to anti-diabetic treatment.

Socio-economic Factors Contributing to Non-Adherence to Recommended Anti-Diabetic Medication among Diabetic Patients.

According to the study results, most (60%) of the respondents reported that medicines are expensive and that no financial support from the family whereas the minority (4%) reported that drugs are very cheap and most patients also are non-adherent since they earn less income that cannot afford to buy the medication. This was in agreement with a study conducted about challenges to Diabetic and Hypertension management in Nakaseke District in Uganda (Chang . H, 2019) that showed the socio-economic factors for non-adherence being high treatment costs and drug costs hence the barrier to accessing medications in Uganda is financial hardship since most individuals are living below the poverty level. Even though the Ugandan health care system funds most of the health services in public hospitals, the hospitals and lower-level health centers frequently experience drug shortages, however, given these drug shortages at the public pharmacies, patients often are required to purchase medications from private pharmacies, though this is often at a considerable cost, and as a result, some patients reduce their medication dosage or mix their drugs with traditional herbal medicine hence financial hardship still stands as a major key factor contributing to non-adherence to anti-diabetic medication among diabetes mellitus patients.

Furthermore, from the results most respondents reported that it is hard to attain the medication without a prescription because; they don't know the cost of the drug and how to use it since am of advanced age (key respondent 3).

Because of a lack of financial support from family members, and the distance traveled to the pharmacy to purchase the drugs, it becomes hard (key informant 4).

I am old and have no caretakers at home to understand which drugs am to use since the ones there are grandchildren in lower primary hence finding it hard (key informant 5). This was supported by a study conducted about non-adherence to medication and associated factors among type 2 diabetes patients at Clinique Medicale Fraternite, Rwanda (Murwanashyaka. J, 2022) whose results showed that the patients who were enrolled in this study were from families that had different attitudes towards patients with T2DM, 35.5% of patients declared that their family members were not concerned about their disease and 24.5% of T2DM were from the families that perceived them as their burdens or burdensome hence family attitudes are significant in the ant-diabetic treatment especially among the T2DM patients. It was

found that the majority (40%) of the patients were from families whose members were very concerned about the diagnosed diseases and their management and this was followed by 35.5% of those who declared that their family members were not concerned about their disease.

Health-Related Factors Contributing to Non-Adherence to Recommended Anti-Diabetic Medication among Diabetic Patients.

The findings of this study show that the majority of the respondents 84% had not received counseling and sensitizing from the hospital and a minority (16%) of the respondents had received counseling from the hospital. This is in line with a study that was conducted about the magnitude of non-adherence and contributing factors among adult outpatients with Diabetes Mellitus in Dilla University Referral Hospital, Gedio, Ethiopia by (Boshe .B. D, 2021), which revealed that 152(80%) of the diabetic patients interviewed were non-adherent because they do not get proper diabetic education from either the treating physician or the hospital hence lack of counseling and medication sensitization from the hospital and physicians are key factors contributing to non-adherence to anti-diabetic medication in Uganda among diabetic patients.

Also, according to the findings, the majority (40%) of the respondents had never received any formal education (were illiterate) whereas the least (10%) had attained only primary education. This agrees with the study that was conducted on Drug non-adherence in type 2 diabetes mellitus; predictors and its associations (Shams. N, 2016) which involved 183patients with diabetes mellitus type 2, showed that non-adherence can be associated with illiteracy, poor diabetes knowledge ($p<0.0001$), poor Glycemic control, poly-Pharmacy and use of other modes of therapy($p<0.05$).

CONCLUSION.

According to the above findings, the researcher discovered based on the response from the respondents that the majority of the respondents get medicine after check-ups at the hospital which is a genuine attribute to adherence towards the treatment, where 44% always receive the medicine and just 6% do not after check-up. And spending less time at the facility while waiting for medicine achieves adherence among most of the respondents (56%).

The researcher therefore concluded that the major factors contributing to increased cases of non-adherence to anti-diabetic treatment were majorly; lack of counseling, sensitization about the medication regimen from the health workers, high treatment costs due to out-stocks at the government facilities, and age above 59 years.

RECOMMENDATIONS.

According to the findings of the current study, adherence to diabetic treatment was suboptimal, there is a need to still improve and bridge the research gap through availing counseling, sensitization whenever the patients visit the hospital, having enough drugs in stock at the facility so that patients do not have to buy them, giving shorter time between visits to the health centers and strategies helping patients understand their drug regimens especially patients above the age of 59 years.

Further research should be conducted on non-adherence to anti-diabetic treatment through counseling and sensitization of the patients.

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LIST OF ACRONYMS AND ABBREVIATIONS.

ART:	Antiretroviral therapy
BMI:	Body Mass Index
DM:	Diabetics mellitus
HCPs:	Health Care Professionals
IDF:	International Diabetes Federation
KSHS:	Kampala School of Health Sciences
T2DM:	Type 2 Diabetes Mellitus
UAHEB:	Uganda Allied Health Examination Board
VHTs:	Village Health Teams
WHC IV:	Walukuba Health Centre IV
WHO:	World Health Organization

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CONFLICT OF INTEREST.

The author declares no conflict of interest.

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