

CHALLENGES ASSOCIATED WITH MANAGEMENT OF TYPE 2 MELLITUS AMONG ADULTS AGED 45-60 YEARS ATTENDING DIABETIC CLINIC AT KISENYI HEALTH CENTRE IV IN KAMPALA DISTRICT. A DESCRIPTIVE CROSS-SECTIONAL STUDY DESIGN.

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Abstract

Background:

Type 2 diabetes mellitus is a type of diabetes mellitus that is very prevalent in Uganda and affects a wide percentage of the adult population. Much as there have been successive interventions in the prevention and control of this non-communicable disease, it is still increasing annually.

Methodology:

This was a descriptive cross-sectional study conducted to assess the challenges associated with the management of type 2 diabetes mellitus among adults aged 45-60 years attending the diabetic clinic at Kisenyi Health Centre IV and the researchers ought to determine the knowledge, lifestyle factors, and health facility related factors associated with the management of type 2 diabetes mellitus among the same population.

Results:

Study findings revealed that males were the majority 65% and stayed in a rural residence 69%. Most of the respondents had sufficient knowledge of diabetes mellitus. More than 80% had knowledge of the definition, types, signs, and causes of diabetes. The majority of respondents said there was general readiness of facilities to handle diabetes but the health workers needed more training.

Conclusion:

In conclusion, the respondents had sufficient knowledge of diabetes mellitus.

Most of the diabetics could define diabetes and knew at least two causes of diabetes mellitus though most thought that taking too much sugar was the most likely cause. The respondents know the types of diabetes mellitus, its signs and symptoms, and the susceptible ages of diabetes mellitus.

Recommendations:

There is a need by the government to therefore prioritize the non-communicable disease treatment and prevention budget, for the health facilities to develop better organizational structures in diabetic clinics and proper stock management. All these will help to reduce the diabetes disease burden in the country at large.

Keywords: Type 2 Diabetes Mellitus, Challenges, Kisenyi Health Centre IV, management, 45-60 years, Submitted: 2023-07-03 Accepted: 2023-07-06

1. Introduction:

Diabetes mellitus is a chronic metabolic disorder characterized by the presence of elevated levels of blood glucose which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. (WHO, 2021)

Diabetes mellitus is divided into several types including type 1, type 2, mature onset, gestational diabetes, and many more. Type 2 diabetes is the most prevalent type and is more prevalent in adults with every 1 in 11 adults affected. Type 2 diabetes mellitus is due to a combination of resistance to insulin action, inadequate insulin secretion, and excessive or inappropriate glucagon secretion.

Globally, the number of people with diabetes quadrupled in the past three decades and is the ninth major cause of death from 108 million in 1980 to 422 million in 2014. Prevalence has been rising more rapidly in low- and middle-income countries especially in Asia and Africa than in high-income countries (Zheng *et al.*, 2018). In 2019, an estimated 1.5 million deaths were directly caused by diabetes, and 2.2 million were directly attributable to high blood glucose (WHO, 2021).

In Africa, it was estimated that 19 million adults live with type 2 diabetes as of 2019. However, this figure is estimated to increase to approximately 47 million by 2045.

Africa also has the highest percentage of undiagnosed people with T2DM with 60% of those living with diabetes unaware of it. Africa has the greatest variability in the prevalence of T2DM from <1% in some regions to up to 16% in other regions (IDF, 2019).

In Sub-Saharan Africa, the number of adults living with T2DM in 2017 was between 9.8-27.8 million with a regional prevalence of 6%. The increase in T2DM prevalence in sub-Saharan Africa is expected to outpace all other global regions. SSA countries face several challenges in tackling the growing T2DM burden including limited

health and social care resources and the continued costs of diseases such as HIV/AIDS and malaria (Zimmermann *et al.*, 2018).

East Africa has a high rate of T2DM though this is not fully statistically assessed.

This is mainly because most of the diabetes cases in East Africa are undiagnosed with a pooled prevalence of 4.43.

Uganda has a relatively low prevalence of diagnosed diabetes mellitus at 1.4% of all adults as of 2016. This is because most of the affected people aren't aware of their glycemic status (Bahendeka *et al.*, 2016).

1.1. General objective:

To assess factors associated with management of diabetes mellitus type 2 among adults aged 45-60 years attending diabetic clinic at Kisenyi health centre IV.

1.2. Specific objectives

- To assess the knowledge of patients attending diabetic clinic at Kisenyi health centre IV regarding the management of type 2 diabetes mellitus.
- To determine the individual lifestyle factors affecting the management of type 2 diabetes mellitus among adults aged 45-60 years attending diabetic clinic at Kisenyi health centre IV.
- To establish the health facility related factors affecting the management of type 2 diabetes mellitus among adults aged 45-60 years attending diabetic clinic at Kisenyi health centre.

2. Methodology:

2.1. Study design :

A descriptive cross-sectional study design was employed in this study. This is because it's time-sensitive it fitted my limited schedule.

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2.2. Study area:

The study was conducted at Kisenyi Health centre IV which is a public health facility found in the Kisenyi suburb, along Mwanga II road Kampala. It serves a population of about 1200 persons per day with a total of around 40 staff. It attends to over 50 adults with diabetes mellitus type 2 per day.

Uganda is the most widely spoken local language in the area. Common religions are Roman Catholic, Anglican, SDA, Islam, and Born Again, and the church of Jesus Christ of latter-daysaints.

2.3. Study population:

The study population included the target population of adults aged 45-60 years with diabetes mellitus type 2 and an accessible population which included the patients attending Kisenyi the health centre IV diabetic clinic that are aged 45 to 60 years between December and January.

2.3.1. Inclusion criteria:

The study included all patients that attended the diabetic clinic at Kisenyi Health Centre IV who were between 45 and 60 years. Only patients who consented to participate in the study were considered.

2.3.2. Exclusion criteria:

Patients who had other types of diabetes mellitus, those who did not attend the diabetic clinic, and those who were below age 45 and beyond age 60 did not participate in the study. Patients who didn't consent to participate also were not included in this study.

2.4. Sample size determination:

The sample size was determined using Kish-Leslie's (1965) formula

$$n = Z^2PQ / e^2$$

Where; n = sample size required

e=acceptable error/ required precision of the estimate=0.081

Z=the standard variate (normal Z-score) corresponding to the confidence interval i.e., for the confidence interval of 95%Z =1.96

P=the estimated prevalence of diabetes mellitus type 2 among people 45 to 60 years in Uganda i.e., 78.4%(UBOS, 2017)

$$Q = 1 - P$$

$$n = Z^2PQ / e^2$$

$n = (1.96^2 \times 0.784 \times 0.216) / 0.081^2$ n = 98 respondents

Therefore, the study involved 98 respondents.

2.5. Sampling technique :

Convenient sampling was employed to select the representative members to participate in the study. The study participants were selected depending on how accessible, convenient, and cooperative to participate in the study as well as the fitting time of the respondent.

2.6. Sampling procedure:

The study participants were selected using convenient sampling. The researcher selected everybody who attended a diabetic clinic at Kisenyi health center IV and was willing to participate in the study at her convenience in terms of time and resources.

2.7. Data collection tools:

The only data collection tool that was used in this study was the questionnaire which included both open and closed-ended questions. These were printed on papers in English and for respondents who did not know English a researcher guided them in filing the questions. Respondents were expected to use their writing materials such as pens or pencils as appropriate. Parcels for proper storage of the questionnaire forms were used before and after the study.

2.8. Data collection method:

The questionnaire method was used for data collection in the study. The questionnaires were delivered by the researcher to selected participants in this study. In this method, information regarding challenges associated with the management of type 2 diabetes mellitus among adults aged 45-60 years attending diabetic clinic at Kisenyi health centre IV were sought. Questions targeting these fields were conveyed in the questionnaire.

2.9. Data collection procedure:

Serial numbers were given to every respondent which were put on the questionnaires. The respondents were then informed about the content and intent of the study and informed consent was sought. A part of the questionnaire provided space for documenting the informed consent. The questionnaire forms were then handed to the respondents and they were given instructions on the way of filling them.

Standard semi-structured questionnaires were used and the respondents were guided on how to fill them using either pen or pencil. The time of collection of the questionnaires was communicated to the respondents. For this study respondents were offered a maximum of one day to return the forms to the researcher.

In the case of refusal to consent to the study or failure to fill out the questionnaire form, the respondent was eliminated from the sample and replaced by another respondent from the stratum as the former. In case of loss of the questionnaire by a respondent, another copy was supplied at the expense of the researcher. This was catered for obtaining a surplus of copies of the forms and retained by the researcher.

2.10. Piloting the study:

The only activity that was relevant in this aspect was the seeking of consent from the authorities. As the study was conducted within the area and population of which the researcher is a resident, there was a relevant need for a pilot study as the researcher deems the area qualified for the study. This is because it was relevant to the study, and the required research and information was available from the members hence the area automatically qualified for the study.

2.11. Quality control:

The data collection tool i.e., the questionnaire was pretested by selecting randomly a few respondents from the hospital attending the diabetic clinic and administering it to them. The answers were then scrutinized to check their perfectibility by respondents and the necessary adjustments were made in the questionnaire.

Adjustments ranged from change, omission, and addition of questions to changing the font of the questions in the forms.

For quality data collection two research assistants were selected from the hospital of which the principle researcher was not part. These were trained on how to answer questions in the questionnaire form, how to treat respondents ethically, and how to translate any question in the questionnaires for the respondents. These assistants helped the researcher in the distribution and collection of the forms before and after the respondents finished filling them. It was their responsibility to ensure the exact the number of forms retrieved after the study.

2.12. Data analysis and presentation:

The researcher ensured completeness of data while in the field and data was encoded and cleaned.

The data collected was analyzed using Microsoft Excel, SPSS software version 2, and STATA version 13.0. Results were presented in the form of narratives, frequency tables, percentages, pie charts, and graphs.

2.13. Ethical considerations:

A letter of introduction was written, addressed to the director of Kisenyi health centers to carry out research in the same hospital. Letters of request were also presented to the head of internal medicine and the in charge of the diabetic clinic in their areas of jurisdiction.

The respondents were assured of a high level of confidentiality by the researcher and his team. This was ensured by the use of serial numbers instead of names on the questionnaire forms to ensure anonymity. The respondents were also informed of their right to refuse to be enrolled in the study and their right to withdraw from the study at any time along the way without any repercussions.

Informed consent was sought from the respondents by presenting them with a consent form to sign after a thorough explanation of the study. The researcher and his team observed and respect the expectations of the respondents.

3. Results:

3.1. *Socio-demographic factors of respondents about Diabetes mellitus at Kisenyi Healthcenter IV regarding the management of type 2 Diabetes mellitus:*

Table 1 shows that the majority of the respondents 40(40.8%) were aged between 45 – 50years. Most of these respondents were married 70(71.4%)and only the minority divorced 12(12.4%).Born again 35(35.7%) was the biggest religious denomination amongst the respondents and Muslims 10(10.2%) were fewest. The majority of the respondents were residing in a rural place 68(69.4%) and had attended at least secondary school education 48(48.9%).

3.2. *Knowledge of respondents about Diabetes mellitus at Kisenyi Health center IV regarding the management of type 2 Diabetes mellitus:*

Figure 1 indicates the majority of the respondents could define diabetes mellitus as persistent high blood sugar 78(80.6%) but only a few could quantify it 17(17.3%) and the rest 3(3.1%)were not sure about the definition.

Table 2 shows; most of the respondents knew that taking too much sugar is the cause of diabetes mellitus 32(32.7%), 19(19.4%)picked old age, 17(17.3%)picked obesity, 16(16.3%)picked family history of diabetes and 14(14.3%) picked other, no one didn't know at least one cause of diabetes.

Figure 2 indicates that the majority, 87% of the respondents showed that diabetes is genetic, and only 3% though it wasn't genetic.

Table 3 indicates that the majority of the respondents were not sure about the types of diabetes mellitus 71(72.4%), type1 was the most recognized type 18(18.4%), 7(7.1%)recognized type2(2%) recognized gestational diabetes mellitus and none of the respondents recognized matureonset diabetes of the young.

Table 4 shows the majority of the respondents 28(28.6%) reported that they had excessive sweating while the minority 10(10.2%) of the respondents reported that they had paralysis.

In table 5; the respondents chose as follows; above60years 40(40.8%), 41-60years 23(23.5%), 21-40years 14(14.3%), 0-20years 6(6.1%) ,allages 12(12.2%). Only 3(3.1%)respondent wasn't sure which ages are affected by diabetes.

3.2.1. *Health facility related factors about Diabetes mellitus at Kisenyi Health center IV regarding the management of type 2 Diabetes mellitus:*

Figure 3 indicates that the majority thought their facilities were ready to treat diabetes mellitus 83(82.7%) and the rest 17(17.3%)thought the facility wasn't ready.

Figure 4 indicates that the majority stayed far from the facility 64(65.3%), 21(21.4%)stayed at a moderate distance, 12(12.2%)stayed near the facility and 1(1.1%) respondent wasn't sure about the distance.

shows that of the 98 respondents, 40(40.8%) travelled to the facility on foot, 28(28.6%) used a bicycle, 23(23.5%) used a motorcycle and only 7 used a motorcar.

Figure 5 shows the availability of medication; where 44(44.9%) respondents reported that there was enough medication at the health facilities and majority 54(55.1%)reported that there was less medications at the health facility.

indicates that the majority of the respondents waited in line for 30minutes to 2 hours, 21(21.4%)waited for greater than 2 hours, 12(12.2%) waited for less than 30 minutes and only2(2.1%) were unsure about the waiting period.

Figure 6 shows that the majority of the respondents 74(75.4%) thought that the health workers at the facility were well trained in the management of diabetes mellitus and only 24(24.6%)thought the health workers lacked in their training in the management of diabetes mellitus.

4. Discussion of results:

4.1. *Knowledge of patients:*

The specific objective was to assess the knowledge of respondents attending the diabetic clinic

Table 1: S

		Number	Percentage
Age	45-50	40	40.8
	51-55	37	37.8
	56-60	21	21.4
Gender	Male	64	65.3
	Female	34	34.5
Marital status	Married	70	71.4
	Divorced	16	16.3
	Widowed	12	12.4
Religion	Muslim	10	10.2
	Anglican	19	19.4
	Born again	35	35.7
Residence	Catholic	22	22.4
	Other	12	12.2
	Rural	68	69.4
Education level	Urban	30	30.6
	Primary	23	23.5
	Secondary	48	48.9
	Tertiary	27	27.6
	Total (For each)	98	100

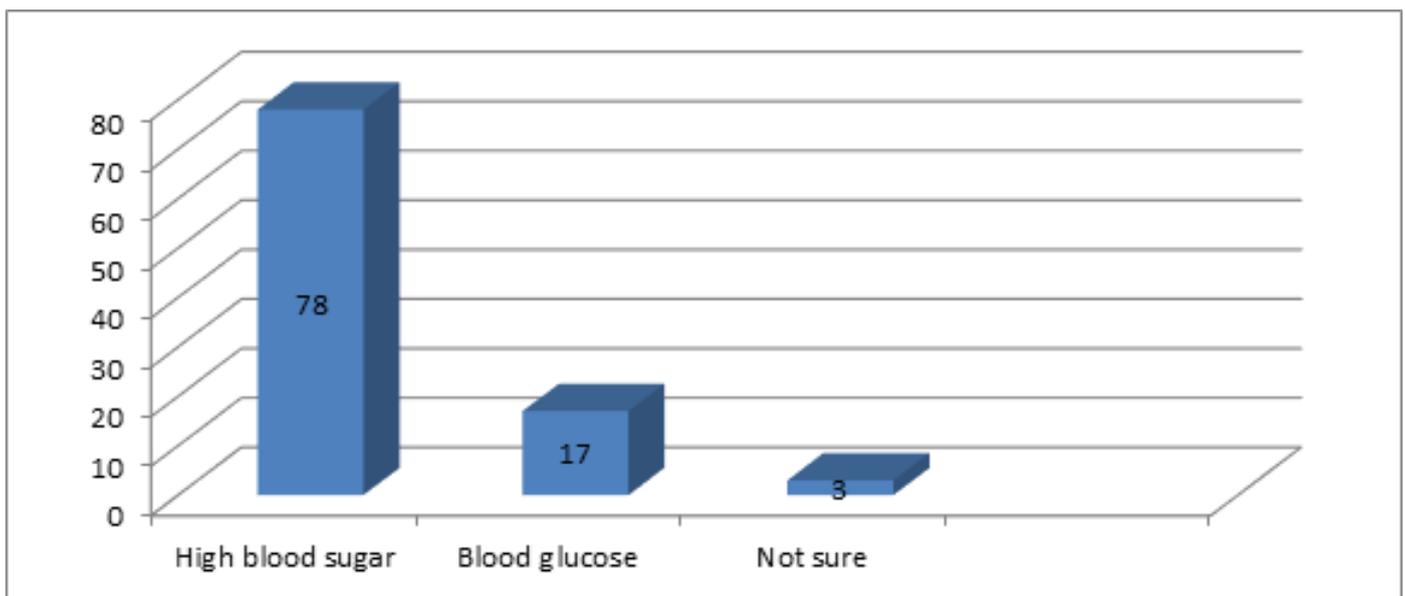


Figure 1: Distribution of Responses about their knowledge on the definition of diabetes (n =98)

Table 2: Responses on causes of diabetes (n=98)

Response	Number	Percentage
Taking too much sugar	32	32.7
Old age	19	19.4
Obesity	17	17.3
Parents with diabetes	16	16.3
Don't know	0	0
Other	14	14.3

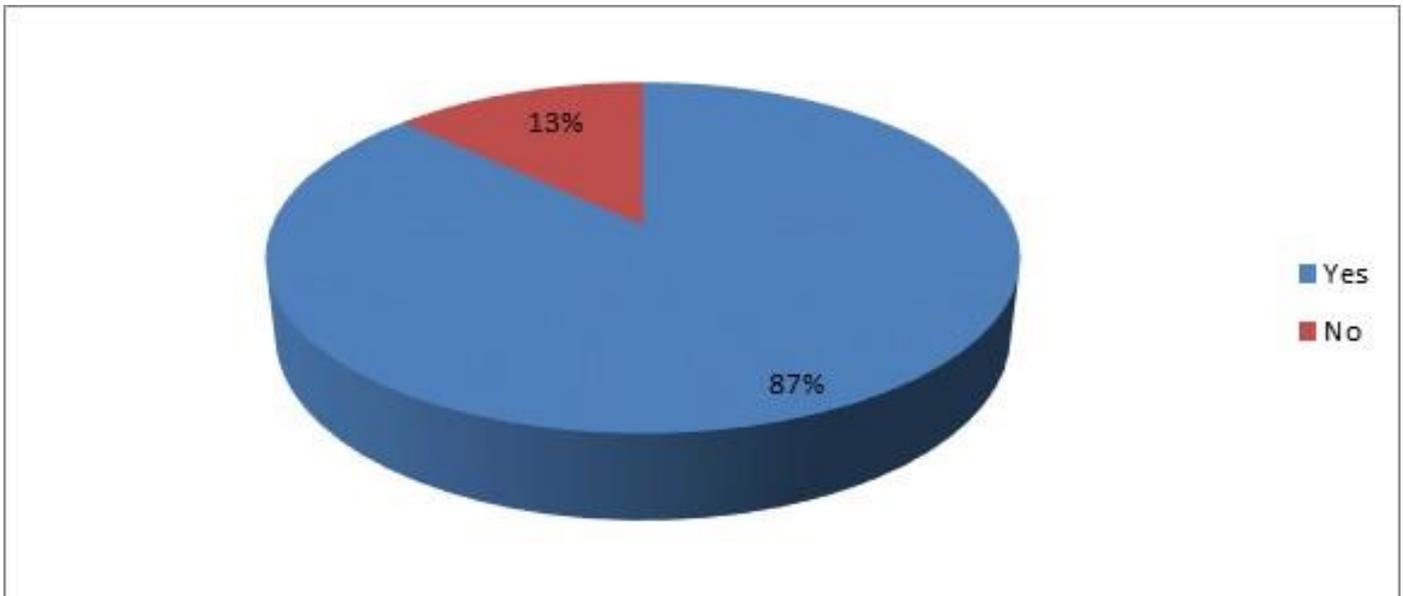


Figure 2: Distribution according to their Responses on whether diabetes is genetic (n=98)

Table 3: Distribution according to the Responses of clients on types of diabetes mellitus (n=98)

Response	Number	Percentage
Type1	18	18.4
Type2	7	7.1
Gestational diabetes	2	2
MODY	0	0
Other	0	0
Not sure	71	72.4
Total	98	100

Table 4: Distribution according to the Respondents' choices on signs of diabetes mellitus (n=98)

Response	Number	Percentage
Over urination	24	24.5
Paralysis	10	10.2
Excessive sweating	28	28.6
Obesity	12	21.2
Poor vision	21	21.4
Other	3	3.1
Total	98	100

Table 5: Distribution according to their Responses on the susceptible ages of diabetes mellitus (n=98)

Response	Number	Percentage
0-20	6	6.1
21-40	14	14.3
40-60	23	23.5
Above60	40	40.8
All ages	12	12.2
Not sure	3	3.1
Total	98	100

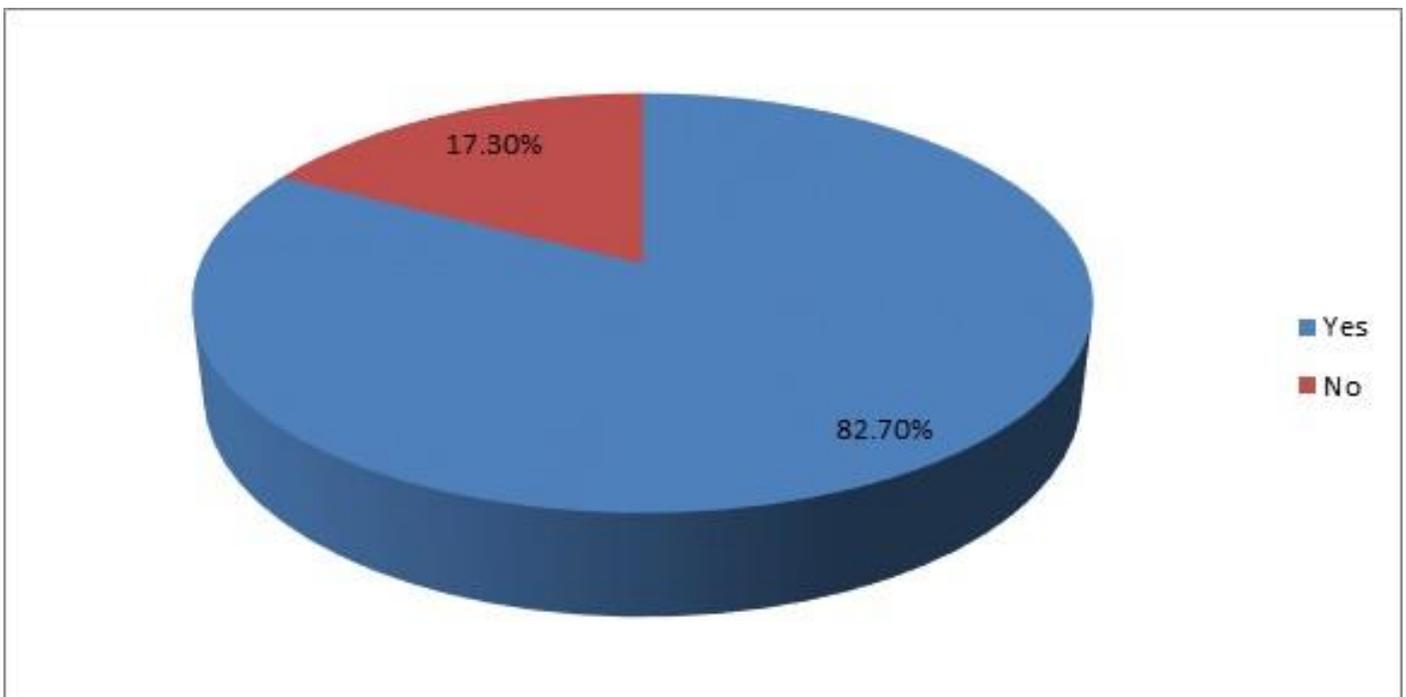


Figure 3: Distribution according to their Responses on whether health facilities are ready to treat diabetes (n=98)

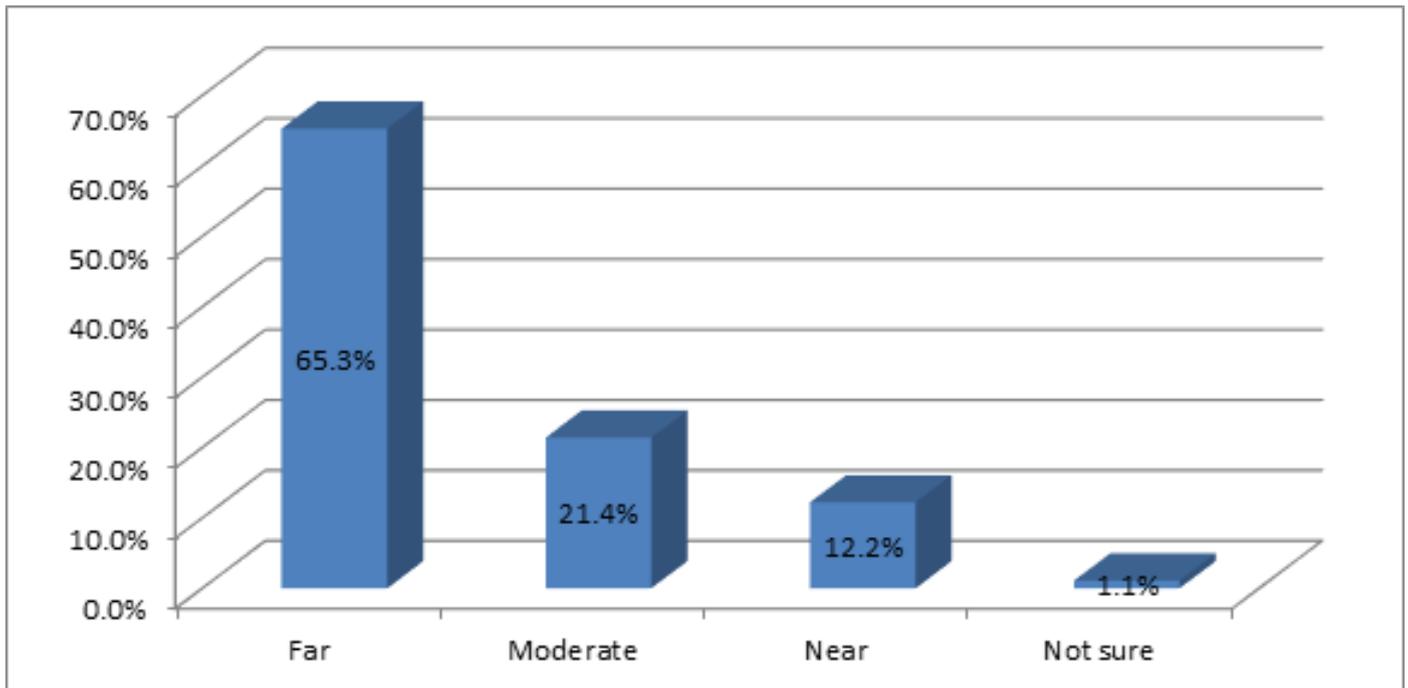


Figure 4: **Distribution according to the Distance of respondents' homes from health facility (n =98)**

Table 6: **Distribution of respondents according to their Modes of transport to the health facility (n=98)**

Response	Number	Percentage
Car	7	7.1
Bicycle	28	28.6
Motorcycle	23	23.5
Foot	40	40.8
Total	98	100

Table 7: **Distribution of respondents according to their Waiting hours at the health facility (n =98)**

Response	Number	Percentage
<30 minutes	12	12.2
30 mins -2 hours	63	64.3
>2 hours	21	21.4
Not sure	2	2.1
Total	98	100

at Kisenyi health center IV regarding the management of type 2 diabetes mellitus. The study found that the majority (80.6%) of the respondents had good knowledge regarding type 2 diabetes mellitus because most of them were tested and initiated on anti-diabetic medication, sensitization through continuous health education when receiving treat-

ment, and information via radios and televisions regarding diabetes mellitus. This is in agreement with the study done in Ugandan universities where 99% of the respondents had sufficient knowledge regarding diabetes mellitus (Kharono *et al*, 2017)

In this study, all the respondents named at least

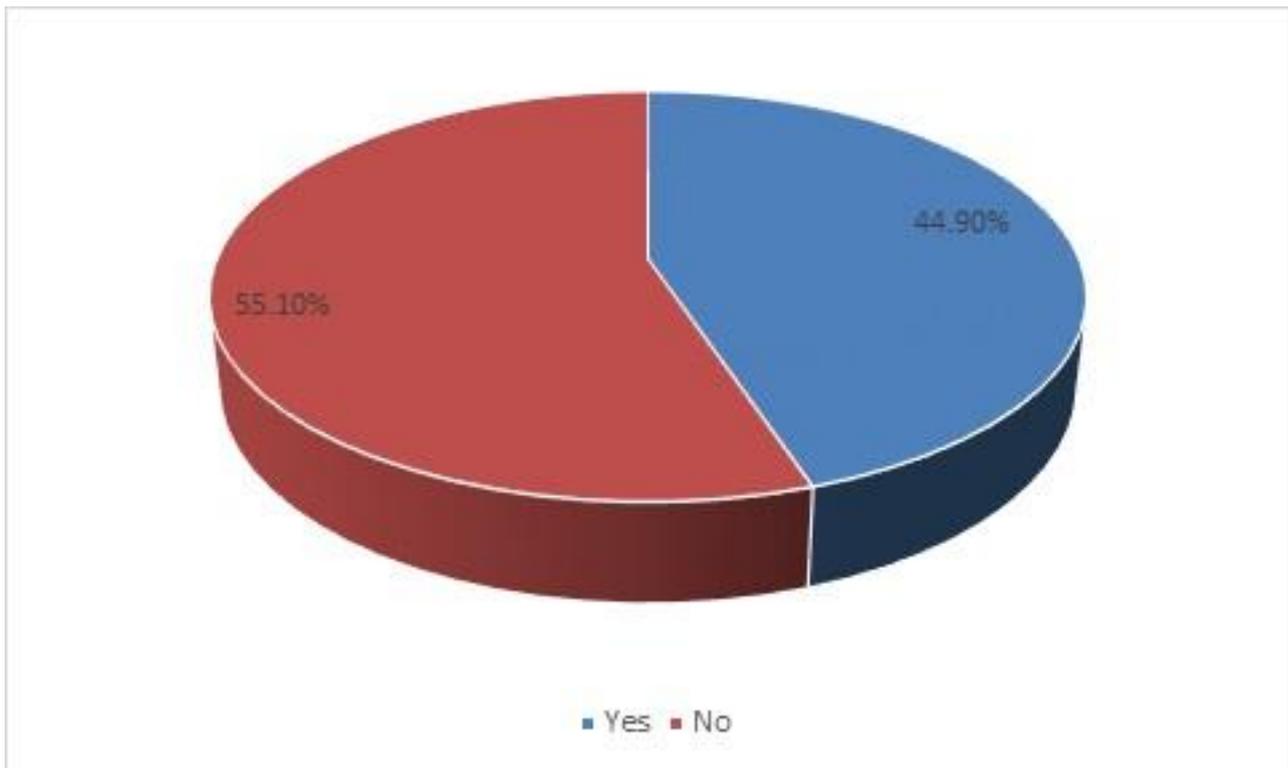


Figure 5: Distribution of respondents according to their responses on the availability of medication(n=98)

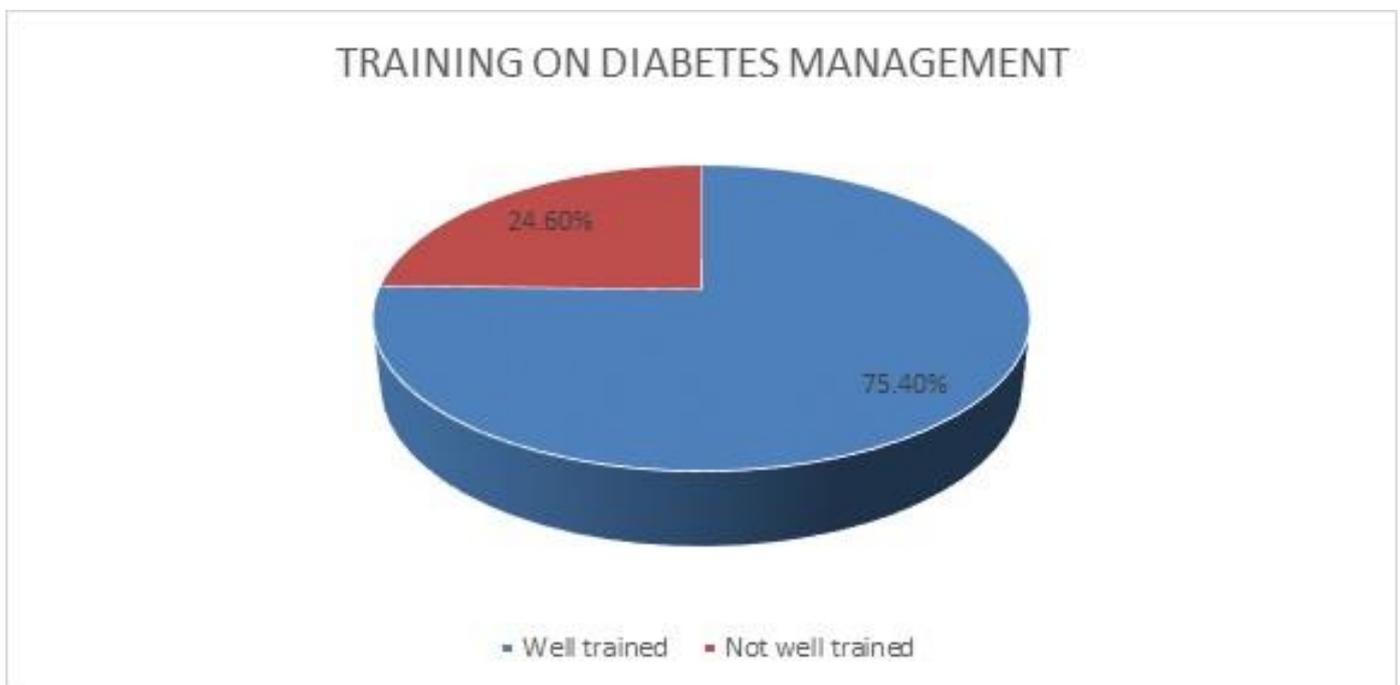


Figure 6: Distribution of respondents according to their responses on Health workers' diabetes management training. (n=98)

one sign and symptom of diabetes mellitus with the most selected sign being excessive sweating with 28.6% choices and the least being obesity with 12.2% choices. This was because of personal experiences of different signs and symptoms by different individuals. This is not in agreement with the study conducted in Saudi Arabia (Ahmed et al, 2019) where only 19.2% of the respondents were aware of type 2 diabetes mellitus and only 40.3% were aware of the signs and symptoms of diabetes mellitus.

The majority of the respondents in this study (86.7%) believed that diabetes mellitus is hereditary. This was because most of them reported that their parents either mother or father died of diabetes mellitus and some are still living with it. This is not correlating with the results of the study carried out (Atwine et al, 2017) in Uganda which found that only the minority 38% believed that diabetes mellitus is hereditary.

The majority of the respondents in this study believed that the risk of diabetes mellitus is higher above 45 years of age that is, 61.1% of the 98 respondents. This is probably because almost all of them developed Diabetes mellitus in their later life of age. This is in agreement with the study conducted amongst Ugandan students which also found that only a minority worried about catching diabetes mellitus before the age of 45. (Kharon et al, 2017).

4.2. Individual lifestyle factors:

The majority of the respondents in this study were male (65.3%) and the rest 34.5% were female. This is not in agreement with the study conducted in Ethiopia in Minz Aman town where the majority of the diabetics were female (63%) and the rest were male (Shiferaw et al, 2018). However, it agrees with a study done in Kanungu district in Uganda which found that only a minority of the respondents (22.8%) were female (Asiimwe et al, 2020).

In this study, more than 60% of the respondents had achieved at least a secondary school education. This was because most of them had attended Universal Primary Education and Universal Secondary Education schools. This corre-

lates with the study conducted in 2018 in Ethiopia which had similar results showing that most diabetics (48%) had attained secondary school and higher (Gurmuet et al, 2018). It is also in agreement with a study in Ethiopia where the majority of the diabetics had attained a diploma level and above (Shiferaw et al, 2018).

The majority of the respondents in this study resided in rural homes (69.4%) and this was because of the high cost of living in towns. This is not in agreement with a study conducted in Rwanda where the majority (85.1%) resided in urban areas and only 14.9% were of rural residents. (Bavuma et al, 2020)

4.3. Health facility factors:

The specific objective of the study was to determine the health-related factors associated with the management of type 2 diabetes mellitus among adults aged 45-60 years attending Kisenyi health center IV. The study found that 82.7% who were the majority agreed that the health facilities were ready to treat diabetes mellitus. This was because the facility has experienced health workers in managing type 2 Diabetes mellitus. This correlates with a study conducted in rural health facilities in Uganda which revealed that health facilities were generally ready to manage diabetes mellitus with a score of 73.9% (Birabwa et al, 2019).

Findings from this study indicate that the majority of the diabetics who participated in the study waited in queues for only less than 2 hours, a total of 76.5%, which is a relatively tolerable time for waiting in line. This is because the facility has enough health workers who are willing and diligent in the provision of health care.

This disagrees with findings from a study done in Bangladesh which found that over 67% of the respondents waited in the queue for long hours to be served (Zheng M et al, 2018).

Regarding the availability of medication, 44.9% of respondents thought there was enough medication at the health facilities and 55.1% who were the majority reported there wasn't enough medication at the health facility. This is in agreement with a study done in southwestern Nige-

ria among patients with type 2 diabetes Mellitus which found that nonavailability or stock-out of anti-diabetic medication was at a rate of 64% (Onwuchuluba et al, 2019).

5. Conclusions:

The first specific objective of the study was to assess the knowledge of diabetic patients aged 45-60 attending the diabetic clinic at Kisenyi Health Centre IV. The results found relatively good levels of knowledge among the respondents. Most of the diabetics could define diabetes and knew at least two causes of diabetes mellitus though most thought that taking too much sugar was the most likely cause. The respondents know the types of diabetes mellitus, its signs and symptoms, and the susceptible ages of diabetes mellitus. From these results, I conclude that the respondents had sufficient knowledge of diabetes mellitus.

Another specific objective of the study was to determine the individual/lifestyle factors affecting the management of type 2 diabetes mellitus among patients attending the diabetic clinic at Kisenyi health center IV. The results found most respondents were below the age of 55 years and the majority were female and married. Most of the respondents were from rural residences and had at least attained secondary school education. Therefore, higher socioeconomic status was a high predictor of diabetes mellitus.

The last specific objective of the study was to assess the health facility-related factors affecting the management of type 2 diabetes mellitus among patients at Kisenyi Health Centre IV. The study findings indicated that health facilities are generally ready to manage diabetes mellitus with enough medications and fairly well-trained personnel to manage the disease. The facilities are relatively far from the residences of most of the clients but have relatively waited hours in the queue. These results show a general facility readiness and well-equipped nature in the management of diabetes mellitus.

6. Study limitations:

Some limitations of the study were inadequate resources such as funds to fully fund the activities involved in the study.

7. Recommendations:

From the results obtained from this study among diabetics attending the diabetic clinic at Kisenyi health center IV, the researcher there recommends that;

The government through the national Ministry of Health should prioritize diabetes mellitus in the annual budget to help in availing the medicines, carry out public awareness campaigns, train health personnel, and other programs that directly improve service delivery to diabetic patients hence reducing the burden of the disease to the nation.

The health facility (Kisenyi health center) and other similar health facilities that offer services to diabetic patients should develop proper organizational structures for the diabetic clinics. These include having flow charts to reduce waiting hours, proper record keeping, and proper stock keeping to enable early requisitions hence avoiding frequent stock-outs of medicines and other materials.

The author recommends that the findings from this study be availed to the Uganda Bureau of Statistics such that they are a point of consideration in the development of infrastructure such as roads in the area.

8. Acknowledgement:

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9. List of abbreviation:

DCM :Diplomain Clinical Medicine and CommunityHealth
HIV:HumanImmune-deficiencyVirus
IDF:International Diabetes Foundation
MoH:Ministryof Health
T2DM:Type2Diabetes Mellitus
UAHEB:UgandaAllied Health Examinations Board
WHO:World Health Organization

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