

PREVALENCE OF DIABETES MELLITUS AMONG HIV PATIENT ATTENDING ART CLINIC AT MBALE REGIONAL REFERRAL HOSPITAL. A CROSS-SECTIONAL STUDY.

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Abstract

Background

Chronic immune activation and inflammation associated with HIV infection contribute to insulin resistance and the development of diabetes mellitus in this population. The study aims to determine the prevalence of diabetes mellitus among HIV patients.

Methodology

The study employed a cross-sectional study design using a structured patient data form to collect quantitative data from 234 respondents attending the ART clinic at Mbale Regional Referral Hospital in Eastern Uganda. Both males and females were included in the study

Results

The prevalence of diabetes mellitus among HIV patients was 19%. 44/234(19%) HIV patient had diabetes mellitus and 190/234(81%) did not have diabetes mellitus.

Conclusion

The prevalence of Diabetes mellitus is gradually increasing among People living with HIV which poses an increasing risk to the general prognosis and well-being of PLWH

Recommendation

More emphasis should be put on conducting routine DM screening of all People living with HIV and ensure timely treatment of those found sick as well as health educating all of them about how to reduce the risks of developing DM

Keywords: *Diabetes mellitus, Insulin resistance, ART clinic.*

Submitted: 2024-03-17 Accepted: 2024-04-26

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Background of the study

The interaction between HIV and diabetes is complex and understanding the prevalence of diabetes among HIV-positive individuals is crucial for effective management and treatment (*Gebrie et al, 2020*). Duration of antiretroviral therapy was positively correlated with an increased risk of diabetes mellitus. (*Lee et al, 2018*). Chronic immune activation and inflammation associated with HIV infection contribute to insulin resistance and the development of diabetes mellitus in this population (*Serrano-Villar et al, 2016*). Additionally, specific antiretroviral drugs, such as protease inhibitors were associated with an increased risk of diabetes mellitus (*Calza et al, 2020*).

There is a significantly higher prevalence of diabetes mellitus among HIV-positive patients (12%) compared to the general population (*Smith et al, 2015*). Studies worldwide identified a significant burden of diabetes mellitus among HIV-positive patients, with prevalence rates ranging from 8% to 20% depending on the geographical location and patient population. (*Brown et al, 2017*). In Sub-Saharan Africa, where the HIV burden is particularly high, the prevalence of diabetes mellitus among HIV-positive patients attending ART clinics with a Prevalence of DM among Hiv patients found at 6.8% in South Africa (*Matsha et al,2015*), 6.5% in Tanzania (*Maganga et al, 2015*) and 4.9% in Uganda

(*Nakanjako et al, 2014*). The study aims to determine the prevalence of diabetes mellites among patients attending the ART clinic at Mbale Regional Referral Hospital in Eastern Uganda.

Methodology

The methodology described is similar to the one published by (*Mukholi & Nakalema, 2024*)

Study Area

Mbale Regional Referral Hospital, commonly known as Mbale Hospital is a hospital in Mbale, Eastern Uganda (scope of study 1.5.3) because it serves many more patients from outside the hospital's catchment area.

Study Design

The study employed a cross-sectional study design to determine the prevalence of diabetes mellitus among HIV patients attending the ART clinic at Mbale Regional Referral Hospital. Because it fits the description of the phenomenon.

Study Population

The study population was HIV patients attending the ART clinic at Mbale Regional Referral Hospital. This population was considered because there are no studies that have specifically addressed the burden of prevalence of diabetes mellitus among HIV patients attending ART clinic, especially in this hospital.

Inclusion criteria

The study involved only HIV patients attending ART clinic who attended the hospital during the study period and their parents were willing to participate in the study voluntarily.

Exclusion criteria

The study excluded all HIV patients who attended the ART clinic at the hospital for the first time and those who were not willing to participate in the study voluntarily.

3.4 Sample Size Determination

The sample size for the participants was determined using the formula developed by Kish (1965): 10

Where.

N= the sample size

Z = is the standard normal deviation which is normally 1.96 at a confidence interval of 95%.

P = is diabetes prevalence among HIV patients of 18.8 % (0.188) reported by (Sempira, 2021)

$Q = 1 - p (1 - 0.188) = 0.812$

I = Margin of error estimated at 5%

$$N = \frac{1.96^2 \times 0.188 \times 0.812}{0.05^2}$$
$$N = \frac{3.8416 \times 0.188 \times 0.812}{0.0025}$$

N= 234

Therefore, 234 patients were considered for the study to have a timely and appropriate sample size that fits the scheduled period of study.

Sampling Procedure

Simple random sampling was used during the study since it allowed the researcher to select a sample of the target population perfectly. This can improve the accuracy and precision of the estimates obtained from the sample, as well as eliminate bias.

Sampling procedure

After the study was approved by the hospital, the researcher approached the ART clinic from where he introduced the study to the patients and then randomly selected the study participants who agreed to participate voluntarily. This was done daily until when the sample was achieved by the researcher.

Data collection tools

A well-structured patient data form was given to the participants to fill in their credentials, mainly their age and sex since the study focused on these demographics.

Data collection procedure

After approval of the study by the institute research committee, the researcher was given an introduction letter from the school seeking permission to carry out the study, which was presented to the hospital director for authorization. Consent letters were presented to the participants. A well-structured patient data form was provided to the participants to obtain their credentials as needed by the study.

Study variables.

The dependent variable was the prevalence of diabetes mellitus.

Quality control

Pilot study/ Pre-testing: Before conducting the study, the patient forms were filled out by a group of well-wishers to check for any errors or irregularities. The forms were printed, and respondents were given enough time to fill in the information.

Data analysis and presentation

Data analysis was done using statistical packages for social science (SPSS) version 25.0 during the study. The data obtained from the program was presented in the form of proportions, tables, charts, and figures.

Ethical considerations

Clearance was obtained from St Francis School of Health Sciences. Informed consent was sought from the respondents both verbally and in writing.

Participants were assured of confidentiality and use of the obtained information for research purposes only and participation was fully out of the respondents' choice with the right to pull out at any time, whenever they felt uncomfortable to continue. Their participation, or its lack thereof, did not in any way influence any condition related to services they were already getting from the Hospital or staff involved but those that were found with DM were referred to DM to be given appropriate treatment immediately.

During the study the following limitations were faced, financial implications and biased information from the participants.

Results

From table 1: 44/234(19%) HIV patient had diabetes mellitus and 190/234(81%) did not have diabetes mellitus.

From figure 1, 19% was for HIV patients with diabetes mellitus and 81% for those HIV patients without diabetes mellitus.

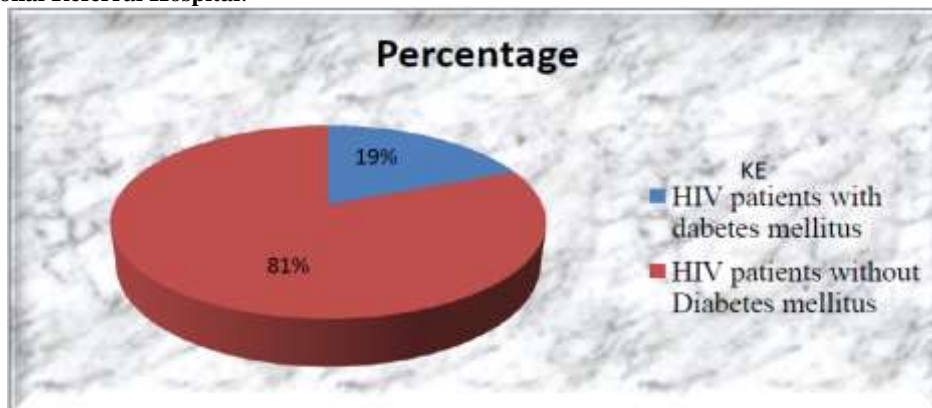
Study Limitation

Table 1: Showing the frequency and percentage of Diabetes Mellitus among HIV Patients Attending ART Clinic at Mbale Regional Referral Hospital.

VARIABLE	FREQUENCY	PERCENTAGE
HIV Patients with Diabetes Mellitus	44	19%
HIV Patients Without Diabetes Mellitus	190	81%
Total	234	100

Source of data: primary data 2023

Figure 1: A Pie chart showing the Percentage of Diabetes Mellitus among HIV Patients Attending ART Clinic at Mbale Regional Referral Hospital.



Discussion

According to the results, 44/234(19%) HIV patients had diabetes mellitus and 190/234(81%) did not have diabetes mellitus. this indicated that the prevalence of diabetes among HIV patients was 19%. the findings were higher than those which were reported by (Fourie *et al*,2019) in South Africa which reported a prevalence of 10.5%. This is attributed mainly to the difference in study design (cross-sectional design) and the study population that was employed in both studies.

Conclusion

The prevalence of Diabetes mellitus is gradually increasing among People living with HIV which poses an increasing risk to the general prognosis and well-being of PLWH

Recommendation

More emphasis should be put on conducting routine DM screening of all People living with HIV and ensure timely treatment of those found sick as well as health educating all of them about how to reduce the risks of developing DM

Acknowledgment

Fast and foremost, I would like to express my heartfelt appreciation to almighty Allah my creator, my source of wisdom, knowledge, and understanding for being the source of my strength throughout the program and his wings only I have soared. Secondly, I also express my sincere gratitude to my mom, my dearest father for funding my education and research work, and any other relative who has contributed financially, and emotionally to ensure that my educational career is a success. I would as well in the same vein like to thank my research supervisor Nakalema Margret for sacrificing her precious

time and guiding me through every step along the way to make sure that this study was a success. In addition, my deep sense of gratitude also extends to the administration and the laboratory staff of MRRH and the hospital for having given me the mandate to carry out the study in the hospital. I also would like to thank my dear respondents who willingly consented to take part in this study. In conclusion, I extend my utmost thanks to all my course mates for all the unmatched contributions you all rendered to me during the study.

List of Abbreviations

ART: Anti-Retroviral Clinic

DM: Diabetes Mellitus

HIV: Human Immunodeficiency Virus

SPSS: Statistical Package of Social Scientist

PLWH: People living with HIV.

Source of funding

No Source of funding

Conflict of interest

No Conflict of interest

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