
Abstract

Background

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The coexistence of HIV infection and diabetes mellitus has become a growing concern in recent years which may be linked to different risk factors like age. The study aims to determine the age most affected with 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 ages most affected by DM among PLWH was 23-27yrs at 7/36 a prevalence of (19%). Prevalence of DM among <18yrs was 2/25(8%), Prevalence among 18-22yrs was 4/44(9%), Prevalence among 23-27yrs was 7/36(19%), Prevalence among 28-32yrs was 5/48(10%), Prevalence among 33-37yrs was 4/34(12%) and Prevalence among >37yrs was 7/47(15%). For patients who did not have DM, 23/25(92%) were <18yrs, 40/44(91%) were 18-22yrs, 29/36(81%) were 23-27yrs, 43/48(90%) were 28-32yrs, 30/34(88%) were 33-37yrs while 40/47(85%) were >37yrs.

Conclusion

The occurrence of Diabetes mellitus a co-morbidity among PLWH was evenly distributed across all age groups with minimal prevalence differences with no significant influx in a particular age group.

Recommendation

More scientific studies should be carried out to ascertain whether age has a significant relationship with the occurrence of DM among people living with HIV.

Keywords: *Co-morbidity among PLWH, Mbale Regional Referral Hospital, DM among PLWH.*

Submitted: 2024-01-29 Accepted: 2024-02-28

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Background of the study

The coexistence of HIV infection and diabetes mellitus has become a growing concern in recent years which may be linked to different risk factors like age. Diabetes mellitus is a chronic metabolic disorder characterized by elevated blood glucose levels, resulting from impaired insulin secretion, insulin action, or both (Pasquel et al, 2021). The health systems are still faced with the global challenge of managing comorbidities amongst patients living and aging with HIV. Despite the increased rollout of antiretroviral therapy (ART). Large cohort studies from multiple countries revealed that the Prevalence of diabetes increased with age, with higher rates observed in older individuals (Rabkin et al, 2012).

In KwaZulu-Natal, the likelihood of diabetes mellitus in PLWH on ART who were between the ages 18 and 48 years was 88% less than those who were older than 48 years with a prevalence of 9% (Umar and Naidoo, 2021). Diabetes prevalence increased significantly with the age of the patients, 4.7% for age 18–34 years, 6.8% for 35–45 years, and 21.8% for > 45 years, and was significantly higher in older patients (aged > 45 years): 21.8% vs. 5.8% in Northeast Ethiopia (Fiseha et al, 2019). There is a need

to carry out further studies to identify the age groups by DM among PLWH. The study aims to Determine the age most affected by Diabetes mellitus among HIV patients attending an antiretroviral clinic at Mbale Regional Referral Hospital in Eastern Uganda.

Methodology

Study Area

Mbale Regional Referral Hospital, commonly known as Mbale Hospital is a hospital in Mbale, Eastern Uganda 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

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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.

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%

$$N = \frac{1.962 \times 0.188 \times 0.812}{0.052}$$

$$N = \frac{3.8416 \times 0.188 \times 0.812}{0.0025}$$

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.

The Independent variable was the age of the HIV patients.

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.

Results

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

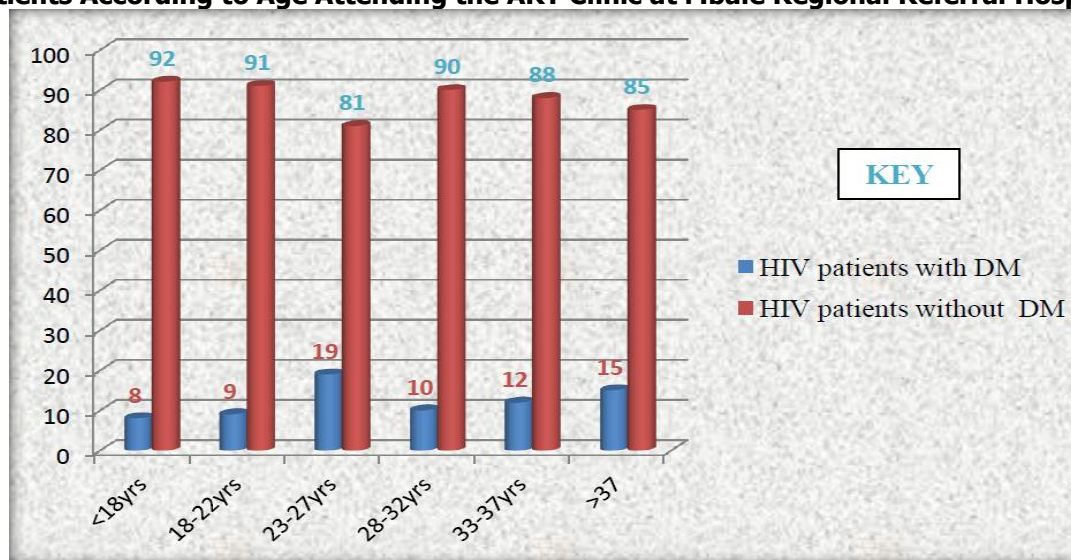
VARIABLE		FREQUENCY(N)		Total	PERCENTAGE (%)	
		HIV patients with DM	HIV patients without DM		HIV patients with DM	HIV patients without DM
Age	<18yrs	2	23	25	8	92
	18-22yrs	4	40	44	9	91
	23-27yrs	7	29	36	19	81
	28-32yrs	5	43	48	10	90
	33-37yrs	4	30	34	12	88
	>37yrs	7	40	47	15	85
Total		29	205	234		

Source of Data: Primary Data 2023

From table one: Prevalence of DM among <18yrs was 2/25(8%), Prevalence among 18-22yrs was 4/44(9%), Prevalence among 23-27yrs was 7/36(19%), Prevalence among 28-32yrs was 5/48(10%), Prevalence among 33-37yrs was 4/34(12%) and Prevalence among >37yrs

was 7/47(15%). For patients who did not have DM, 23/25(92%) were <18yrs, 40/44(91%) were 18-22yrs, 29/36(81%) were 23-27yrs, 43/48(90%) were 28-32yrs, 30/34(88%) were 33-37yrs while 40/47(85%) were >37yrs

Figure one: A Column graph showing the Percentage of Diabetes Mellitus among HIV Patients According to Age Attending the ART Clinic at Mbale Regional Referral Hospital.



Discussion

Findings in table 1 show that 2/25(8%),4/44(9%),7/36(19%),5/48(10%),4/34(12%) and 7/47(15%) diabetes mellitus cases occurred among HIV patients aged <18yrs, 18-22yrs, 23-27yrs, 28-32yrs, 33-37yrs and >37yrs. these findings revealed that HIV patients aged >37 years were the most affected with an infection rate of 15%, this is possibly because aging is associated with a numerical decline and impairment of humoral response that may limit the ability to contain pathogen growth and response towards it. However, these

findings were similar to the findings from a study which was carried out by (Fiseha T *et al*, 2019) that reported that DM among HIV patients was significantly higher in older patients among HIV patients attending the ART clinic at Dessie referral hospital and this is attributed to the similarity in the study design (cross-sectional study design) and hospital setting (ART clinics at referral hospitals) which was employed in both studies despite the difference in the study population.

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Study Limitation

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

Conclusion

The occurrence of Diabetes mellitus a co-morbidity among PLWH was evenly distributed across all age groups with minimal prevalence differences with no significant influx in a particular age group.

Recommendation

More scientific studies should be carried out to ascertain whether age has a significant relationship with the occurrence of DM among people living with HIV.

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

Publisher details:

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

Author Biography

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