

## **Abstract**

**Background:** Use of dolutegravir-based antiretroviral therapy has been associated with the development of hyperglycemia in Uganda yet laboratory screening of the drug users for this condition is not routine due to limited resources. The aim of this study was to determine the prevalence of, factors associated with, and the predictive performance of obesity indices for hyperglycemia among adult HIV-infected patients on this therapy at Ntwetwe Health Centre IV, Kyankwanzi district, Uganda

**Methods:** A hospital-based cross sectional study of 219 systematically selected patients on dolutegravir-based antiretroviral therapy for at least a year was carried out using a semi-structured questionnaire, supplemented by review of medical records, anthropometric measurements and laboratory biomarker measurements by well-trained data collectors. We used logistic regression analysis to assess associated factors and the receiver operating characteristics curve to assess the predictive performance of obesity indices for hyperglycemia.

**Results:** Out of the 219 study participants, 45 had fasting plasma glucose levels  $\geq 110$ mg/dL giving an overall prevalence of hyperglycemia as 20.55 % (95% CI: 15.68% - 26.45%). Male gender; aOR: 4.90(95%CI: 1.45-16.59, P-value:0.011), having a body mass index of 25-29.9kg/m<sup>2</sup>;aOR: 8.11(95%CI: 2.76 23.85, P-value: <0.001), and abnormal waist to hip ratio; aOR: 4.36(95%CI: 1.23 15.37, P-value: 0.022) were significantly associated with hyperglycemia. Waist to hip ratio (AUC=0.685, 95%CI: 0.598-0.772), body mass index (AUC=0.675, 95%CI: 0.576-0.775), and waist to height ratio (AUC=0.622,95%CI:0.534-0.711) showed significant predictive performance for hyperglycemia. Body mass index at an optimal cut point of  $\geq 24.576$  was the best predictor for hyperglycemia with the highest sensitivity (71.1%) and high specificity (74.7%) in this study.

**Conclusions:** The prevalence of hyperglycemia among HIV-infected patients on dolutegravir-based antiretroviral therapy is relatively high. In addition to body mass index, waist to hip ratio and waist to height ratio can be used as non-invasive screening tools at their optimal cut off points to identify HIV-infected patients on dolutegravir-based regimens at risk of hyperglycemia and therefore eligible for laboratory screening.

**Key words:** Hyperglycemia, dolutegravir-based antiretroviral therapy, HIV, Uganda