

# Lipid disorders in HIV patients and impact on raised HDL cholesterol level

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## Background

- HDL Cholesterol (HDL-C) is known to prevent cardiovascular disease (CVD). However, results from large population-based studies demonstrated that all-cause mortality including CVD is high in men and women when their HDL-C level were either in the lower range or at the very highest levels [1,2,3].
- With evolution of newer antiretroviral (ARV) there has been change in the pattern of dyslipidemia in HIV patients.
- We aim to find out the pattern of dyslipidaemia and prevalence of raised HDL-C in treatment experienced HIV patients and any underlying risk factors for raised HDL-C.

## Methods

- Study design: Cross sectional descriptive & case control study.
- Study setting: HIV outpatient clinic.
- Study population: Treatment experienced HIV infected patients attending to HIV clinic for three months who had their fasting lipid profile tested (n=513) are included to find out the pattern dyslipidaemia amongst those patients.

Cases (n=120) were patients with HDL-C 1.8 mmol/L or above.

Controls (n=120) were HDL-C less than 1.8 mmol/L selected at random from rest of the main cohort (n=393).

- Study Instrument: Retrospective data collection from patient proforma.
- Study variables: Information was collected about baseline demography, current viral load (VL), CD-4 count current and nadir, fasting lipid profile, history of smoking, alcohol consumption, treatment regimen, duration of treatment, history of diabetes and hypertension and use of lipid lowering agents.

## Results

### Descriptive Study about Dyslipidaemia

Total number of patients were 513.

- Females were 50.7%, mean age 45.8 (+/-10.3) years and 79.9% were of Black ethnic origin.
- Raised TC (above 5.0 mmol/L) were the most common abnormality with prevalence of 42% (figure 1).
- Prevalence of raised HDL-C was 22% (figure 1).
- Abnormally raised HDL-C level (2.3 mmol/L or above) were 4% (figure 2).

### Case Control Study

Total number of patients were 240.

- Majority of patients with raised HDL-C were females (73.6%), Black ethnic origin (87.6%), non-smokers (86.8%) and 54.5% were of age less than 50 years.
- Mean VL log 1.6 (+/-2.3) copies/ml, current CD-4 count 585 (+/-238) cells/ml, nadir CD-4 count was 320 (+/- 120) cells /ml, duration of treatment was 10.1 (+/-5.24) years.
- On bivariate analysis being a female, age over 50 years, on HAART over 5 years, NNRTI use, alcohol consumer associated with high HDL-C level but there was no association with smoking status and statin use (table 1). There was no association with other ARV regimens including TAF and Integrase Inhibitors.
- History of hypertension (OR=1.6, CI 0.8, 3.2, p=0.09), diabetes (OR=1.5, CI 0.4, 4.5, p=0.08) and CVD risk calculated with Q risk 3 (OR=0.7, CI 0.3, 1.1, p=0.6), were not different. Current CD-4 count (OR=0.8, CI 0.6, 1.2, p=0.6), Nadir CD-4 count (OR 0.6, CI 0.4, 1.1, p=0.9) were similar between the groups and did not have any effect.
- On multivariate analysis using stepwise logistic regression female patients, on HAART, and alcohol consumption were associated with raised HDL-C (figure 3).

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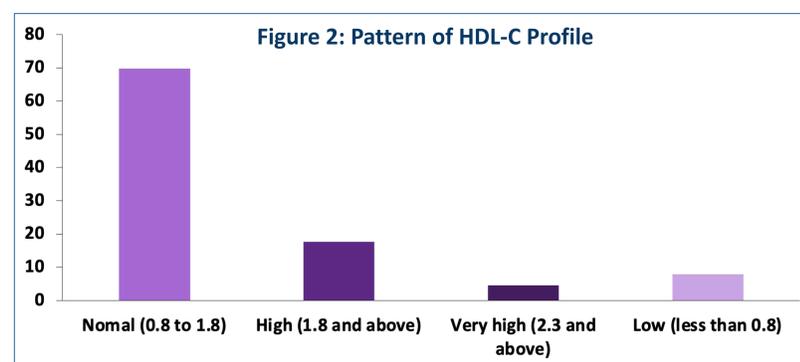
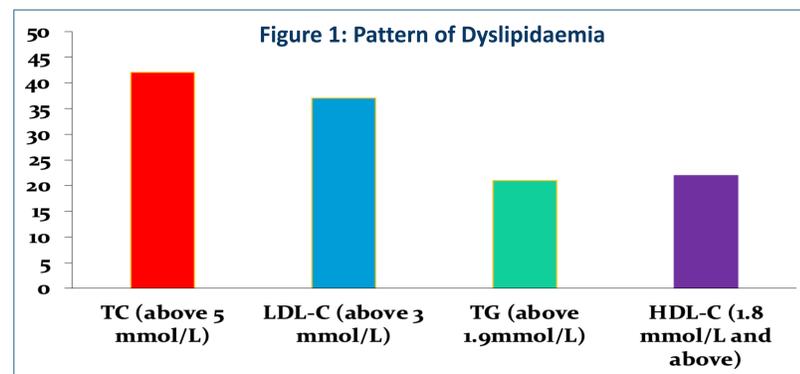
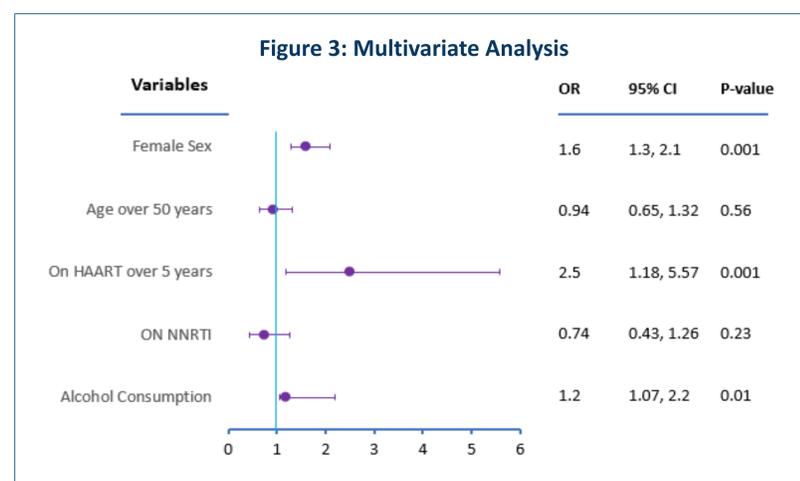


Table 1: Bivariate Analysis Between Cases and Controls

Variables	Cases (n=120)	Controls (n=120)	OR (95% CI)	P-value
Female sex	89 (73.6%)	53 (44.2%)	3.5 (2.04, 6.04)	0.001
Black Ethnicity	106 (87.6%)	101(84.2%)	0.75 (0.36, 1.56)	0.67
Age over 50 years	55 (45.5%)	47 (39.2%)	1.9, (0.77, 2.56)	0.017
Alcohol Consumption	51 (42.1%)	37 (32.1%)	2.08 (1.2, 3.5)	0.01
Smoking	16 (13.2%)	18 (15.0%)	0.69 (0.32, 1.45)	0.32
Statin use	8 (6%)	12 (10%)	1.30 (0.51, 3.76)	0.57
Duration of treatment over 5 years	105 (87.5%)	88 (73.3%)	2.5 (1.2, 5.0)	0.001
On NNRTI Regimen	30 (25%)	16 (13%)	2.3 (1.1, 3.2)	0.016



## Conclusion

In our study we found raised HDL-C was not uncommon in patients living with HIV infection. Patients on longer duration of treatment particularly in women and consuming alcohol may have more association with raised HDL-C. Further research may find more insight whether it would have any impact in the management of patients living with HIV infection.

## Reference

- Das S. (2019). Lipid Disorders in HIV patients: What about raised HDL-Cholesterol? Blood Heart Circulation, Volume 3;1-2 doi: 10.15761/BHC.1000150.
- Riddler SA, Smit E, Cole SR, Li R, Chmiel JS, et al. (2003) Impact of HIV infection and HAART on serum lipids in men. JAMA 289: 2978-2982.
- Madsen CM, Varbo A, Nordestgaard BG (2017) Extreme high high-density lipoprotein cholesterol is paradoxically associated with high mortality in men and women: two prospective cohort studies. Eur Heart J 38: 2478-2486.