

# Waist to Hip Ratio is a Predictive Marker of Hepatic Steatosis in People Living with HIV

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## INTRODUCTION

Hepatic steatosis is a highly prevalent condition in people living with HIV (PLWH) [1]. Current clinical investigations such as ultrasound and Fibroscan™ can detect the condition but are often time-consuming and may not be widely available in resource-poor environments. Hepatic steatosis shares common aetiologies with other common metabolic co-morbidities such as insulin resistance and Type 2 Diabetes Mellitus [2].

In routine clinical practice, anthropometric and clinical data are often collected as part of screening processes or to guide clinical management. Given the burden of metabolic dysfunction such as in hepatic steatosis, it would be prudent to routinely assess for this condition in clinical practice using data that are already collected as per normal protocols.

## HYPOTHESIS & AIMS

**Hepatic steatosis is significantly correlated in people living with HIV and anthropometric factors can significantly predict affected patients.**

We aimed to investigate hepatic steatosis prevalence in our cohort of PLWH and whether any routinely collected clinical data can be used to predict this condition.

## DESIGN & METHODS

Demographic, anthropometric and clinical data were collected from a sample of PLWH structured to represent the demographic of three South London clinics. A diagnosis of hepatic steatosis was established by Fibroscan™ or liver biopsy.

Waist and waist:hip ratios were measured using non-stretch tapes. Using WHO and IDF criteria, central obesity was defined as: a waist size greater than 90cm for male South/East Asians and Central/South Americans, 94cm for all other males and 80cm for all women; and a waist:hip ratio >0.9 for males and >0.85 for females [3,4].

Univariate analysis and binary logistic regression estimated the contribution of a range of factors to hepatic steatosis risk. Receiver operator characteristic (ROC) curves were used to estimate the sensitivity and specificity of using clinical measures to identify hepatic steatosis. Statistical significance was taken as p<0.05 for all tests.

## RESULTS AND DISCUSSION

Of 338 patients sampled, 71 (21%) had a confirmed diagnosis of hepatic steatosis, with age, dysglycaemia and body mass index category all significantly associated with risk (p<0.05 for all). Waist and waist:hip ratios signifying central obesity were significantly associated with hepatic steatosis (p<0.001).

ROC Curve of Waist:Hip Ratio greater than cut-off vs Hepatic Steatosis

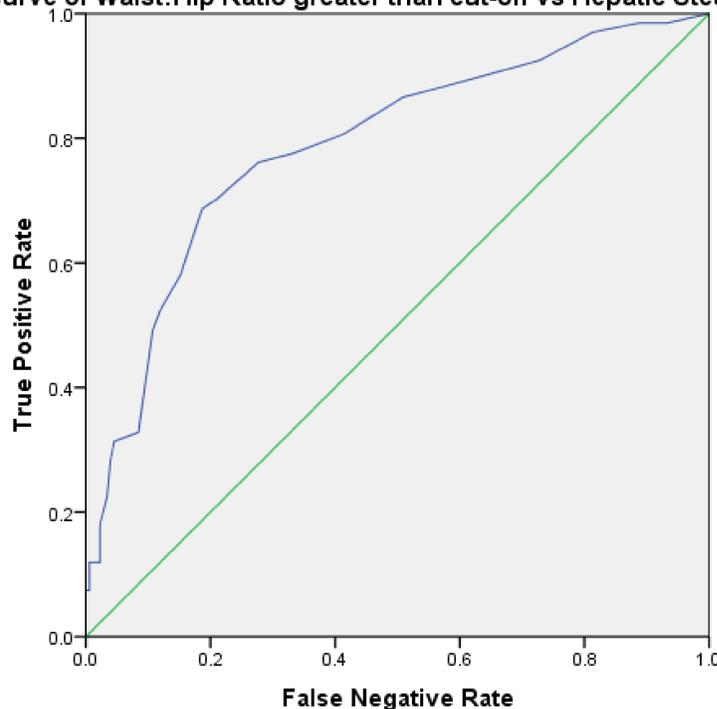


Figure 1. Waist:Hip Ratio greater than the WHO cut-off vs Hepatic steatosis

ROC Curve of Waist Circumference greater than cut-off vs. Hepatic Steatosis

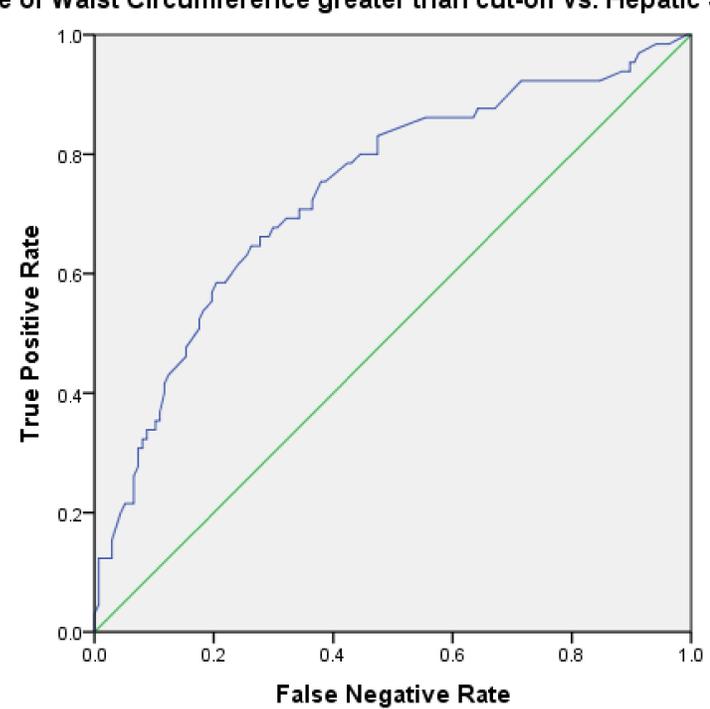


Figure 2. Waist circumference greater than the WHO cut-off vs Hepatic steatosis

Variable	AUC	Confidence Interval	P
Waist:Hip Ratio	0.788	0.722, 0.855	<0.001

Ratio greater than cut-off	Sensitivity	Specificity
0.05	0.925	0.271
0.10	0.761	0.723
0.13	0.582	0.847
0.15	0.493	0.893

Variable	AUC	Confidence Interval	P
Waist Circumference	0.738	0.662, 0.813	<0.001

cms greater than cut-off	Sensitivity	Specificity
5	0.923	0.182
10	0.862	0.455
11	0.800	0.526
15	0.692	0.679

As such, we provide our recommended cut-offs per our results:

Ethnicity	Male	Female
All ethnicities	>1.0	>0.95

Ethnicity	Male	Female
Europeans, African/Afro-Caribbean	>101 cm	>91 cm
South/East Asian, Central/South Americans	>105 cm	>91 cm

## CONCLUSIONS

1. Waist:hip ratio and waist circumference can effectively predict hepatic steatosis risk in PLWH and may identify individuals suitable for further investigation.
2. Waist:hip ratio is more sensitive and specific than waist circumference alone.
3. The measurements are non-invasive and can be done by any healthcare professional using standardised criteria.

### References

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