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Glucose and Insulin Metabolism in Middle-Aged Women With Comorbid HIV and Obesity in South Africa

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BACKGROUND

- The interplay between HIV, antiretroviral therapy (ART) and adiposity impacts type 2 diabetes (diabetes) risk in sub-Saharan Africa (SSA) in ways that remain incompletely understood [1].
- This is especially relevant in women in South Africa who are disproportionately affected by obesity, HIV and diabetes [2].
- We aimed to (1) characterize HIV-related variations in glucose homeostasis across body mass index (BMI) strata in Black South African women, and (2) explore whether these are explained by alterations in insulin homeostasis and β-cell function.

CONCLUSIONS

HIV was associated with worse glucose profiles only women with normal weight, but not those with overweight/obesity.

Increased insulin resistance coupled with inadequate β-cell function in WWH with normal weight may intimate incipient β-cell exhaustion and thus elevated future diabetes risk.

RESULTS

Table 1. Participant characteristics

	Normal weight			Overweight/Obese		
	WWH	**WoH**	**P-value**	**WWH**	**WoH**	**P-value**
Number	18	32	-	59	336	-
Age (years)	51.3 (5.7)	54.8 (6.1)	0.047	50.2 (4.7)	54.4 (5.7)	<0.001
Diabetes	2 (11.1%)	3 (9.4%)	0.98	9 (15.2%)	73 (21.7%)	0.34
VAT (cm^2)	44.2 (12.1)	49.5 (11.0)	0.52	106.9 (12.1)	113.2 (8.9)	0.31
BMI (kg/m^2)	21.6 (2.5)	22.3 (2.0)	0.44	34.0 (5.0)	34.9 (6.4)	0.24

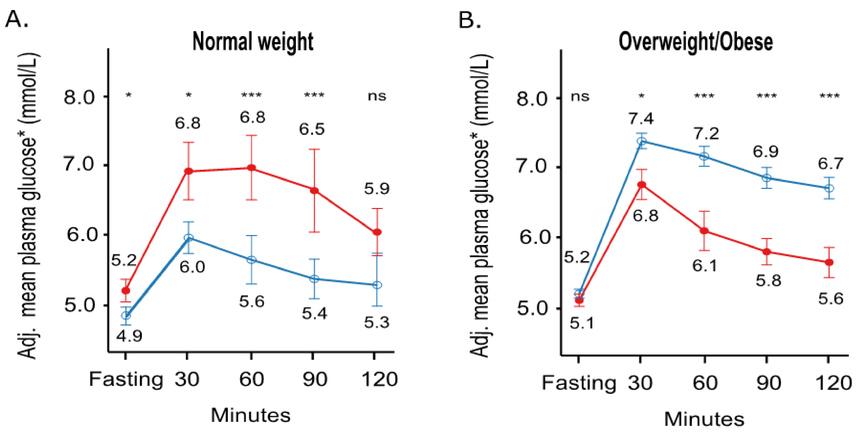
METHODS

- Women with (WWH) and without HIV (WoH) not taking diabetes medications completed anthropometry, DXA and oral glucose tolerance testing (OGTT).
- We assessed OGTT glucose profiles, insulin resistance (HOMA2-IR) and sensitivity (Matsuda index); first-phase (insulinogenic index, IGI) and overall β-cell function (disposition index, DI); and diabetes (FPG ≥7.0mmol/L and/or PPG ≥11.1 mmol/L).
- These were compared between WWH vs. WoH stratified by weight (<25kg/m^2; ≥25 kg/m^2).

PLAIN LANGUAGE SUMMARY

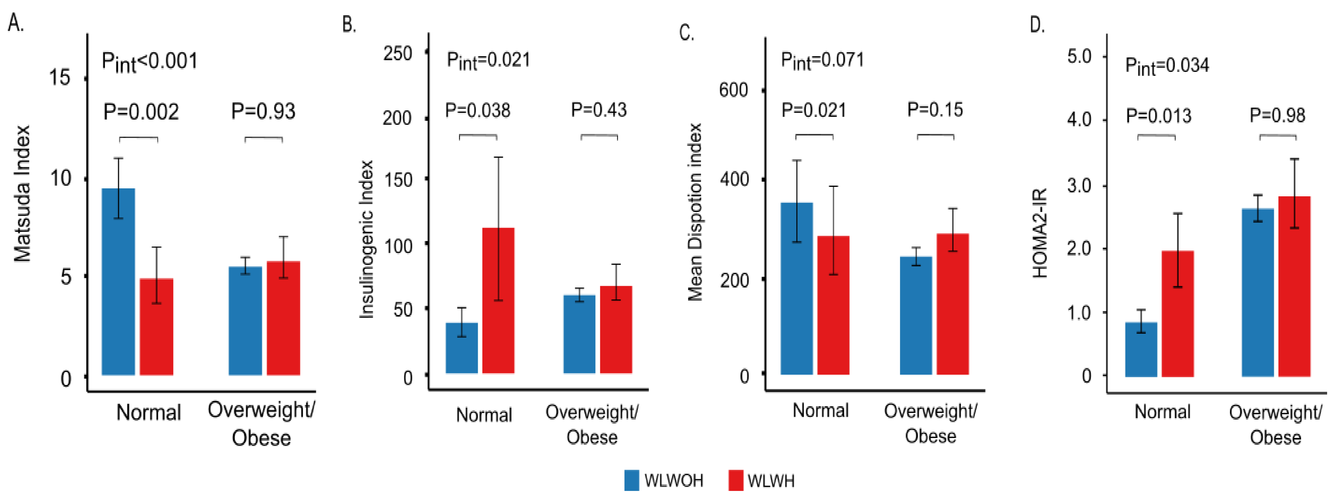
South African women living with HIV may face higher diabetes risk at a healthy weight, whereas being overweight appears to be protective compared to those without HIV.

Figure 1. Mean plasma glucose profiles during OGTT among WWH and WoH by BMI category.



*Adjusted for age, socioeconomics, alcohol use, smoking, and past TB.
P values: ns >0.05; * <0.05; ** <0.01; *** <0.001.

Figure 2. Measures of insulin sensitivity and β-cell function among WWH and WoH by BMI category.



References

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