

## Supplementary Material

### Sex and area differences in the association between adiposity and lipid profile in Malawi

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**Supplementary Table 1.** Characteristics of the participants with missing and complete lipid data in rural area, by sex

		Men			Women		
		Missing n=864 (14.7%)	Non-missing n=5,000 (85.3%)	p- value	Missing n=943 (11.7%)	Non-missing n=7,096 (88.3%)	p- value
<b>Age</b> - mean (SD)		36.2 (16.5)	38.1 (16.5)	0.002	42.3 (20.6)	37.6 (15.6)	<0.001
<b>Household assets score</b> - median (IQR)		179.8 (183.0)	207.2 (185.0)	0.008	194.0 (195.5)	201.0 (179.0)	0.497
<b>BMI</b> – mean (SD)		21.2 (2.6)	21.6 (2.8)	<0.001	22.5 (4.1)	23.5 (4.3)	<0.001
<b>WHR</b> – mean (SD)		0.86 (0.06)	0.86 (0.05)	0.105	0.86 (0.07)	0.86 (0.07)	0.110
<b>Ethnicity</b>	Chewa	2.4 (1.6; 3.7)	2.1 (1.8; 2.6)	0.354	1.9 (1.2; 3.0)	2.5 (2.2; 2.9)	0.009
% (95% CI)	Tumbuka	77.7 (74.8; 80.3)	76.9 (75.8; 78.1)		70.5 (67.5; 73.3)	75.5 (74.4; 76.5)	
	Ngoni	1.0 (0.5; 2.0)	2.0 (1.6; 2.4)		2.4 (1.6; 3.6)	2.0 (1.7; 2.4)	
	Yao	0.5 (0.2; 1.2)	0.4 (0.3; 0.6)		0.5 (0.2; 1.3)	0.3 (0.2; 0.4)	
	Lomwe	0.3 (0.1; 1.1)	0.2 (0.1; 0.4)		0.2 (0.1; 0.8)	0.2 (0.1; 0.3)	
	Nkonde	6.3 (4.8; 8.1)	5.3 (4.7; 6.0)		8.6 (7.0; 10.6)	7.3 (6.7; 7.9)	
	Other	11.8 (9.8; 14.1)	13 (12.1; 14.0)		15.8 (13.6; 18.3)	12.3 (11.5; 13.1)	
<b>Education</b>	No formal	2.0 (1.2; 3.1)	1.6 (1.3; 2.0)	0.065	12.7 (10.7; 15.0)	5.3 (4.8; 5.8)	<0.001
% (95% CI)	Standard 1-5	13.1 (11.0; 15.5)	10.4 (9.6; 11.3)		24.1 (21.4; 26.9)	16.1 (15.3; 17.0)	
	Standard 6-8	41 (37.7; 44.3)	41.5 (40.2; 42.9)		39.8 (36.7; 42.9)	52.4 (51.2; 53.5)	
	Secondary	40.3 (37.0; 43.6)	43.5 (42.2; 44.9)		22.5 (19.9; 25.3)	25.3 (24.3; 26.3)	
	Tertiary	3.7 (2.6; 5.2)	2.9 (2.4; 3.4)		1.0 (0.5; 1.8)	1.0 (0.8; 1.2)	
<b>Marital status</b>	Never married	26.3 (23.5; 29.4)	22.7 (21.6; 23.9)	0.015	9.7 (7.9; 11.7)	7.2 (6.6; 7.8)	
% (95% CI)	Married	68.2 (65.0; 71.2)	72.4 (71.2; 73.7)		60.6 (57.4; 63.6)	69.8 (68.7; 70.9)	<0.001
	Widowed	0.7 (0.3; 1.5)	1.2 (1.0; 1.6)		20.6 (18.1; 23.3)	12.4 (11.6; 13.2)	
	Divorced	4.8 (3.5; 6.4)	3.6 (3.1; 4.2)		9.2 (7.5; 11.3)	10.6 (9.9; 11.4)	
<b>Number of pregnancies<sup>a</sup></b>	0				10.0 (8.2; 12.1)	6.6 (6.1; 7.2)	<0.001
% (95% CI)	1				8.8 (7.2; 10.8)	10.0 (9.3; 10.7)	
	2				11.6 (9.7; 13.8)	12.5 (11.8; 13.3)	
	3				10.9 (9.0; 13.0)	13.2 (12.5; 14.1)	
	4+				58.7 (55.5; 61.8)	57.7 (56.5; 58.8)	
<b>Smoking status</b>	Never	80.7 (77.9; 83.2)	82.3 (81.2; 83.3)	0.220	99.5 (98.7; 99.8)	99.7 (99.6; 99.8)	0.379
% (95% CI)	Former	4.1 (2.9; 5.6)	4.5 (4.0; 5.2)		0.2 (0.1; 0.8)	0.1 (0.1; 0.2)	
	Current	15.3 (13.0; 17.8)	13.2 (12.3; 14.1)		0.3 (0.1; 1.0)	0.2 (0.1; 0.3)	
<b>Alcohol intake</b>	Never	57.6 (54.3; 60.9)	58.1 (56.7; 59.5)	0.068	95 (93.4; 96.2)	96.6 (96.1; 97)	0.038
% (95% CI)	< 1 month	9.4 (7.6; 11.5)	9.5 (8.8; 10.4)		1.7 (1.0; 2.8)	1.4 (1.1; 1.7)	

	1-3 days/ month	11.3 (9.4; 13.6)	13.4 (12.5; 14.4)		1.6 (1.0; 2.6)	1.2 (1.0; 1.5)	
	1-4 days/ week	16.1 (13.8; 18.7)	15.2 (14.2; 16.2)		1.6 (1.0; 2.6)	0.7 (0.5; 0.9)	
	5+ days/ week	5.6 (4.2; 7.3)	3.8 (3.3; 4.3)		0.1 (0.0; 0.8)	0.1 (0.1; 0.2)	
<b>Physical activity level<sup>b</sup></b>	Low	3.5 (2.4; 4.9)	2.3 (1.9; 2.8)	0.104	5.1 (3.9; 6.7)	1.4 (1.2; 1.7)	<0.001
% (95% CI)	Moderate	11.1 (9.2; 13.4)	10.6 (9.8; 11.5)		5.9 (4.6; 7.6)	3.2 (2.8; 3.6)	
	High	85.4 (82.9; 87.6)	87.1 (86.2; 88)		89.0 (86.8; 90.8)	95.4 (94.9; 95.9)	
<b>Lipid-lowering medication</b>	No raised cholesterol		99.9 (99.8; 100)	0.772	99.7 (99; 99.9)	99.9 (99.8; 99.9)	0.109
% (95% CI)	No medication		0 (0.0; 0.2)		0.3 (0.1; 1.0)	0.1 (0.1; 0.2)	
	Taking medication		0 (0.0; 0.1)		-	-	
<b>HIV status</b>	HIV negative	89.6 (86.7; 91.9)	89.5 (88.5; 90.5)	0.975	88.4 (85.6; 90.7)	87.0 (86.0; 87.8)	0.319
% (95% CI)	HIV positive	10.4 (8.1; 13.3)	10.5 (9.5; 11.5)		11.6 (9.3; 14.4)	13.0 (12.2; 14.0)	
<b>ART status<sup>c</sup></b>	On ART	5.7 (1.3; 21.4)	10.2 (7.0; 14.4)	0.403	11.1 (4.0; 27.1)	5.8 (4.1; 8.2)	0.197
% (95% CI)	Not on ART	94.3 (78.6; 98.7)	89.8 (85.6; 93.0)		88.9 (72.9; 96)	94.2 (91.8; 95.9)	

ART: anti-retroviral therapy; HIV: human immunodeficiency virus; IQR: interquartile range; NA: not applicable; SD: standard deviation

<sup>a</sup> Information available only for women

<sup>b</sup> Level of physical activity based on metabolic equivalent (MET)

<sup>c</sup> Based on those who reported being HIV positive

**Supplementary Table 2.** Characteristics of the participants with missing and complete lipid data in urban area, by sex

		Men			Women		
		Missing n=1,520 (26.2%)	Non-missing n=4,284 (73.8%)	p- value	Missing n=2,304 (21.2%)	Non-missing n=8,563 (78.8%)	p- value
<b>Age</b>	- mean (SD)	32.0 (13.0)	33.2 (14.1)	0.003	30.9 (12.6)	32.5 (12.4)	<0.001
<b>Household assets score</b>	- median (IQR)	668.2 (358.0)	793.1 (410.0)	<0.001	650.0 (370.0)	707.4 (436.0)	0.006
<b>BMI</b>	- mean (SD)	22.2 (3.5)	22.5 (3.6)	0.002	24.7 (5.0)	25.6 (5.4)	<0.001
<b>WHR</b>	- mean (SD)	0.84 (0.06)	0.84 (0.07)	0.447	0.81 (0.07)	0.81 (0.07)	0.025
<b>Ethnicity</b>	Chewa	39.7 (37.3; 42.2)	34.2 (32.8; 35.6)	0.002	40.2 (38.2; 42.3)	37.2 (36.2; 38.2)	0.034
% (95% CI)	Tumbuka	11.3 (9.8; 12.9)	13.7 (12.7; 14.8)		12 (10.8; 13.4)	12 (11.3; 12.7)	
	Ngoni	17.7 (15.9; 19.7)	19 (17.9; 20.2)		18.8 (17.3; 20.5)	19.7 (18.9; 20.6)	
	Yao	7.6 (6.4; 9.1)	8.1 (7.4; 9.0)		8.0 (7.0; 9.2)	7.8 (7.2; 8.4)	
	Lomwe	15.1 (13.4; 17)	15 (13.9; 16.1)		11.8 (10.5; 13.2)	13.4 (12.7; 14.1)	
	Nkonde	1.8 (1.2; 2.6)	1.4 (1.1; 1.9)		1.0 (0.6; 1.4)	1.6 (1.3; 1.8)	
	Other	6.8 (5.7; 8.2)	8.5 (7.7; 9.4)		8.1 (7.1; 9.3)	8.4 (7.8; 9.0)	
<b>Education</b>	No formal	1.7 (1.2; 2.5)	1.2 (0.9; 1.6)	0.009	5.4 (4.5; 6.4)	4.5 (4.0; 4.9)	<0.001
% (95% CI)	Standard 1-5	5.5 (4.4; 6.7)	4.4 (3.8; 5.1)		12.1 (10.8; 13.5)	9.1 (8.5; 9.7)	
	Standard 6-8	13.9 (12.3; 15.8)	14.1 (13.1; 15.2)		23.0 (21.3; 24.7)	22.9 (22.0; 23.8)	
	Secondary	59.3 (56.8; 61.8)	56.9 (55.4; 58.3)		45.5 (43.5; 47.5)	50.4 (49.3; 51.5)	
	Tertiary	19.5 (17.6; 21.6)	23.4 (22.2; 24.7)		14.1 (12.7; 15.5)	13.2 (12.5; 13.9)	
<b>Marital status</b>	Never married	45.8 (43.3; 48.3)	47.2 (45.7; 48.7)	0.153	23.7 (22.0; 25.4)	20.8 (19.9; 21.6)	0.018
% (95% CI)	Married	48.9 (46.4; 51.5)	48.2 (46.8; 49.8)		61.5 (59.5; 63.4)	64.1 (63.1; 65.1)	
	Widowed	1.1 (0.7; 1.8)	1.4 (1.1; 1.9)		6.0 (5.1; 7.1)	6.6 (6.0; 7.1)	
	Divorced	4.1 (3.2; 5.3)	3.1 (2.6; 3.6)		8.9 (7.8; 10.1)	8.6 (8.0; 9.2)	
<b>Number of pregnancies<sup>a</sup></b>	0				21.0 (19.4; 22.7)	18.2 (17.4; 19.1)	<0.001
% (95% CI)	1				20.4 (18.8; 22.1)	17.2 (16.5; 18.1)	
	2				18.7 (17.2; 20.4)	17.9 (17.1; 18.7)	
	3				14.2 (12.8; 15.7)	15.4 (14.6; 16.2)	
	4+				25.7 (24.0; 27.6)	31.2 (30.3; 32.2)	
<b>Smoking status</b>	Never	81.7 (79.7; 83.6)	84.4 (83.2; 85.4)	0.014	98.9 (98.4; 99.3)	99.5 (99.3; 99.6)	0.008
% (95% CI)	Former	9.3 (7.9; 10.8)	7.0 (6.3; 7.8)		0.6 (0.4; 1.0)	0.3 (0.2; 0.5)	
	Current	9.0 (7.7; 10.6)	8.6 (7.8; 9.5)		0.5 (0.3; 0.9)	0.2 (0.1; 0.3)	
<b>Alcohol intake</b>	Never	59.1 (56.6; 61.6)	64.1 (62.6; 65.5)	0.002	93.6 (92.5; 94.5)	93.8 (93.3; 94.3)	0.804
% (95% CI)	< 1 month	8.4 (7.1; 9.9)	8.4 (7.6; 9.2)		2.6 (2.0; 3.3)	2.8 (2.5; 3.2)	

	1-3 days/ month	13.8 (12.2; 15.6)	13.1 (12.1; 14.1)		2.7 (2.1; 3.4)	2.4 (2.1; 2.7)	
	1-4 days/ week	13.7 (12.0; 15.5)	10.8 (9.9; 11.7)		0.7 (0.5; 1.2)	0.7 (0.6; 0.9)	
	5+ days/ week	4.9 (4.0; 6.1)	3.7 (3.2; 4.3)		0.3 (0.2; 0.7)	0.3 (0.2; 0.4)	
<b>Physical activity level<sup>b</sup></b>	Low	3.6 (2.8; 4.7)	4.3 (3.7; 5.0)	0.162	2.2 (1.7; 2.9)	1.5 (1.2; 1.8)	0.001
% (95% CI)	Moderate	12.3 (10.7; 14.1)	13.7 (12.7; 14.8)		3.5 (2.8; 4.3)	2.4 (2.1; 2.7)	
	High	84.1 (82.2; 85.8)	82.0 (80.8; 83.1)		94.3 (93.3; 95.2)	96.1 (95.7; 96.5)	
<b>Lipid-lowering medication</b>	No raised cholesterol	99.8 (99.4; 99.9)	99.6 (99.4; 99.8)	0.298	99.9 (99.6; 100)	99.6 (99.4; 99.7)	0.113
% (95% CI)	No medication	0.1 (0.0; 0.5)	0.4 (0.2; 0.6)		0.1 (0.0; 0.4)	0.3 (0.2; 0.5)	
	Taking medication	0.1 (0.0; 0.5)	0.0 (0.0; 0.2)		-	0.1 (0.0; 0.2)	
<b>HIV status</b>	HIV negative	94.9 (93.3; 96.1)	93.6 (92.7; 94.3)	0.125	92.7 (91.5; 93.8)	89.1 (88.4; 89.7)	<0.001
% (95% CI)	HIV positive	5.1 (3.9; 6.7)	6.4 (5.7; 7.3)		7.3 (6.2; 8.5)	10.9 (10.3; 11.6)	
<b>ART status<sup>c</sup></b>	On ART	8.3 (3.0; 20.8)	13.1 (8.7; 19.4)	0.371	11.3 (6.8; 18.3)	10.6 (8.4; 13.3)	0.822
% (95% CI)	Not on ART	91.7 (79.2; 97.0)	86.9 (80.6; 91.3)		88.7 (81.7; 93.2)	89.4 (86.7; 91.6)	

ART: anti-retroviral therapy; HIV: human immunodeficiency virus; IQR: interquartile range; NA: not applicable; SD: standard deviation

<sup>a</sup> Information available only for women

<sup>b</sup> Level of physical activity based on metabolic equivalent (MET)

<sup>c</sup> Based on those who reported being HIV positive

**Supplementary Table 3.** Missing data according to area of residence and sex.

	All N=24,943	Rural Residents		Urban Residents	
		Women n=7,096	Men n=5,000	Women n=8,563	Men n=4,284
BMI	835 (3.3)	429 (6.0)	10 (0.2)	394 (4.6)	2 (0.05)
WHR	828 (3.3)	422 (5.9)	10 (0.2)	394 (4.6)	2 (0.05)
Marital status – N (%)	20 (0.1)	12 (0.2)	8 (0.2)	0	0
Parity <sup>a</sup> – N (%)	22 (0.1)	21 (0.3)	NA	1 (0.01)	NA
HIV/ART status – N (%)	4,618 (18.5)	1,848 (26.0)	1,478 (29.6)	719 (8.4)	573 (13.4)

All the other variables had no missing data.

ART: anti-retroviral therapy; BMI: body mass index; HIV: human immunodeficiency virus; NA: not applicable; WHR: waist-hip ratio

<sup>a</sup> Information considered only for women

**Supplementary Table 4.** Age-adjusted prevalence of dyslipidaemias in rural and urban residents, by sex.

	<b>Women Prevalence (95% CI)</b>	<b>Men Prevalence (95% CI)</b>	<b>p- values</b>
<b>High TC (<math>\geq 5.2</math> mmol/L)</b>			
Rural (N=7,096) / (N=5,000)	11.0 (10.3; 11.7)	6.9 (6.2; 7.5)	
Urban (N=8,563) / (N=4,284)	13.3 (12.6; 14.1)	11.3 (10.3; 12.3)	
P-value for difference between sex			<0.001
P-value for difference between areas			<0.001
<b>High LDL-C (<math>\geq 3.4</math> mmol/L)</b>			
Rural (N=7,096) / (N=5,000)	16.3 (15.5; 17.1)	9.8 (9.0; 10.6)	
Urban (N=8,563) / (N=4,284)	20.8 (19.9; 21.7)	17.7 (16.5; 18.8)	
P-value for difference between sex			<0.001
P-value for difference between areas			0.016
<b>Low HDL-C (<math>&lt; 1.0</math> mmol/L)</b>			
Rural (N=7,096) / (N=5,000)	33.3 (32.2; 34.5)	42.5 (41.1; 43.9)	
Urban (N=8,563) / (N=4,284)	25.7 (24.8; 26.7)	34.4 (32.9; 35.9)	
P-value for difference between sex			<0.001
P-value for difference between areas			<0.001
<b>High TG (<math>\geq 1.7</math> mmol/L)</b>			
Rural (N=7,096) / (N=5,000)	6.0 (5.5; 6.6)	10.4 (9.6; 11.3)	
Urban (N=8,563) / (N=4,284)	8.8 (8.1; 9.4)	14.1 (13.0; 15.1)	
P-value for difference between sex			<0.001
P-value for difference between areas			<0.001
<b>Any dyslipidaemia</b>			
Rural (N=7,096) / (N=5,000)	48.2 (47.0; 49.4)	53.6 (52.2; 55.0)	
Urban (N=8,563) / (N=4,284)	46.3 (45.2; 47.4)	51.8 (50.3; 53.3)	
P-value for difference between sex			<0.001
P-value for difference between areas			<0.001

BMI: body mass index; HDL-C: high density lipoprotein-cholesterol; LDL-C: low density lipoprotein-cholesterol; TC: total cholesterol; TG: triglycerides; WHR: waist-hip ratio

**Supplementary Table 5.** Adjusted association between BMI/WHR and dyslipidaemias in rural and urban women and men.

	Adjusted OR per 1 SD higher BMI (95% CI)	Adjusted OR per 1 SD higher WHR (95% CI)
<b>OR of high TC (<math>\geq 5.2</math> mmol/L)</b>		
Rural women (N=4,971) / (N=4,975)	1.53 (1.39; 1.69)	1.18 (1.07; 1.31)
Rural men (N=3,548) / (N=3,549)	1.51 (1.31; 1.73)	1.40 (1.18; 1.66)
Urban women (N=7,455)	1.30 (1.21; 1.40)	1.24 (1.14; 1.34)
Urban men (N=3,705)	1.50 (1.35; 1.66)	1.47 (1.33; 1.62)
P-values for difference between sex	<0.001	<0.001
P-values for difference between area	0.072	0.408
<b>OR of high LDL-C (<math>\geq 3.4</math> mmol/L)</b>		
Rural women (N=4,971) / (N=4,975)	1.53 (1.39; 1.69)	1.20 (1.10; 1.31)
Rural men (N=3,548) / (N=3,549)	1.51 (1.31; 1.73)	1.42 (1.22; 1.64)
Urban women (N=7,455)	1.30 (1.21; 1.40)	1.32 (1.23; 1.41)
Urban men (N=3,705)	1.50 (1.35; 1.66)	1.45 (1.33; 1.58)
P-values for difference between sex	0.001	<0.001
P-values for difference between area	0.038	0.118
<b>OR of low HDL-C (<math>&lt; 1.0</math> mmol/L)</b>		
Rural women (N=4,971) / (N=4,975)	1.15 (1.07; 1.23)	1.20 (1.12; 1.28)
Rural men (N=3,548) / (N=3,549)	1.14 (1.05; 1.24)	1.18 (1.09; 1.29)
Urban women (N=7,455)	1.30 (1.24; 1.37)	1.27 (1.20; 1.35)
Urban men (N=3,705)	1.24 (1.16; 1.32)	1.23 (1.14; 1.33)
P-values for difference between sex	0.223	0.284
P-values for difference between area	0.008	<0.001
<b>OR of high TG (<math>\geq 1.7</math> mmol/L)</b>		
Rural women (N=4,971) / (N=4,975)	1.89 (1.65; 2.16)	2.05 (1.69; 2.47)
Rural men (N=3,548) / (N=3,549)	2.02 (1.78; 2.28)	1.67 (1.45; 1.92)
Urban women (N=7,455)	1.60 (1.45; 1.75)	1.80 (1.63; 1.99)
Urban men (N=3,705)	1.82 (1.64; 2.03)	1.69 (1.53; 1.88)
P-values for difference between sex	<0.001	0.720
P-values for difference between area	0.001	0.651

BMI: body mass index; HDL-C: high density lipoprotein-cholesterol; LDL-C: low density lipoprotein-cholesterol; SD: standard deviation; OR: odds ratio; TC: total cholesterol; TG: triglycerides; WHR: waist-hip ratio

Adjusted for age, ethnicity, education, household assets score, marital status, use of lipid-lowering medication, smoking status, alcohol intake, physical activity, and HIV/ART status.



**Supplementary Table 6.** Adjusted association between BMI/WHR and serum lipids in Malawian rural and urban women and men, according to HIV status.

	HIV negative	HIV positive	p-value
<b>Adjusted difference in outcome per 1 SD higher BMI (95% CI)</b>			
<b>Difference in mean TC (mmol/L)</b>			
Rural women (N=4,400) / (N=679)	0.22 (0.19; 0.26)	0.25 (0.14; 0.37)	0.721
Rural men (N=3,237) / (N=381)	0.19 (0.16; 0.23)	0.20 (0.05; 0.34)	0.973
Urban women (N=6,841) / (N=859)	0.13 (0.11; 0.15)	0.17 (0.10; 0.24)	0.238
Urban men (N=3,550) / (N=243)	0.16 (0.13; 0.19)	0.14 (0.00; 0.28)	0.905
<b>Difference in mean LDL-C (mmol/L)</b>			
Rural women (N=4,400) / (N=679)	0.22 (0.19; 0.25)	0.20 (0.11; 0.28)	0.706
Rural men (N=3,237) / (N=381)	0.19 (0.16; 0.21)	0.20 (0.09; 0.30)	0.993
Urban women (N=6,841) / (N=859)	0.15 (0.13; 0.17)	0.15 (0.09; 0.20)	0.922
Urban men (N=3,550) / (N=243)	0.17 (0.15; 0.20)	0.16 (0.04; 0.27)	0.792
<b>Difference in mean HDL-C (mmol/L)</b>			
Rural women (N=4,400) / (N=679)	-0.03 (-0.04; -0.02)	0.00 (-0.04; 0.03)	0.465
Rural men (N=3,237) / (N=381)	-0.04 (-0.05; -0.02)	0.00 (-0.05; 0.05)	0.104
Urban women (N=6,841) / (N=859)	-0.05 (-0.06; -0.04)	-0.03 (-0.05; -0.01)	0.049
Urban men (N=3,550) / (N=243)	-0.05 (-0.06; -0.04)	-0.03 (-0.09; 0.02)	0.449
<b>Difference in mean TG (mmol/L)</b>			
Rural women (N=4,400) / (N=679)	0.11 (0.10; 0.13)	0.13 (0.06; 0.19)	0.392
Rural men (N=3,237) / (N=381)	0.16 (0.13; 0.19)	0.04 (-0.07; 0.15)	0.095
Urban women (N=6,841) / (N=859)	0.10 (0.08; 0.11)	0.08 (0.04; 0.12)	0.965
Urban men (N=3,550) / (N=243)	0.17 (0.14; 0.20)	0.02 (-0.15; 0.18)	0.167
<b>Adjusted difference in outcome per 1 SD higher WHR (95% CI)</b>			
<b>Difference in mean TC (mmol/L)</b>			
Rural women (N=4,403) / (N=680)	0.04 (0.01; 0.08)	0.15 (0.05; 0.24)	0.367
Rural men (N=3,238) / (N=381)	0.06 (0.02; 0.10)	0.17 (0.03; 0.30)	0.028
Urban women (N=6,841) / (N=859)	0.10 (0.07; 0.12)	0.11 (0.04; 0.18)	0.530
Urban men (N=3,550) / (N=243)	0.09 (0.06; 0.12)	0.05 (-0.04; 0.15)	0.736
<b>Difference in mean LDL-C (mmol/L)</b>			
Rural women (N=4,403) / (N=680)	0.05 (0.03; 0.08)	0.11 (0.04; 0.18)	0.622
Rural men (N=3,238) / (N=381)	0.06 (0.03; 0.10)	0.12 (0.02; 0.22)	0.101
Urban women (N=6,841) / (N=859)	0.09 (0.07; 0.12)	0.10 (0.04; 0.16)	0.801
Urban men (N=3,550) / (N=243)	0.10 (0.07; 0.12)	0.04 (-0.03; 0.11)	0.468
<b>Difference in mean HDL-C (mmol/L)</b>			
Rural women (N=4,403) / (N=680)	-0.03 (-0.04; -0.02)	0.00 (-0.03; 0.02)	0.278
Rural men (N=3,238) / (N=381)	-0.03 (-0.05; -0.02)	0.01 (-0.05; 0.07)	0.043
Urban women (N=6,841) / (N=859)	-0.03 (-0.04; -0.02)	-0.02 (-0.05; 0.00)	0.214
Urban men (N=3,550) / (N=243)	-0.03 (-0.04; -0.02)	-0.03 (-0.09; 0.02)	0.914
<b>Difference in mean TG (mmol/L)</b>			
Rural women (N=4,403) / (N=680)	0.09 (0.08; 0.11)	0.14 (0.07; 0.21)	0.497
Rural men (N=3,238) / (N=381)	0.11 (0.08; 0.14)	0.08 (-0.05; 0.21)	0.774
Urban women (N=6,841) / (N=859)	0.08 (0.07; 0.10)	0.16 (0.11; 0.22)	0.007
Urban men (N=3,550) / (N=243)	0.14 (0.11; 0.16)	0.13 (0.01; 0.26)	0.885

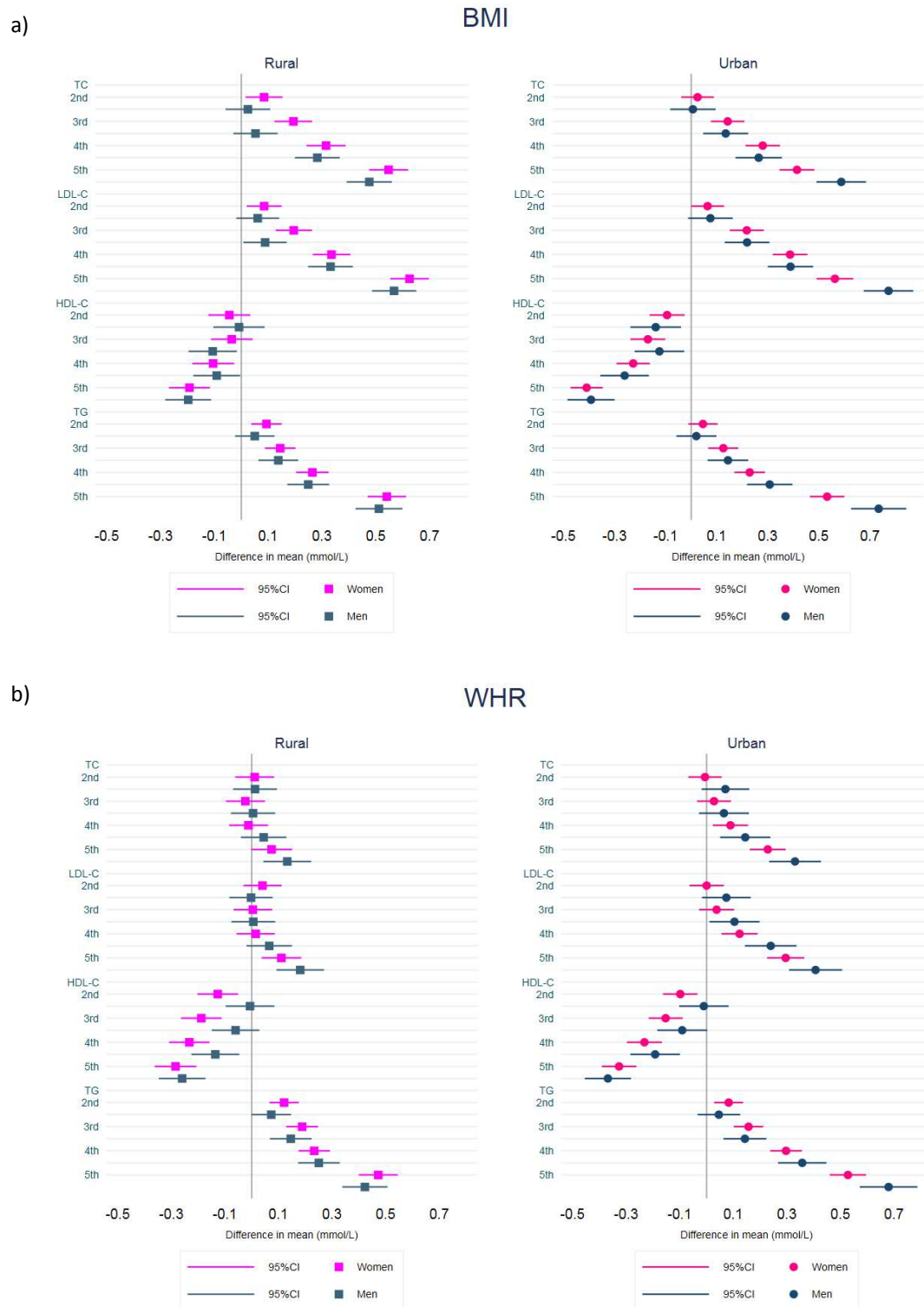
p-value for interaction between HIV/status and anthropometry measures

Serum lipids were assessed in in mmol/L.

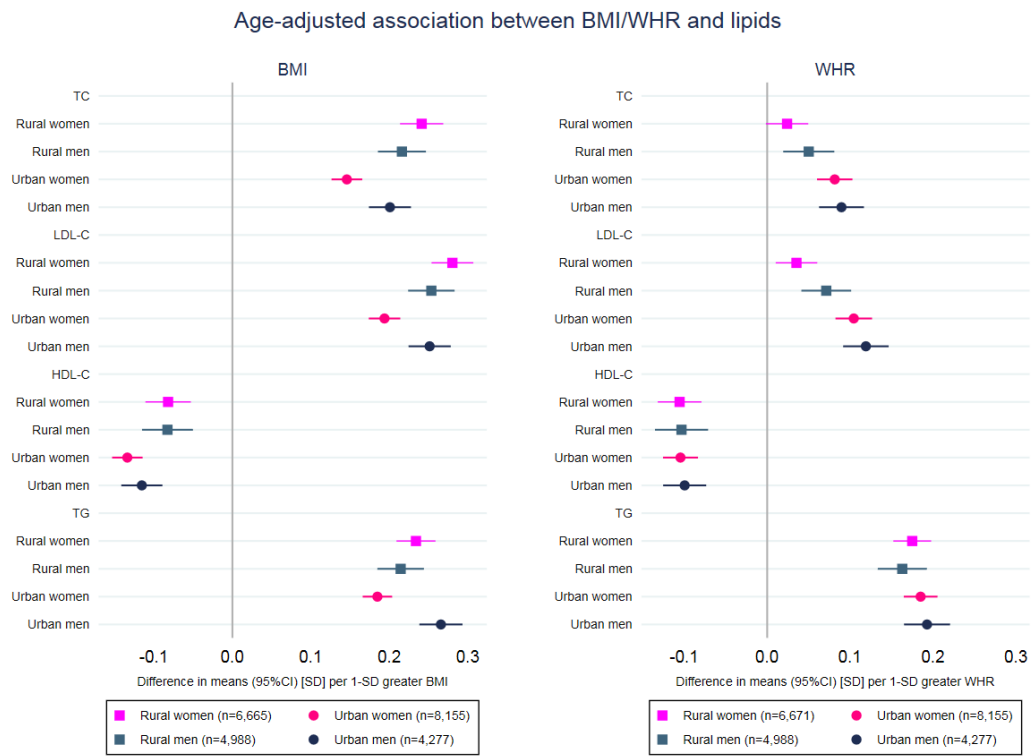
BMI: body mass index; HDL-C: high density lipoprotein-cholesterol; LDL-C: low density lipoprotein-cholesterol; TC: total cholesterol; TG: triglycerides; WHR: waist-hip ratio

Adjusted for age, ethnicity, education, household assets score, marital status, parity (women) use of lipid-lowering medication, smoking status, alcohol intake, and physical activity.

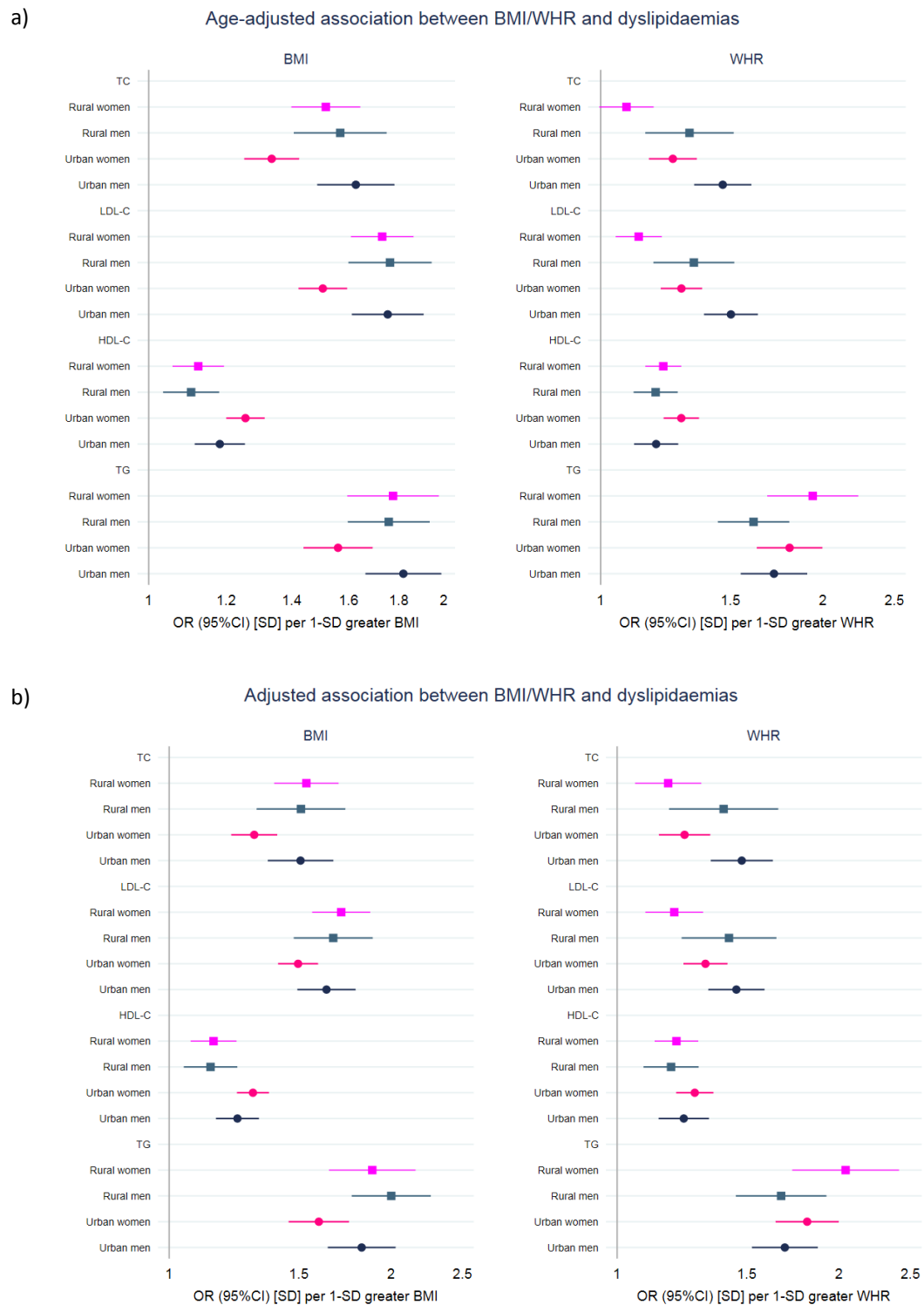
BMI and WHR are used in standard deviations



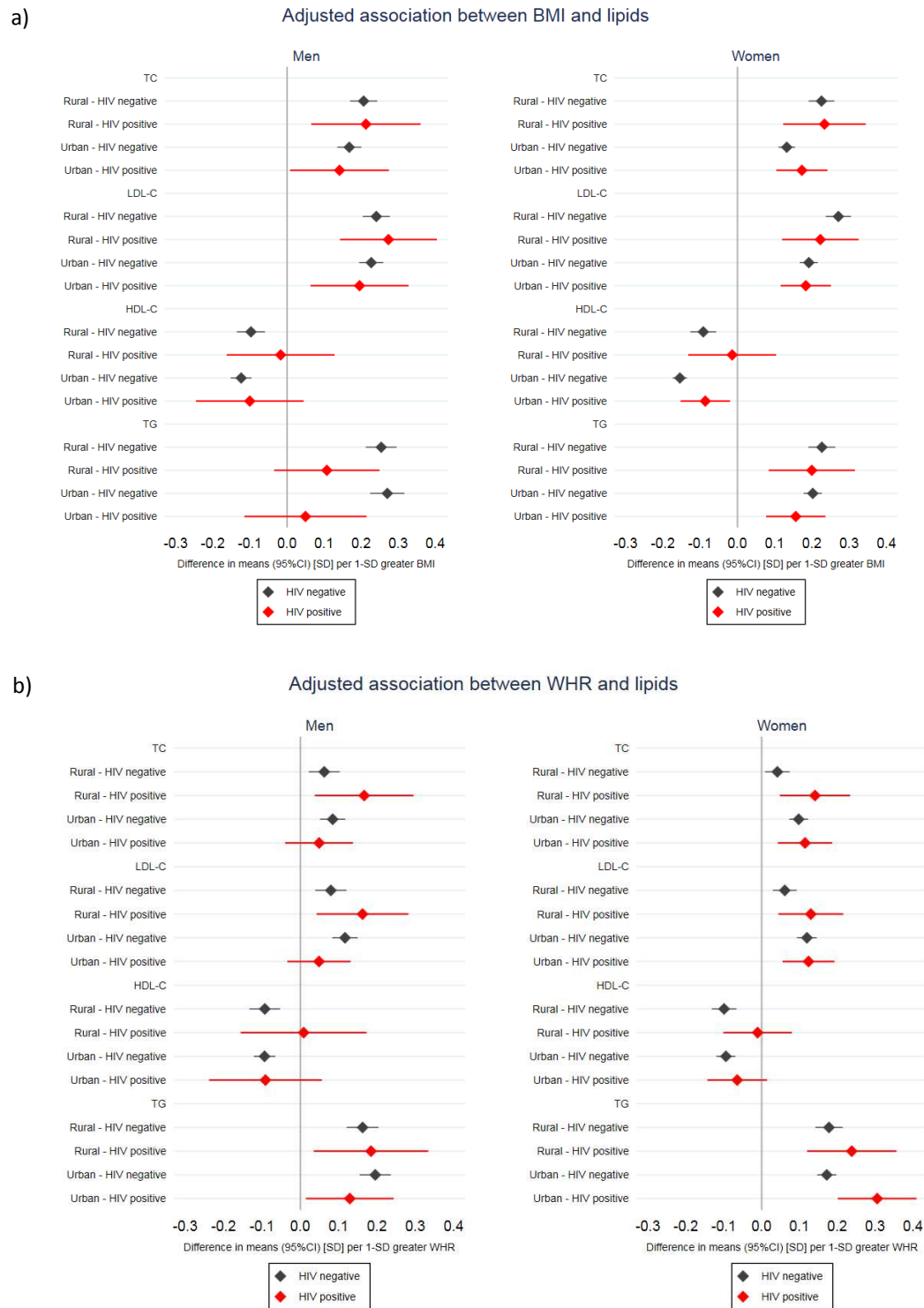
**Supplementary Figure 1.** Age-adjusted association between quintiles of BMI (a) and WHR (b) with serum lipids in men and women, by area. Serum lipids are used in standard deviations.



**Supplementary Figure 2.** Age-adjusted association between BMI/WHR and serum lipids in rural and urban men and women. BMI, WHR and serum lipids are used in standard deviations.



**Supplementary Figure 3.** Age-adjusted (a) and adjusted (b) associations between BMI/WHR and dyslipidaemia in rural and urban men and women. Adjusted for age, ethnicity, education, household assets score, marital status, use of lipid-lowering medication, smoking status, alcohol intake, physical activity, and HIV/ART status. BMI, WHR and serum lipids are used in standard deviations.



**Supplementary Figure 4.** Adjusted associations of BMI (a) and WHR (b) with lipids in HIV positive and negative individuals in rural and urban men and women.

Adjusted for age, ethnicity, education, household assets score, marital status, use of lipid-lowering medication, smoking status, alcohol intake, and physical activity.

BMI, WHR and serum lipids are used in standard deviations.