

# P157: Socio-economic deprivation, obesity, and diabetes mellitus in people of African ancestry living with HIV in South London



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## BACKGROUND

- Long term conditions (LTCs) such as diabetes mellitus (DM) and chronic kidney disease (CKD), and their respective risk factors obesity and hypertension (HPT), are highly prevalent in communities of African ancestry in South London.
- Socio-economic deprivation is common and thought to contribute to the development of these LTCs.
- On the other hand, the prevalence of HIV infection in South London is one of the highest in the UK.
- We explored associations between measures of socio-economic deprivation and\*
  - Obesity and HPT, and
  - DM and CKD
 in people of African ancestry living with HIV in South London.

\*Analyses were updated with information on HPT and CKD after abstract acceptance

## METHODS

- Cross-sectional study of people of black ethnicity with HIV aged 30-65 years.
- Participants were enrolled at King's College Hospital, Guys' and St Thomas' Hospital and Saint Georges' Hospital between Sept 2020 - Jan 2022; height, weight, and standardized blood pressure readings were obtained; HbA1c, creatinine and albumin/creatinine ratio (ACR) were measured; socio-economic parameters were ascertained through validated questionnaires.
- Outcome variables definitions
  - Obesity = body mass index (BMI)  $\geq 30\text{kg/m}^2$
  - HPT = on anti-HPT medication, or an average BP  $\geq 140/90$  mmHg
  - DM = on anti-DM medication, or HbA1c  $\geq 6.5\%$
  - CKD = eGFR  $< 60$  mL/min/1.73m<sup>2</sup>, or ACR  $> 3$  mg/mmol
- Multivariate logistic regression models were fitted to explore associations between socio-economic variables and outcomes; age and sex were included as covariates, as well as variables with p value  $< 0.1$  in the univariate models.

## RESULTS

- A total of 398 participants were enrolled (Table 1). Socio-economic deprivation was common: 52.3% reported financial insecurity, 32.0% low educational status, 28.4% employment insecurity, 22.3% food insecurity, 12.3% migration status insecurity, and 11.1% housing insecurity.

Table 1: Demographic and clinical characteristics (n=398)

	Overall	Normal BMI/ pre-obese	Obese	p value	Normal BP	Hypertension	p value	Normoglycaemia/ pre-diabetes	DM	p value	Normal renal function	CKD	p value
N	398	200	198		186	212		324	74		287	111	
Sex (Female)	218 (54.8)	84 (42.0)	134 (67.7)	<b>&lt;0.001</b>	107 (57.5)	111 (52.4)	0.351	184 (56.8)	34 (45.9)	0.118	158 (55.1)	60 (54.1)	0.946
Age	52.0 (45.0, 57.0)	51.0 (44.0, 57.0)	52.0 (46.0, 57.0)	0.273	48.0 (42.0, 54.0)	55.0 (50.0, 59.0)	<b>&lt;0.001</b>	51.0 (44.8, 56.0)	55.0 (50.3, 59.0)	<b>&lt;0.001</b>	51.0 (44.5, 57.0)	54.0 (49.0, 57.0)	<b>0.006</b>
Time since HIV diagnosis (years)	14.0 (9.5, 18.0)	14.0 (9.8, 18.3)	14.0 (9.5, 18.0)	0.991	14.0 (10.0, 17.3)	14.0 (9.0, 18.0)	0.689	14.0 (10.0, 18.0)	15.0 (9.0, 18.0)	0.595	13.0 (9.0, 18.0)	15.0 (10.8, 18.3)	0.090
On ART	387 (97.2)	193 (96.5)	194 (98.0)	0.552	180 (96.8)	207 (97.6)	0.826	315 (97.2)	72 (97.3)	1.000	280 (97.6)	107 (96.4)	0.768
HIV RNA > 200 c/mL	23 (5.8)	16 (8.0)	7 (3.5)	0.090	12 (6.5)	11 (5.2)	0.746	17 (5.2)	6 (8.1)	0.499	14 (4.9)	9 (8.1)	0.318
CD4+ count	548 (371, 749)	566 (409, 730)	525 (358, 768)	0.862	532 (363, 752)	555 (381, 731)	0.983	514 (367, 740)	623 (448, 761)	0.083	500 (346, 736)	635 (457, 752)	<b>0.003</b>
Hypertension	212 (53.3)	99 (49.5)	113 (57.1)	0.158	-	-	-	157 (48.5)	55 (74.3)	<b>&lt;0.001</b>	134 (46.7)	78 (70.3)	<b>&lt;0.001</b>
BMI (kg/m <sup>2</sup> )	30.0 (26.5, 34.2)	-	-	-	29.2 (25.8, 34.1)	30.7 (27.4, 34.4)	<b>0.036</b>	29.7 (26.4, 33.9)	31.9 (28.2, 35.4)	<b>0.008</b>	29.7 (26.5, 33.9)	31.1 (26.9, 35.1)	0.230
CRP (mg/L)	2 (1, 5)	1 (1, 3)	4 (2, 7)	<b>&lt;0.001</b>	2 (1, 5)	3 (1, 5)	0.278	2 [1, 5]	3 (1, 6)	0.072	2 (1, 5)	3 (1, 6)	<b>0.038</b>

Categorical data are expressed as N (%) and continue data as median (IQR)

- Univariate analyses showed no association between measures of socio-economic deprivation and obesity or CKD (Table 2). There was moderate evidence to suggest an association with housing insecurity and HPT and weak evidence of an association between food insecurity and diabetes, and social isolation and HPT (Table 2).

Table 2: Univariate logistic regression models for association between measures of socio-economic deprivation and risk factors / LTCs

Characteristics	Obesity OR (95%CI), p value	HPT OR (95%CI), p value	DM OR (95%CI), p value	CKD OR (95%CI), p value
Financial insecurity	1.38 (0.93, 2.06), p=0.107	0.84 (0.56, 1.25), p=0.387	1.09 (0.66, 1.82), p=0.734	0.93 (0.60, 1.44), p=0.736
Food insecurity	1.08 (0.66, 1.77), p=0.750	1.04 (0.64, 1.70), p=0.881	<b>1.66 (0.91, 2.94), p=0.089</b>	1.17 (0.67, 1.98), p=0.574
Housing insecurity	0.74 (0.39, 1.39), p=0.348	<b>0.51 (0.26, 0.96), p=0.040</b>	0.96 (0.40, 2.06), p=0.921	1.54 (0.78, 2.94), p=0.198
Migration status insecurity	0.83 (0.45, 1.51), p=0.538	0.71 (0.38, 1.30), p=0.268	1.19 (0.54, 2.43), p=0.651	1.10 (0.55, 2.11), p=0.774
Employment insecurity	1.27 (0.82, 1.97), p=0.288	0.81 (0.52, 1.26), p=0.351	1.27 (0.73, 2.17), p=0.394	1.39 (0.86, 2.22), p=0.175
Low education level	1.30 (0.85, 1.99), p=0.233	1.29 (0.84, 1.99), p=0.246	0.64 (0.35, 1.13), p=0.135	0.89 (0.55, 1.43), p=0.641
Social isolation	1.24 (0.81, 1.89), p=0.318	<b>0.66 (0.43, 1.01), p=0.057</b>	0.85 (0.49, 1.46), p=0.574	1.00 (0.62, 1.58), p=0.987
Discrimination	1.16 (0.75, 1.78), p=0.509	1.00 (0.65, 1.54), p>0.999	0.85 (0.47, 1.48), p=0.572	1.18 (0.72, 1.90), p=0.508
Non-disclosure of HIV	0.80 (0.49, 1.28), p=0.348	0.94 (0.59, 1.52), p=0.810	1.39 (0.77, 2.45), p=0.266	1.46 (0.87, 2.41), p=0.148

OR: odds ratio, 95%CI: 95% confidence interval

**Financial insecurity** = behind with some/most bills, only some of the time enough money to meet basic needs, or needed financial support in the last year

**Food insecurity** = needed food support in the last year

**Housing insecurity** = temporary accommodation/living with friends or family/homeless

**Migration status insecurity** = temporary/limited/no status, or needed immigration support in the last year

**Employment insecurity** = unemployed, sick, or disabled, or needed employment support in the last year

**Low educational status** = 0 levels (age 16) or less

**Social isolation** = Loneliness/isolation (often feeling a lack of companionship, feeling left out from others, feeling isolated from others, or feeling lonely), no one to turn to for emotional support, or needed support with loneliness/isolation in the last year

## CONCLUSION

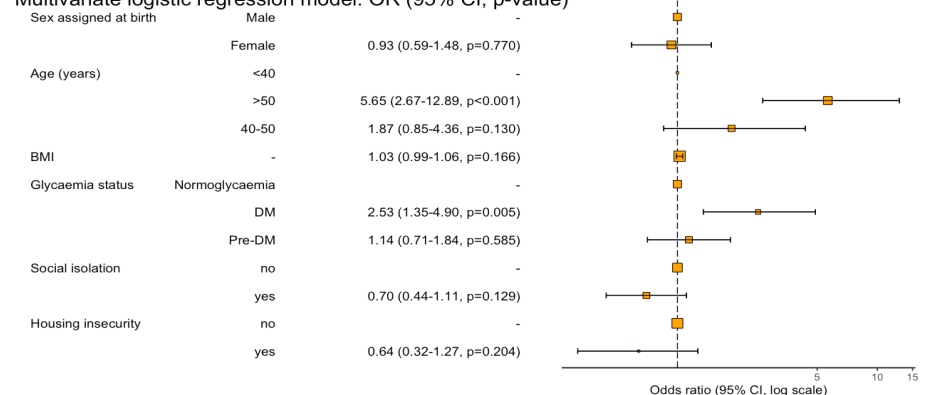
- In these cross-sectional analyses, we found no evidence for an association between various socio-economic factors and obesity, HPT or CKD in people living with HIV of African ancestry.
- The observed association between food insecurity and DM deserves to be further characterised in future studies and to be explored in relation to diet, especially in the current context of rising costs of living.

- Multivariate analyses did not reveal independent associations between housing insecurity or social isolation and HPT. A significant association between food insecurity and DM was observed (Figure 1).

Figure 1: Multivariate logistic regression models for a) HTN and b) DM after adjustment for covariates\* with p value  $< 0.1$  in univariate models.

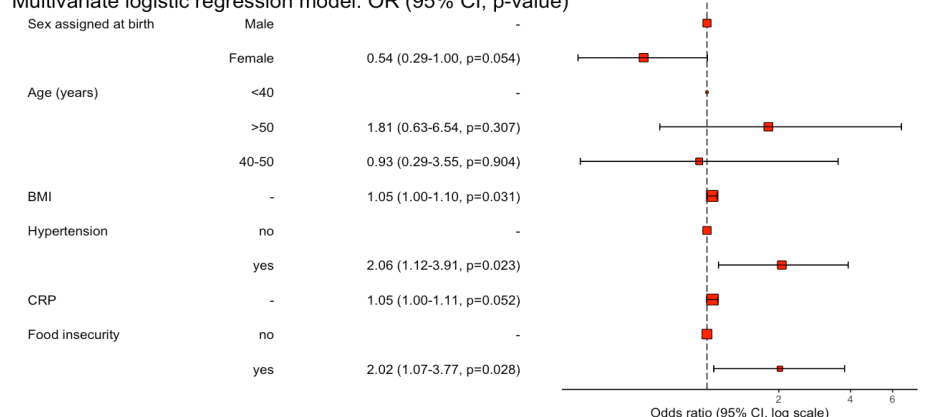
### a) Factors associated with systemic hypertension

Multivariate logistic regression model: OR (95% CI, p-value)



### b) Factors associated with diabetes mellitus

Multivariate logistic regression model: OR (95% CI, p-value)



\*Covariates analysed in univariate models (apart from measures of socio-economic deprivation):

- Sex assigned at birth, region of birth
- Time since HIV-1 infection diagnosis, time on ARVs, HIV VL at study entry, nadir CD4+, CD4+ at study entry
- APOL1 genotype, smoking status, BMI, HPT, DM, CRP (mg/L)
- Chronic pain, Impaired mobility / function, psych disorders

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