

# Racial discrimination predicts the incidence of type-2 diabetes in Brazilian adults: ELSA-Brasil study

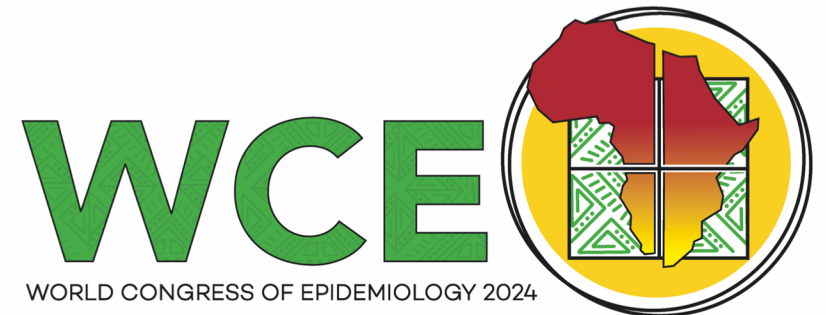
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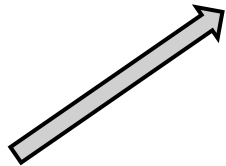
# Background

- **Racial disparities in Type 2 Diabetes**
- Racial discrimination in the causal pathway of type 2 diabetes:
  - Discrimination-induced stress
  - Marker of structural racism

RACIAL  
DISCRIMINATION

Direct effect  
Indirect effect  
Confounding

RACIAL  
DISCRIMINATION



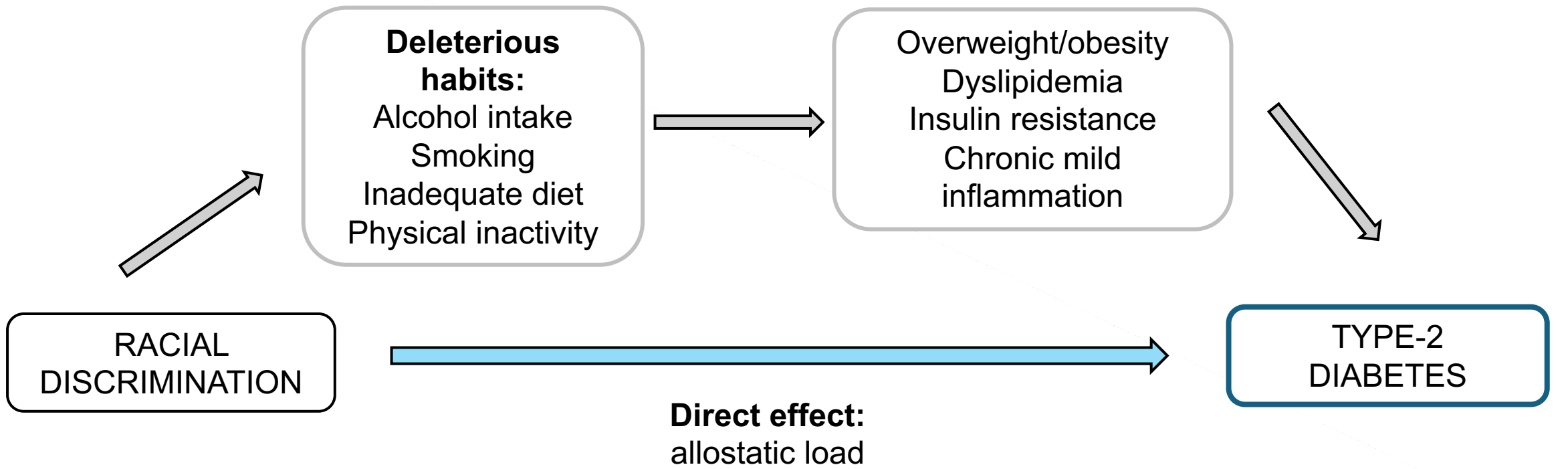
**Deleterious habits:**  
Alcohol intake  
Smoking  
Inadequate diet  
Physical inactivity



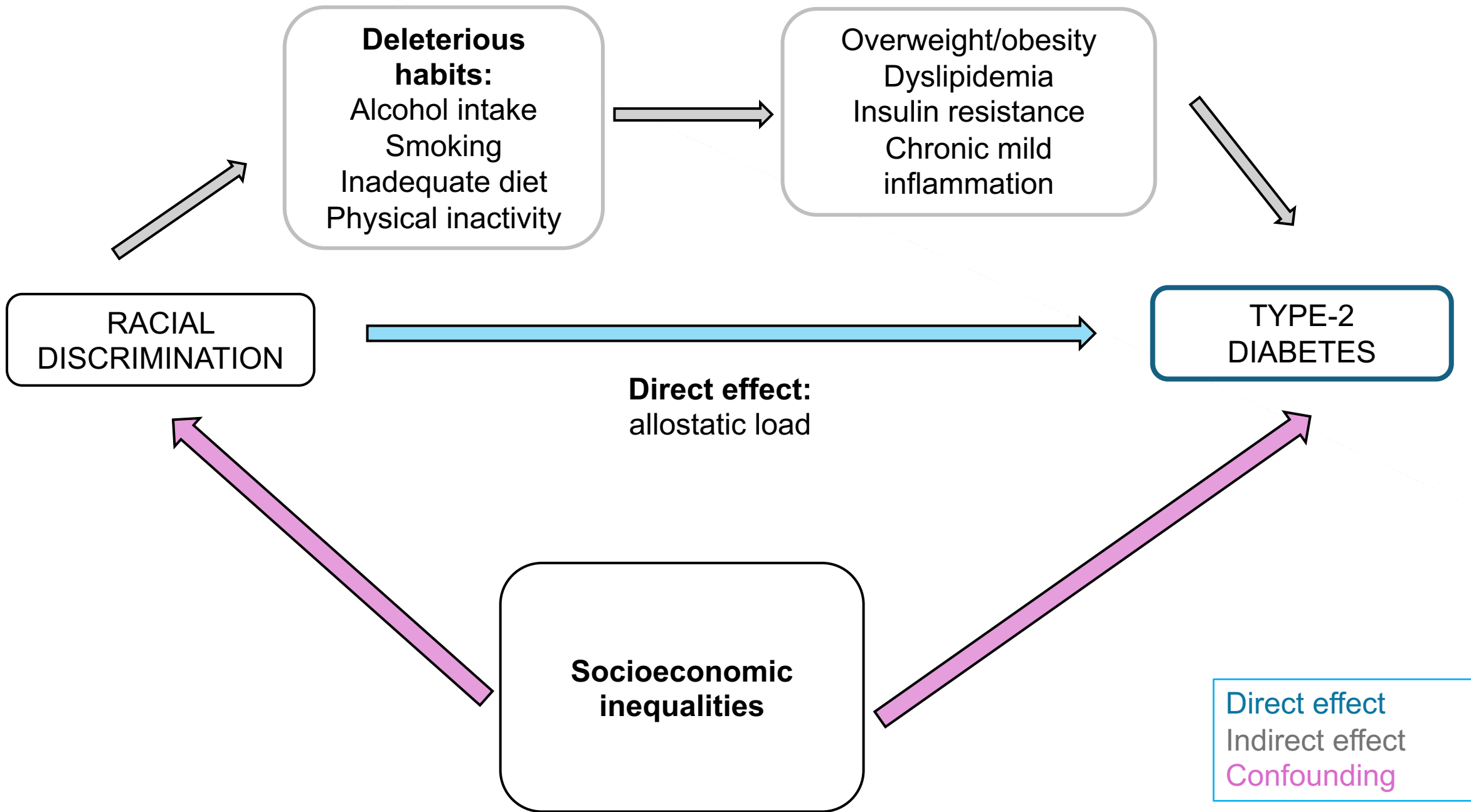
Overweight/obesity  
Dyslipidemia  
Insulin resistance  
Chronic mild inflammation



Direct effect  
Indirect effect  
Confounding



Direct effect  
Indirect effect  
Confounding



# Background

- **Racial discrimination** linked to an increased diabetes risk in North American studies

	<b>Population</b>	<b>Diabetes assessment</b>
Bacon et al. 2017	Black <b>women</b> (US)	Self-reported medical diagnosis
Whitaker et al. 2017	Men and women (US)	Self report (diagnosis or medication), FPG
Mayne et al. 2020	Black men and women (US)	FPG, OGTT, HbA1c
Gaston et al. 2021	<b>Women</b> (US and Puerto Rico)	Self-reported medical diagnosis



# Background

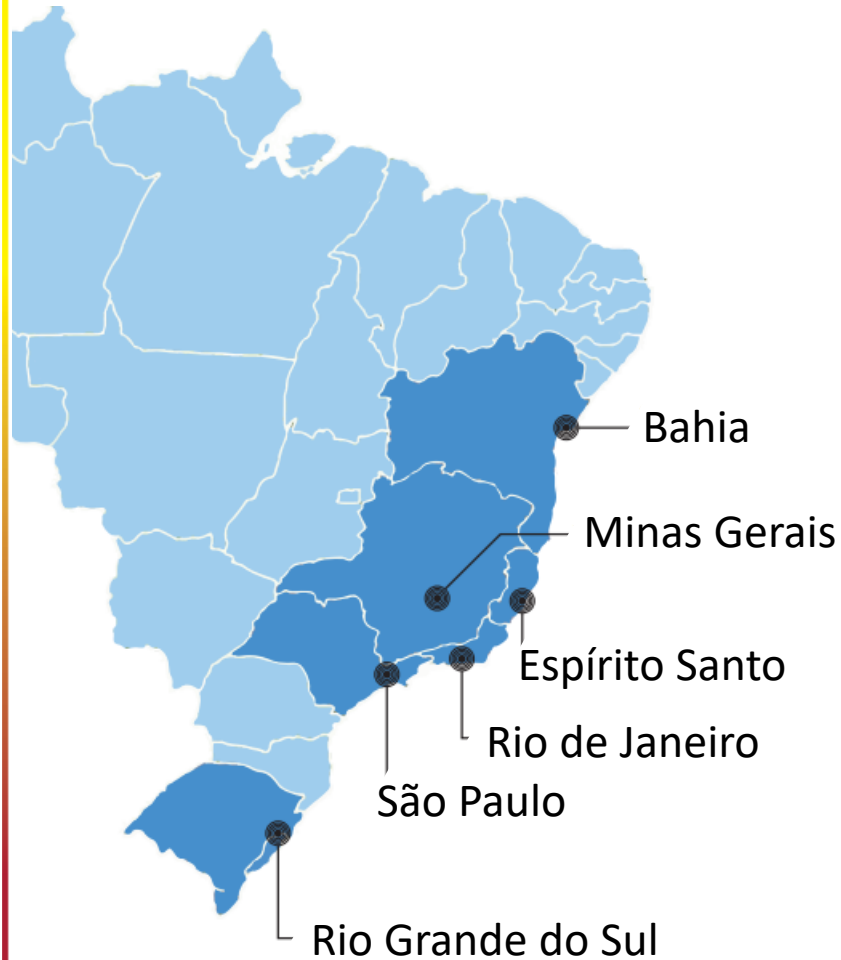
- The unique context of the ELSA-Brasil cohort
  - **Comprehensive diabetes** assessment
  - Ethnic diversity and **racial classification**: black x mixed-race/brown



# Objective

To evaluate if perceived lifetime racial discrimination is associated with diabetes incidence after 7 years of follow-up in Brazilian men and women

# Methods



**ELSA BRASIL**

*ELSA-Brasil is a cohort study of 15,105 civil servants, aged 35–74, from 6 state capitals in Brazil*

Longitudinal analysis: 11,931 participants free of diabetes at baseline



Mean follow-up time → 7.13 ± 2.32



# Methods

Exposure

**Self-reported race/color** (white, mixed-race/brown, black)

+

**Perceived discrimination due to race/color** in at least one of five contexts (Lifetime Major Events Scale).

- White, non-discriminated = reference group
- Brown, discriminated
- Brown, non-discriminated
- Black, discriminated
- Black, non-discriminated

# Methods

Outcome = **Incidence of type 2 diabetes**



Self-reported medical diagnosis  
or medication use \*



Laboratory abnormalities  
(FPG, HbA1c or 2h-OGTT)

\* Research visits and annual phone interviews

# Methods

## Confounders (baseline)

- Sex
- Age (Years)
- Education (less than high school; complete high school; university degree)
- State Center (Bahia; São Paulo; Rio de Janeiro; Minas Gerais, Espírito Santo, Rio Grande do Sul)
- Per capita household income (Brazilian reais)

# Methods

Statistical analysis

**Cox proportional hazards model for men and women**

**HR (95%CI)**

Model 1: unadjusted

Model 2: Model 1 + age;

Model 3: Model 2 + state center;

Model 4: Model 3 + education + income;

# Results

- Racial discrimination: more frequent among Blacks (30% of women and 35% of men) than mixed-color/Browns (5% women and 7,5% men)
- Those exposed to discrimination had:
  - Lower income and education
  - Higher proportion of obesity and hypertension
  - Higher proportion of heavy alcohol consumption and binge drinking
  - Lower physical activity levels

# Results

Race/color + perceived racial discrimination (yes/no)	Women (n = 6698)		Men (n = 5233)	
	HR	95% CI	HR	95% CI
<b>Model 1: unadjusted</b>				
White, no	Reference		Reference	
Brown, no	1.03	0.89 – 1.20	1.13	0.97 – 1.32
Brown, yes	1.82	1.20 – 2.77	1.74	1.21 – 2.50
Black, no	1.39	1.16 – 1.67	1.13	0.88 – 1.44
Black, yes	1.59	1.25 – 2.03	1.44	1.08 – 1.91
<b>Model 2: + age</b>				
White, no	Reference		Reference	
Brown, no	1.05	0.91 – 1.23	1.19	1.02 – 1.39
Brown, yes	1.91	1.26 – 2.91	1.83	1.27 – 2.64
Black, no	1.41	1.18 – 1.69	1.15	0.90 – 1.47
Black, yes	1.69	1.32 – 2.15	1.57	1.18 – 2.09



# Results

Race/color + perceived racial discrimination (yes/no)	Women (n = 6698)		Men (n = 5233)	
	HR	95% CI	HR	95% CI

## Model 3: + age + state center

White, no	Reference		Reference	
Brown, no	1.12	0.96 – 1.31	1.25	1.06 – 1.47
Brown, yes	1.99	1.31 – 3.02	1.82	1.26 – 2.63
Black, no	1.46	1.21 – 1.76	1.20	0.93 – 1.55
Black, yes	1.74	1.36 – 2.23	1.57	1.18 – 2.10

## Model 4: + age + study center + education + income

White, no	Reference		Reference	
Brown, no	1.04	0.88 – 1.23	1.15	0.96 – 1.36
Brown, yes	1.89	1.24 – 2.89	1.68	1.16 – 2.44
Black, no	1.31	1.07 – 1.60	1.06	0.81 – 1.38
Black, yes	1.62	1.26 – 2.07	1.45	1.08 – 1.95

# Conclusion

Racial discrimination predicted a higher diabetes risk in Browns and Blacks, regardless of sex. Conversely, those unexposed to discrimination did not show elevated risks compared to Whites, except for Black women. Our findings suggest that discrimination contributes to the observed racial disparities in diabetes risk.

Understanding direct and indirect effects of racial discrimination in diabetes risk is crucial for effective intervention and evaluation.

# Thank you



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