

**13<sup>th</sup> Annual Summer Public Health  
Research Videoconference on Minority  
Health**

**Racial Discrimination in the Coronary  
Artery Risk Development in Young  
Adults (CARDIA) Study**

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# Outline

- Introduction
- Physical and Mental Health in African Americans
  - Racial Discrimination
  - Skin color
- Substance use in African Americans and whites
- Implications for future research

# Introduction

- Disparities in health status between blacks (or African Americans) and whites are large, pervasive and persistent over time
  - Socioeconomic position
- Existing research reveals that
  - A substantial proportion of African Americans experience discrimination
  - Discrimination is adversely related to multiple indicators of health status including poorer self-rated physical and mental health, blood pressure and other cardiovascular outcomes as well as other health outcomes and related behaviors

# Self-reported health, perceived racial discrimination and skin color in African Americans

Borrell LN, Kiefe CI, Williams DR, Diez-Roux AV, Gordon-Larsen P.  
Social Science & Medicine 2006;63(6):1415-27

# Background

- Racial discrimination has emerged as an important risk factor for the health of African Americans
- Evidence suggests that skin tone may be a marker for discrimination, with darker skinned blacks reporting higher levels of discrimination than their lighter skinned peers

# Aim of the Study

- To investigate the association of perception of racial discrimination and skin color with self-reported physical and mental health status in African Americans

# Source of the Data

## ■ The *CARDIA* study

- A prospective study of cardiovascular risk factors
- 5,115 African American and white adults 18-30 years of age recruited from 4 US urban areas in 1985-86, balanced on age, sex, race and education
- Re-examined every 2-5 years, retention for Year 15 (2000-01): 74%
- A sample of 1,722 African Americans

# Outcomes

## ■ Physical and Mental Health

- Data collected during Year 15
- SF-12: 12 questions representing two summary scores, the Physical Component Score (PCS) and the Mental Component Score (MCS)
- Scores on scale from 0 (worst) to 100 (best)
- Mean score for a healthy population is 50



# Exposures

## ■ Racial Discrimination

- Data collected during Year 15
- Self-reported experience of discrimination in 7 domains: at school, getting a job, getting housing, at work, at home, getting medical care, on the street or in a public setting
- Answers for 7 domains added for a summary score
- Range from 0 (no discrimination) to 21 (highest frequency/intensity of discrimination)

# Exposures...

## ■ Skin Color

- Data collected during Year 7 follow up examination
- By amber, blue, and green filters of a Photovolt 577 reflectance meter
- Values pertain to percentage reflected light
- Range from 0 (darkest) to 100 (lightest)

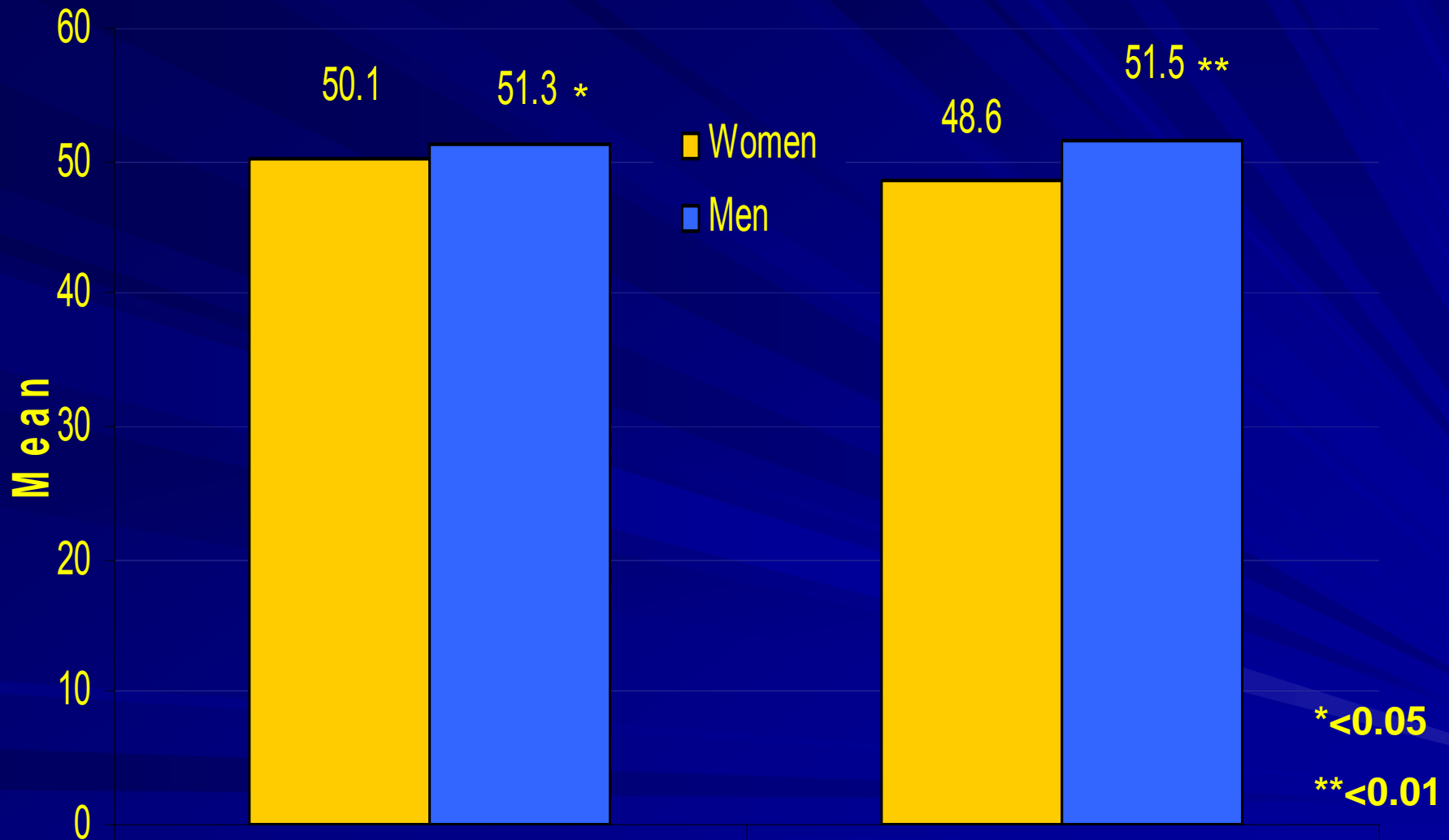
# Covariates

- Age
- Marital status
- Education (years and degrees)
- Family income

# Characteristics of the Study Population

Characteristics	Women (n=1016)	Men (n=706)
<b>Education (%)</b>		
Incomplete high school	6.6	9.7
Complete high school or GED	21.7	28.5
1-3 years of college	42.5	37.8
4 years of college	19.1	17.0
Some graduate or professional school	10.1	7.0**
<b>Income (%)</b>		
<\$12,000	11.4	10.3
\$12,000-\$15,999	5.5	5.1
\$16,000-\$24,999	10.8	7.0
\$25,000-\$34,999	12.9	13.0
\$35,000-\$49,999	18.6	18.4
\$50,000-\$74,999	20.9	19.7
\$75,000-\$99,999	11.6	13.8
≥\$100,000	8.2	12.7**

# Mean scores for physical and mental health at Year 15



*MSPH*

Physical Health

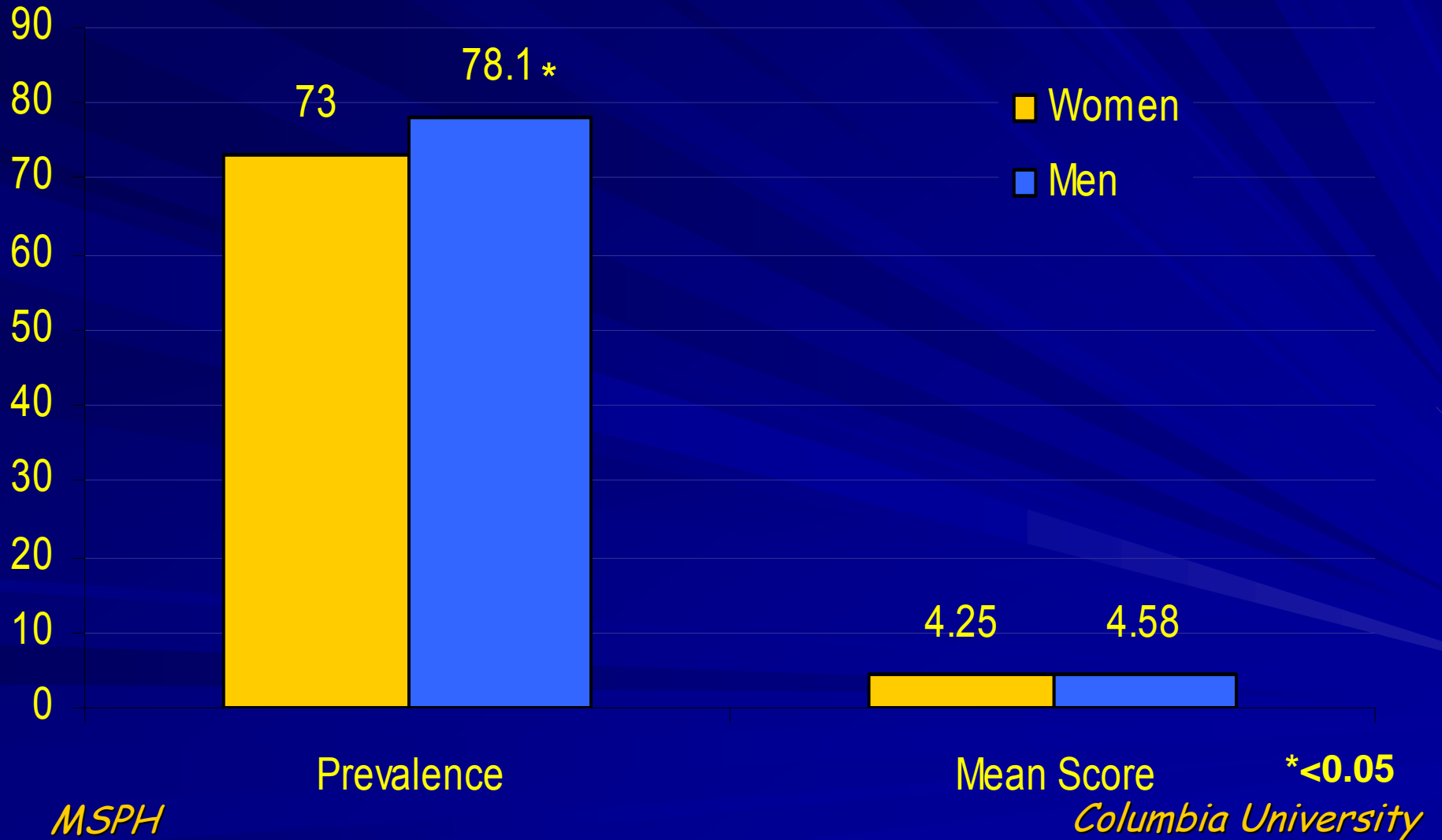
Mental Health

*Columbia University*

# Mean skin color reflectance by tertile at Year 7



# Racial discrimination at Year 15 and race/ethnicity: Prevalence (any versus none) and mean score



## Average change in physical and mental health score per unit increase in the racial discrimination summary score

Outcomes	Women	Men
	$\beta$ (95% CI)	$\beta$ (95% CI)
PCS	-0.16 (-.28, -.04)	-0.14 (-.27, -.00)
MCS	-0.52 (-.67, -.37)	-0.29 (-.45, -.14)



## Average change in physical and mental health score per unit increase in the racial discrimination summary score

Outcomes	Women		Men	
	$\beta$ (95% CI)	$\beta$ Adjusted* (95% CI)	$\beta$ (95% CI)	$\beta$ Adjusted (95% CI)
PCS	-0.16 (-.28, -.04)	-0.25 (-.36, -.13)	-0.14 (-.27, -.00)	-0.13 (-.26, .002)
MCS	-0.52 (-.67, -.37)	-0.56 (-.71, -.41)	-0.29 (-.45, -.14)	-0.31 (-.46, -.16)

\*Coefficients adjusted for age, income and education

# Additional Results

- Skin color was not associated with physical or mental health

# Additional Results...

- The association between discrimination and MCS varies with income among women
  - In women with income of less than \$16,000, between \$16,000 to \$34,999 and \$35,000 to \$74,999, a one unit increase in the discrimination scale was associated with a decrease of 0.77, 0.65 and 0.60 in the mean MCS score, respectively

# Limitations

- Cross-sectional data
- Self-reported nature of the data could lead to same-source bias
- Measurements of skin color were taken eight years before the discrimination and health assessment

# Conclusions

- Racial discrimination was reported in 75% of participants, but was more common in men than in women
- Racial discrimination was associated with worse physical and mental health in both men and women
  - These associations were stronger for women than for men

# Self-reported racial discrimination and substance use in the Coronary Artery Risk Development in Adults (CARDIA) study

Borrell LN, Jacobs DR, Williams DR, Pletcher MJ, Houston TJ, Kiefe CI.  
American Journal of Epidemiology (Article accepted for publication)

*MSPH*

*Columbia University*

# Background

- Although the associations between racial discrimination and health outcomes have been reported consistently, the causal mechanism underlying these associations remains a challenge

# Aim of the Study

- To investigate the association of self-reported racial discrimination with cigarette smoking, alcohol consumption, and use of illicit substances among African American and white adults



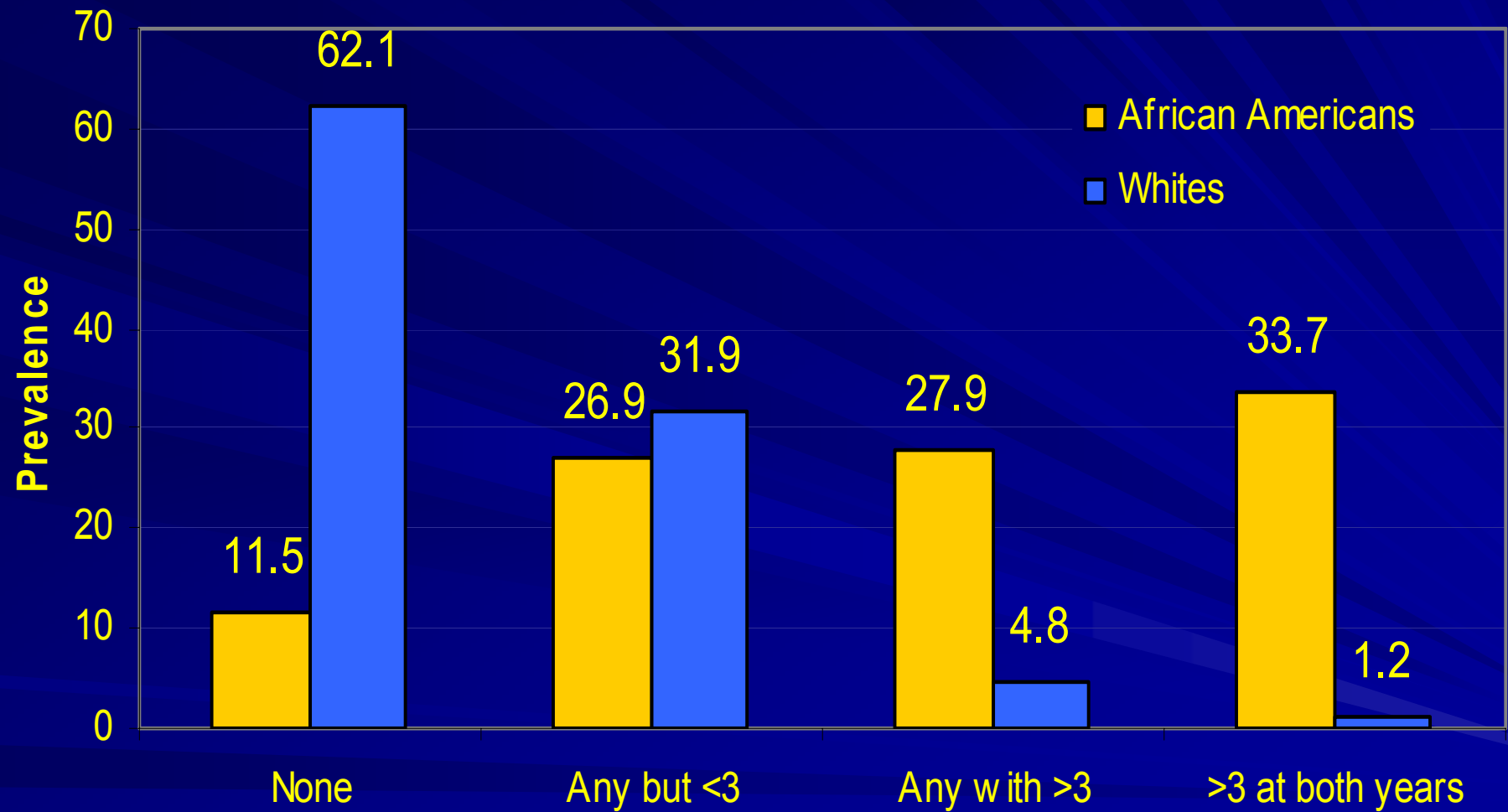
# Methods

- **CARDIA Study**
  - African American (n=1507)
  - Whites (n=1822)
- **Outcomes**
  - Smoking status, alcohol consumption, and lifetime use of illicit substances (marijuana, cocaine, crack, heroin and speed) ascertained at Year 15
- **Racial Discrimination at Years 7 and 15**

# Covariates

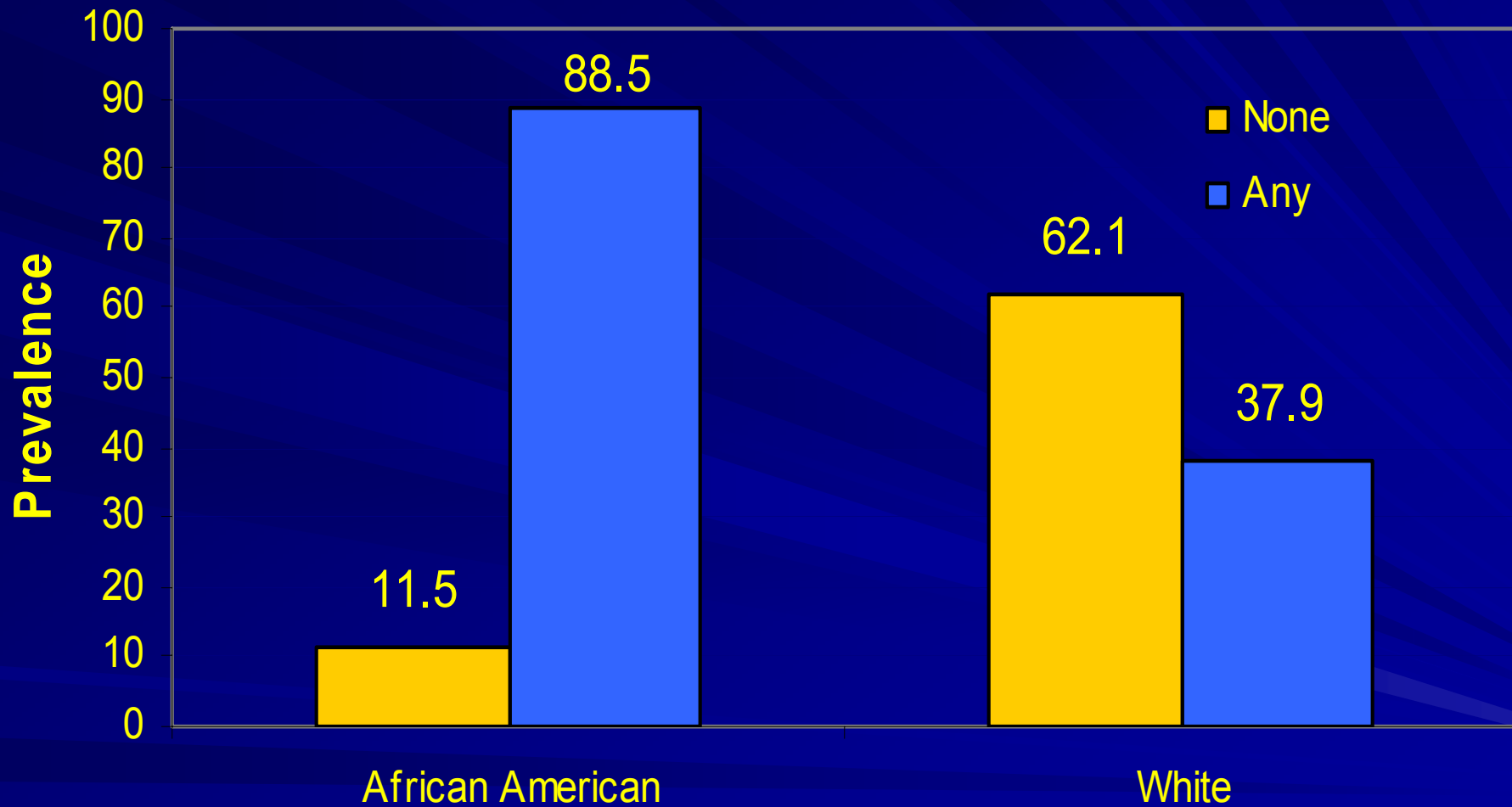
- Age
- Sex
- Marital status
- Education (years and degrees)
- Family income
- Coping mechanisms for unfair treatment
- Control/mastery
- Anger
- Social network
- Social support

# Prevalence of racial discrimination by race/ethnicity



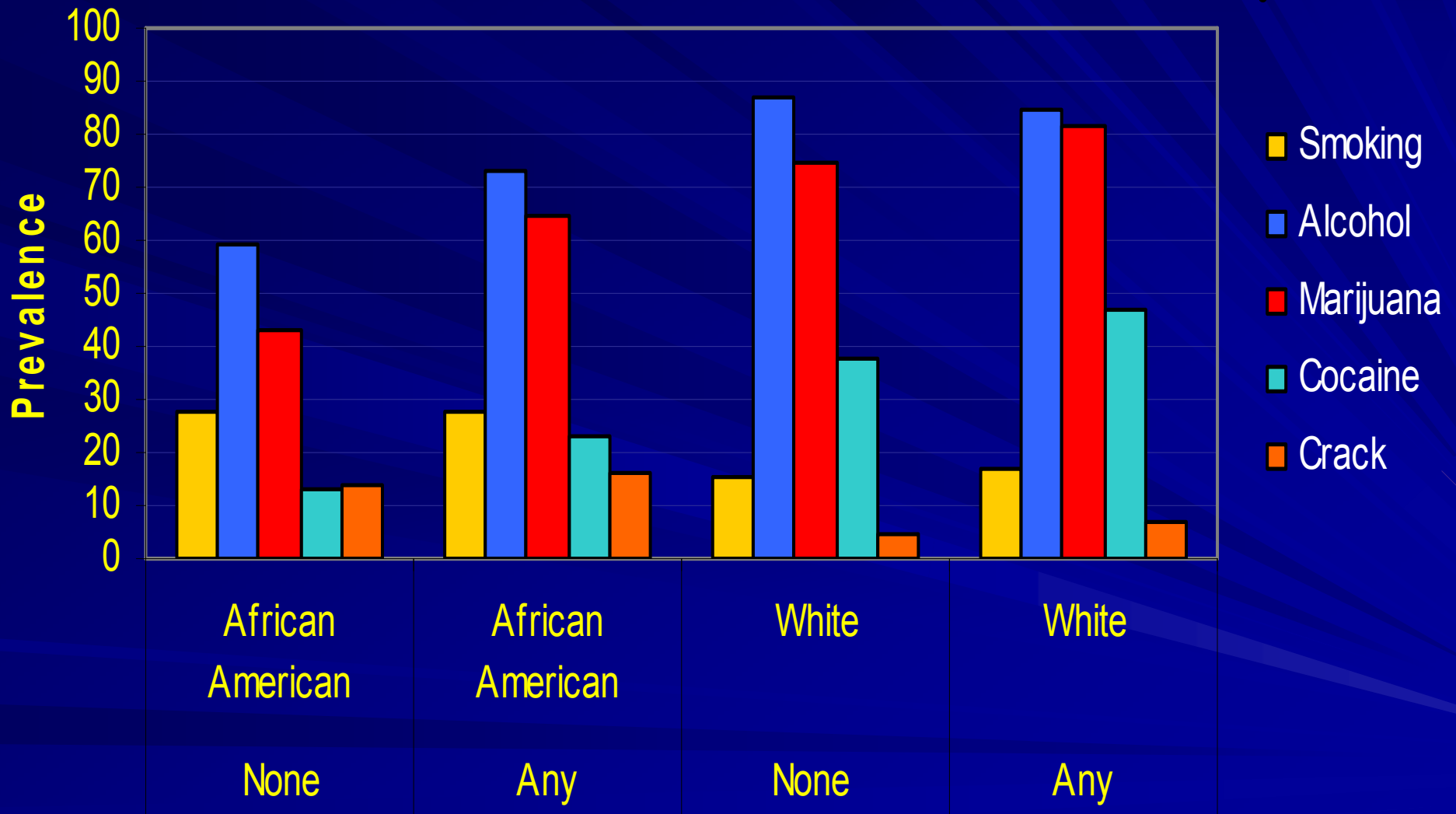
Racial Discrimination Experience at Years 7 and 15

# Prevalence of racial discrimination by race/ethnicity



**Racial Discrimination at Years 7 and 15**

# Prevalence of substance use according to racial discrimination and race/ethnicity



# Limitations

- Self-reported nature of the data could lead to same-source bias
- The associations of racial discrimination with smoking, alcohol consumption and lifetime substance use were determined in cross-sectional and longitudinal analyses

# Conclusions

- Racial discrimination was:
  - More common in African Americans (89%) than in whites (38%) when queried 8 years apart
  - Associated with smoking, past year alcohol consumption and lifetime use of marijuana and cocaine in both racial/ethnic groups

# Implications for Future Research

- Our findings suggest:
  - We need to move beyond reporting the effect of self-reported perceived racial discrimination on health outcomes
  - We should focus on the etiologic mechanisms, upstream and downstream, by which racial discrimination may exert its effects on health



# Acknowledgements

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  - National Institutes of Health (NHLBI & NIDCR)
  - Robert Wood Johnson Health and Society Scholars Program
  - We thank the staff and participants in the CARDIA study for their important contributions