Exploring the Intersection of Obesity and Disparities in Pediatrics

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Learning Objectives

- Discuss racial and ethnic disparities in the prevalence, treatment, and pathophysiology of obesity
- Evaluate the role of racism in our understanding of obesity in pediatrics
- Discern strategies to evaluate race as a social construct and not as a biologic phenomena

Disclosure Statement

Speaker
Dr. Fatima Cody Stanford

- Consultant: Calibrate, GoodRx, and Novo Nordisk
- Will not be discussing unlabeled/unapproved use of drugs or products

Disparities in prevalence, pathophysiology, and treatment of obesity in pediatrics
Trends in obesity among adults AND children and adolescents aged 2-19, by sex, United States, 1999 through 2015-2016

Prevalence of obesity among boys and girls aged 12-19 years, by race and ethnicity: United States, 2015-2016


Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2019

Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2019
Non-Hispanic White Adults

SOURCE: CDC/NCHS, National Health and Nutrition Examination Survey (NHANES), 2015-2016

Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2019
Non-Hispanic White Adults
Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2019

Hispanic Adults

Prevalence† of Self-Reported Obesity Among U.S. Adults by State and Territory, BRFSS, 2019

Non-Hispanic Black Adults

Ethnic and Sex Differences in Visceral and Subcutaneous in Children and Adolescents

• Age-adjusted Total Body Fat was greater in African Americans (P = 0.017) and females (P < 0.0001) compared with Whites and males, respectively.
• The demonstrated ethnic and sex differences are important confounders in the prevalence of obesity and in the assignment of disease risk in children and adolescents.

VAT: Visceral Adipose Tissue
SAT: Subcutaneous Adipose Tissue

Insulin, Estrogen, and Fat Mass in African-American vs. European American adolescent girls

[Graphs and charts related to the text provided]
Insulin, Estrogen, and Fat Mass in African-American vs. European American adolescent girls

Regulation of Food Intake

Regulation of Food Intake

BDNF Regulation and Obesity


Obesity Disparities in Early Life

Racial and Ethnic Disparities in Early Childhood

- Nationally representative data from ~10,700 children in the Early Childhood Longitudinal Study Birth Cohort who were followed from age 9 months through kindergarten entry.
- African American children had the highest prevalence of risk factors, whereas Asian children had the lowest prevalence.
- The major contributor to the BMI z score gap was the rate of infant weight gain during the first 9 months of life → strong predictor of BMI z score at kindergarten entry.
- The rate of infant weight gain accounted for between 14.9% and 70.5% of explained disparities between white children and their racial and/or ethnic minority peers.
- Gaps in socioeconomic status were another important contributor that explained disparities, especially those between white and Hispanic children.
- Early childhood risk factors, such as fruit and vegetable consumption and television viewing, played less important roles in explaining racial and/or ethnic differences in children’s BMI z score.
Obesity Interventions in Racial and Ethnic Minorities

Religiosity and Excess Weight Among African-American Adolescents: The Jackson Heart KIDS Study

- Examined the relationship between religious practices, spirituality, and excess weight among African-American adolescents (N = 212) residing in the Deep South.
- Results from modified Poisson regression analysis indicated that adolescents who prayed daily had a lower prevalence of excess weight (PR 0.77 [95% CI 0.62-0.96]) than those who did not.
- This relationship was only significant for 12-15-year-old participants in age-stratified analysis.

Racial/Ethnic Differences in the Effectiveness of a Multisector Childhood Obesity Prevention Intervention

Adjusted analysis of utilization of MBS based on combined NHANES and NIS data using Cochran-Mantel-Haenszel method.
Race emerged as a socio-political concept both to classify humans and to justify a group’s dominance over another.

Race as a social construct NOT a biologic variable

- Applied to very large proportions of humanity
- Large genetic variability within any such single grouping any genetic differences
- Any between groupings are trivial relative to the equivalent genetic similarities

Reliance on race as a biological variable

Race often attributed to:
- Physical phenotypes (e.g., skin color, facial and hair features)
- Attribution tendency to see "racial" characteristics as biological features of a person or population.

- Supports claims of
  - Social inequality
  - Social control
  - Superiority
  - Ancestry
  - Genetics

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN

Racism and Its Link to Health

- Biologic
- Social
- Physiologic
- Other Health Outcomes

Racism and Obesity

Racism scores were created from 8 questions asked in 1997 and 2009 about the frequency of:
- "everyday" racism → people act as if you are dishonest
- "lifetime" racism → unfair treatment on the job

4,315 incident cases of obesity identified from 1997 through 2009 in Black Women’s Health Study

Everyday racism and lifetime racism → increased incidence of obesity

Reliance on Race as a Reliable and Static Variable

Lack of clarity on methods used to categorize race

“Racial categories have variously been assigned to research subjects by investigators, medical examiners, hospital admitting clerks, and others generating further opportunities for prejudice and misclassification to impact scientific data.”
Components of ethnicity relevant to variability in cardiometabolic risk

<table>
<thead>
<tr>
<th>Biological Component</th>
<th>Example</th>
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<tbody>
<tr>
<td>DNA content</td>
<td>Frequency of ApoE polymorphism</td>
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<tr>
<td>Gene effect</td>
<td>Physiological effect of TGF gene</td>
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<td>DNA expression</td>
<td>Global DNA methylation</td>
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<td>Life history</td>
<td>Growth and Maturaton</td>
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<td>Biological aging</td>
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<td>Morphology</td>
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<td>Proteomics</td>
<td>Protein markers of cardiovascular disease</td>
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<td>Microbiome</td>
<td>Genetic variability of the biota</td>
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<td>Biochemistry</td>
<td>Inflammatory response</td>
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<td>Physiology</td>
<td>Blood pressure</td>
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<td>Behavior</td>
<td>Physical Exercise</td>
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<td>Physical environment</td>
<td>Quality of urban environment</td>
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<td>Social environment</td>
<td>Social support networks</td>
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<td>Education</td>
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<td>Access to healthcare</td>
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<td>Healthcare</td>
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<td>Commercial pressures</td>
<td>Targeting by commercial companies</td>
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<td>Exposure to discrimination</td>
<td>Negative targeting of identity</td>
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<tr>
<td>Values and beliefs</td>
<td>Values and beliefs relating to foods</td>
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**Recommendations**

- Biomedical researchers, especially those in the field of obesity, should abandon the use of racial categories to explain biologic phenomena.
- Social determinants of health are not limited to race and ethnicity.
- When race or ethnicity are characterized, specify the method with which these classifications were made.
- Full descriptions of ethnic background may well include dietary pattern descriptions.
- Words matter.

**Conclusion**

- Our responsibility to raise consciousness about how the routine use of race in the obesity literature might reflect or promote systemic racism, whereas instead our goal should be to highlight racial inequities that should be vigorously opposed.
- Realization of the inherent limitations and possible adverse consequences of our routine characterization of research populations along limited and imperfect racial categories, as well as the commitment to not conflate race with biology, can be a step in the obesity community bending the proverbial arc of history towards justice.

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**Thank you!**

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