Contextualization of Social Determinants of Health

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Goal

• To understand the unique conditions in the United States which have led to the patterns of health disparities observed today
Context

• Definition:
  – The parts of a discourse that surround a word or passage and can throw light on its meaning
  – The interrelated conditions in which something exists or occurs
Where would you want to Live?

- **Jupiter**
  - Group A: [Bar Graph]
  - Group B: [Bar Graph]

- **Neptune**
  - Group A: [Bar Graph]
  - Group B: [Bar Graph]
The origin of Health Disparities: Fundamental Causes of Disease

History → FCD → Behavioral Risk → Mortality

FCD = Fundamental Causes of Disease

Wilder, 2008
Fundamental Causes of Disease

• Three vital characteristics of a FCD:
  
  – A FCD will affect access to health resources used to avoid disease or to minimize the consequences of disease once it occurs
  
  – FCD acts on multiple disease outcomes through multiple disease risk factors
  
  – A dynamic health climate creates the ideal environment for a FCD to act on health over time (Life Course Perspective)
Conceptual Model
Fundamental Causes of Disease (FCD)

History
Segregation
Racism
Sexism

FCD
Socioeconomic Status
Race/Ethnicity

Behavioral Risk
Smoking
Alcohol
Exercise

Biological Risk
BMI
WHR
Blood Pressure
Self Rated Health

Social Risk
Stress
Social Support
Financial Strain
Marriage

Mortality

Wilder, 2008
Socioeconomic Status

• Education
• Income
• Occupation
• Wealth
  – Home Ownership
What is Race?

• Biological myth
  – Subjective labeling of a complexion hue that can be adaptively or environmentally altered
  – Race theoretically represents a uniform, closely inbred group, in which all family lines are alike—as in pure breeds of domesticated animals
  – Within-population differences among individuals account for 93 to 95% of genetic variation.
  – Differences among major groups constitute only 3 to 5%
What is Race?

• Social construct
  – Created from prevailing social perceptions and is without scientific foundation
  – *Race may* be employed to attribute not only physical characteristics but also psychological and moral ones to members of given categories, thus justifying or naturalizing a discriminatory system
American Community Survey- USA

• Race
  – 1.2% American Indian and Alaska Native
  – 5.4% Asian
  – 13.2% Black of African American
  – 0.2% Native Hawaiian or Other Pacific Islander
  – 77.4% White
  – 2.5% “Two or more races”

• Ethnicity
  – 17.4% Hispanic/Latino
American Community Survey- USA

• Language
  – 20.7% Speak a language other than English at home

• Socioeconomic Status
  – Per capita income (in 2013 inflation-adjusted dollars): $28,155
  – 15.4% Individuals below poverty level
American Community Survey: Richmond, VA

• Race
  – .6% American Indian and Alaska Native
  – 2.4% Asian
  – 49.7% Black of African American
  – 0.2% Native Hawaiian or Other Pacific Islander
  – 44.7% White
  – 2.2% “Two or more races”

• Ethnicity
  – 6.6% Hispanic/Latino
American Community Survey: Richmond, VA

- **Language**
  - 9.8% Speak a language other than English at home

- **Socioeconomic Status**
  - Per capita income (in 2013 inflation-adjusted dollars): $27,184
  - 25.6% Individuals below poverty level
SES and Race as FCD

• SES and Race impact access to health protective resources

• SES and Race are associated with multiple risk factors and multiple disease outcomes
  – Stress; Smoking, Physical inactivity
  – Chronic and communicable diseases

• The impact of SES and Race on mortality is reproduced over time and through replacement of intervening mechanisms in a dynamic health climate
SES and Race as FCD

*Age-adjusted
SES and Race as FCD

*Age-adjusted
SES and Race as FCD

*Age-adjusted
SES and Race as Fundamental Causes of Oral Health Disparities

Dental Caries and SES

Dental caries levels (DMFT) of 12-year-olds worldwide
Race and SES

- Are racial disparities explained by SES?
  - Yes, but not fully
Race and SES

• Does Genetics explain the residual racial differences?
  – Possibly, but not all of the difference.
  – Plus, we have no idea how race defines a persons genes
  – Plus, we can’t fix your genes,,,,yet
Race and SES

• What could be accounting for the differences in terms of race and health disparities
  – Stress
  – Bias
Stress and Race

• Having a certain race (defined as social construct within a specific society) contributes to increased underlying stress

• Life long racial undertones contribute to higher level of physiologic stress
  – Allostatic Load
## Allostatic Load

<table>
<thead>
<tr>
<th>System</th>
<th>Acute Response to Challenge</th>
<th>Problems Associated with Chronic Activity or Inactivityb</th>
</tr>
</thead>
</table>
| Cardiovascular | Maintaining erect posture (avoiding “black-out”)  
Physical exertion | Hypertension, potential for stroke, MI  |
| Metabolic    | Activating and maintaining energy reserves, including energy supply to the brain            | Obesity, diabetes, atherosclerosis                      |
| Immune       | Response to pathogens  
Surveillance for tumors                                                                 | Inflammatory,b autoimmune disordersb  
Immunosuppression      |
| Brain, CNS   | Learning, memory  
Neuroendocrine and autonomic regulation                                                      | Neuronal atrophy, death of nerve cells                 |

**Mediator Hormones:** Adrenalin, noradrenalin, ACTH, glucocorticoids, insulin, glucagon, catecholamines

McEwen, 1998
The perception of stress is influenced by one’s experiences, genetics, and behavior. When the brain perceives an experience as stressful, physiologic and behavioral responses are initiated, leading to allostasis and adaptation. Over time, allostatic load can accumulate, and the overexposure to mediators of neural, endocrine, and immune stress can have adverse effects on various organ systems, leading to disease.
Is Racial Prejudice still an Issue in American Society and Medicine?
Racial and Ethnic Prejudice

• Number of hate groups operating in the U.S. rising yearly.
  – In 2008, 4% increase vs. 2007
  – 50% increase since 2000

• More than 9,000 hate crime offenses in 2008.
  – >50% motivated by racial bias.
Prejudice

• Explicit
  – Predicts more deliberative behaviors

• Implicit
  – Automatically activated by the mere presence (actual or symbolic) of the object of the prejudice, commonly functioning without a person's full awareness or control
Employment Discrimination

• Bertrand and Mullainathan

  – Applicants with “white” names needed to send about 10 resumes to get one callback whereas applicants with “African-American” names needed to send about 15 resumes.
  
  • Statistically significant 50% gap in callback

  – White name yielded as many more callbacks as an additional eight years of experience on a resume.

*The American Economic Review. 2004;94(4): 991-1013*
Racial Impact of a Criminal Record on Interview Call Backs

Race as a FCD

• SES does not explain
• Genetics do not fully explain
• Likely related to stress
• Bias does contribute to FCD
Residential Segregation

Share of Lower-Income and Upper-Income Households Who Live Mainly Among Themselves, 1980 and 2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Lower-Income Households</th>
<th>Upper-Income Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>2010</td>
<td>28</td>
<td>18</td>
</tr>
</tbody>
</table>

Notes: Based on census tracts in the nation’s 942 metropolitan and micropolitan statistical areas. The upper bars report the share of lower-income households that reside in a census tract in which at least half of the households were lower income. The lower bars show the share of upper-income households that reside in majority upper-income census tracts.

Source: Pew Research Center tabulations of 2006-2010 American Community Survey (ACS) 5-year file and Geolytics 1980 Census data in 2000 boundaries

Residential Income Segregation Index (RISI) in the 10 Largest Metros, 1980 and 2010

<table>
<thead>
<tr>
<th>City</th>
<th>1980</th>
<th>2010</th>
<th>Change 1980 to 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Houston</td>
<td>32</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Dallas</td>
<td>39</td>
<td>60</td>
<td>21</td>
</tr>
<tr>
<td>New York</td>
<td>49</td>
<td>57</td>
<td>9</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>47</td>
<td>51</td>
<td>4</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>39</td>
<td>51</td>
<td>11</td>
</tr>
<tr>
<td>Miami</td>
<td>30</td>
<td>49</td>
<td>20</td>
</tr>
<tr>
<td>Washington</td>
<td>43</td>
<td>47</td>
<td>4</td>
</tr>
<tr>
<td>Atlanta</td>
<td>42</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Chicago</td>
<td>35</td>
<td>41</td>
<td>6</td>
</tr>
<tr>
<td>Boston</td>
<td>31</td>
<td>36</td>
<td>5</td>
</tr>
</tbody>
</table>

Notes: The RISI score for a metro area is derived by adding the share of its lower-income households located in majority lower-income census tracts to the share of its upper-income households located in majority upper-income census tracts. “Change 1980 to 2010” calculated prior to rounding.

<table>
<thead>
<tr>
<th>Rank</th>
<th>City</th>
<th>Black Population</th>
<th>White Population</th>
<th>Total Population</th>
<th>Dissimilarity Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Richmond</td>
<td>112,455</td>
<td>74,506</td>
<td>197,790</td>
<td>68.3</td>
</tr>
<tr>
<td>2.</td>
<td>Roanoke</td>
<td>25,220</td>
<td>65,256</td>
<td>94,911</td>
<td>68.3</td>
</tr>
<tr>
<td>3.</td>
<td>Portsmouth</td>
<td>50,569</td>
<td>45,403</td>
<td>100,565</td>
<td>62.0</td>
</tr>
<tr>
<td>4.</td>
<td>Norfolk</td>
<td>102,268</td>
<td>110,221</td>
<td>234,403</td>
<td>57.5</td>
</tr>
<tr>
<td>5.</td>
<td>Chesapeake</td>
<td>56,442</td>
<td>131,200</td>
<td>199,184</td>
<td>52.6</td>
</tr>
<tr>
<td>6.</td>
<td>Charlottesville</td>
<td>9,916</td>
<td>30,825</td>
<td>45,049</td>
<td>52.4</td>
</tr>
<tr>
<td>7.</td>
<td>Suffolk</td>
<td>27,524</td>
<td>33,940</td>
<td>63,677</td>
<td>52.0</td>
</tr>
<tr>
<td>8.</td>
<td>Lynchburg</td>
<td>19,288</td>
<td>43,108</td>
<td>65,269</td>
<td>51.2</td>
</tr>
<tr>
<td>9.</td>
<td>Newport News</td>
<td>69,538</td>
<td>93,624</td>
<td>180,150</td>
<td>50.3</td>
</tr>
<tr>
<td>10.</td>
<td>Hampton</td>
<td>64,795</td>
<td>70,963</td>
<td>146,437</td>
<td>47.4</td>
</tr>
<tr>
<td>12.</td>
<td>Alexandria</td>
<td>28,463</td>
<td>68,889</td>
<td>128,283</td>
<td>46.0</td>
</tr>
<tr>
<td>13.</td>
<td>Petersburg</td>
<td>26,511</td>
<td>6,131</td>
<td>33,740</td>
<td>42.6</td>
</tr>
<tr>
<td>14.</td>
<td>Virginia Beach</td>
<td>79,092</td>
<td>295,402</td>
<td>425,257</td>
<td>41.4</td>
</tr>
<tr>
<td>16.</td>
<td>Manassas</td>
<td>4,430</td>
<td>23,304</td>
<td>35,135</td>
<td>29.2</td>
</tr>
</tbody>
</table>
Contextualizing Segregation


Racial Residential Segregation

- Created distinctive, pathogenic ecological environments for African Americans

- Affects socioeconomic status, educational and employment opportunities
  - Disinvestment of economic resources, out-migration of many whites and some middle-class blacks
  - Mass movement of low-skilled, high-paying jobs to suburbs → spatial and skills mismatch
Racial Residential Segregation

• Neighborhood characteristics
  – High mobility, low occupancy rates, high levels of abandoned buildings and grounds, relatively larger numbers of commercial and industrial facilities, and inadequate municipal services and amenities, including police and fire protection
  – Increased availability and marketing of tobacco and alcohol
  – Increased personal and property crime rates
  – Average murder and robbery rates in high-segregation metropolitan areas were 24% higher than those in low-segregation areas
Racial Residential Segregation

• Because of segregation, middle-class blacks live in poorer areas than whites of similar economic status, and poor whites live in much better neighborhoods than poor blacks

• Although residential segregation is inversely related to income for Latinos and Asians, the segregation of African Americans is high at all levels of income

• The most affluent African Americans (annual incomes over $50,000) experience higher levels of residential segregation than the poorest Latinos and Asians (incomes under $15,000)
Racial Residential Segregation: Progress

- Gentrification and immigration have made a dent in segregation

- Significantly less all-white neighborhoods

- Ghetto neighborhoods persist, but most are in decline
Addressing Health Disparities in Oral Health

• Education
  • Oral Health
  • Risk factors for oral disease

• SES
  – Removing barriers to health care resources
  – Patient Navigation for community health
  • Cancer
    – Improved compliance with screening
    – Appropriate referral and management following endoscopy (colon cancer)
Addressing Health Disparities in Oral Health

- Oral Health
  - Screening programs
    - Within appropriate Zip code hot spots
    - Linking primary care and dental care EMR
  - Culture
    - Diversity within the work force
    - Medical Education
    - Culture/Linguistics
Dental Faculty Diversity

General population, dental school faculty, students and practicing dentists by ethnicity

Kelley Report, 2015
Addressing Health Disparities in Oral Health

• Political Priority
  – Identifying zip codes at risk for poor oral health
  – Engaging community leaders

• Social Activism
  – Community Based Participatory Research
  – Engage Community Institutions
    • Church
    • Barbershops