SOCIAL DETERMINANTS OF HEALTH INEQUALITIES: MEASUREMENT & INTERVENTION

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Objectives

- Describe social determinants of health equity
- Consider implications of social determinants of health for interventions to promote health & health equity
- Discuss four brief case examples of interventions that address social determinants of health, and evaluation/measurement of effects.
SOCIAL DETERMINANTS OF HEALTH
Social determinants of health

• Social & economic & physical conditions under which people are born, live, work, learn & age, & which determine their health

• These conditions determine the availability of resources that are necessary to maintain health.
Introduction
Introduction
HEALTH DISPARITIES vs. HEALTH INEQUITIES
“HEALTH DISPARITIES”

“BROADLY DEFINED AS POPULATION-SPECIFIC DIFFERENCES IN HEALTH INDICATORS”

“most dictionaries define disparity as: inequality; difference in age, rank, condition, or excellence.”

Health Inequities are inequalities that are related to differences in health status or medical treatment that are unfair to disadvantaged people and that are avoidable.

An Enduring Relationship Exists Between Race and Income/Educational Levels

Income, education, and race are associated.

High School Dropouts

- White: 4%
- Asian or Pacific Islander: 4%
- Black: 8%
- Hispanic: 13%

Below the Poverty Level

- White: 12%
- Asian or Pacific Islander: 11%
- Black: 27%
- Hispanic: 24%

There is also an enduring relationship between various demographic and social factors and health
Self-Reported Health and Activity Limitation by Level of Education, 2011

Income Is Linked With Health Regardless of Racial or Ethnic Group

Differences in health status by income do not simply reflect differences by race or ethnicity; differences in health can be seen within each racial or ethnic group. Both income and racial or ethnic group matter.

Prepared for the Robert Wood Johnson Foundation by the Center on Social Disparities in Health at the University of California, San Francisco.
*Age-adjusted
What do social determinants of health have to do with health inequities?

Health inequities occur when there are systematic differences in the distribution of social and economic resources – the social determinants of health – across communities or groups of people.

Differences in the distribution of these social determinants of health are largely responsible for health inequities.
Health and the Built Environment

The design of neighborhoods impacts residents’ health
Health and the Physical Environment

[Images of protests and government buildings with signs]

92 schools in Wayne County are in areas where the air is unsafe to breathe.
Allostatic Load: Stress and Health

• Definition of Allostatic Load: “A measure of the cumulative physiological burden exacted on the body through attempts to adapt to life's demands.”

• Sources of stress include:
  ▪ Economic insecurity
  ▪ Job insecurity
  ▪ Lack of social support
  ▪ Inadequate child care
  ▪ Low-control jobs
  ▪ Racism
  ▪ Sexism
  ▪ Discrimination
  ▪ Unsafe neighborhoods
  ▪ Elements of the built environment
Connection between Stress and Health

- **Neighborhood poverty → higher stress → poorer health**
  - People who live in disadvantaged neighborhoods are more likely to suffer heart attacks than people in middle-class neighborhoods
  - People in neighborhoods with many abandoned buildings have higher rates of early death from cancer and diabetes

- Higher allostatic load is associated with significantly increased risk for 7-year mortality, declines in cognitive and physical functioning, increased risk for cardiovascular disease and metabolic disorders

- Innovative research on telomeres
  - Short telomeres are linked to heart disease, diabetes, cancer – and chronic stress
  - Ways to protect telomeres include through diet, exercise – and easing emotional stress

IMPLICATIONS FOR INTERVENING TO REDUCE HEALTH INEQUITIES
Social Determinants of Health Frameworks…

• …open new possibilities for interventions to promote health
  • Interventions that *mitigate* the impact of social, economic or physical environmental conditions on people’s lives & health
  • Interventions that *directly address* the social, economic and physical environmental conditions that affect health
Core Aspects of Effective Solutions

• Place-based solutions.
  • Assess community to identify the unique ways its environment impacts health outcomes.
  • Meaningful place-based solutions are holistic, focus on prevention, and engage community members and partners from multiple sectors.

• Intentional focus on race, nationality, ethnicity, and culture.
  • Race affects where and how we all live, work and play.
  • Attention must be placed on addressing racial equity.

• Communication strategies.
  • Explain and amplify the problem
  • Highlight inequities with supporting data
  • Offer solutions.

• Policy and systems change.
  • Critical elements in sustaining health equity efforts and maintaining a culture of health.
HEALTH INEQUALITIES: CASE STUDY 1

INTERVENTIONS THAT RECOGNIZE SOCIAL DETERMINANTS OF HEALTH
A community-based participatory research partnership working together since 2000 to understand and promote heart health in Detroit. We examine aspects of the social & physical environment that contribute to racial & socioeconomic inequities in cardiovascular disease (CVD), and develop, implement & evaluate interventions to address them.
Age adjusted cardiovascular mortality rates and median household income

- Median Household income (in 100's)
- Heart Disease Mortality Rate (per 100,000)
Community Planning Process: *Building placed-based solutions*

**Challenges**

- “There is no equipment – youth play basketball in the street”
- Local recreation centers closed
- Places that are not clean
- “immigrants don’t want to walk outside – they feel vulnerable to the border patrol”
- “the wooded areas are dangerous – why take the chance?”
- Traffic – cars driving up and down the streets fast

**Facilitating Factors**

- Outdoor community events
- Dancing/fun
- Activities for youth & families
- Trails, parks & facilities that are safe & easy to get to
- More people out walking – more likely to use the spaces
- Support for walking
- Organizations that support walking and activity friendly spaces
CATCH Multilevel Intervention: *Pathways to Heart Health*

- Promote Walking
- Promote Community Leadership & Sustainability
- Promote Activity Friendly Neighborhoods
Walk Your Heart to Health

- **Walking Group Aims:**
  - Promote heart healthy behaviors via walking
  - Provide opportunities for other heart health activity (e.g., food demos)
  - Offer social support for heart healthy activities

- **Evaluation: Pre & Post Surveys** (e.g., health indicators, attitudes, social support)
  - Pedometers – monitor steps
  - Participant observation
  - Attendance records
  - Session summary sheets
What We Learned

1. WALKING GROUPS INCREASE PHYSICAL ACTIVITY

Mean Number of Daily Steps Walked by WYHH Participants

<table>
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<th>Steps on days participants did not walk with the group</th>
<th>Overall mean steps</th>
<th>Steps on days participants walked with the group</th>
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<td>Baseline</td>
<td>4,729</td>
<td>5,800</td>
<td>6,993</td>
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<tr>
<td>8 Weeks</td>
<td>5,796</td>
<td>6,956</td>
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<td>16 Weeks</td>
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<td>24 Weeks</td>
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<tr>
<td>32 Weeks</td>
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</tr>
</tbody>
</table>
What We Learned

2. WYHH WALKING GROUPS REDUCED CVD RISK FACTORS

Adjusted High Blood Pressure Prevalence Estimates for WYHH Participants with an Average Increase of 4000 Steps per Day
What We Learned

3. WALKING GROUPS strengthen social relationships

“I loved it! The people in the group and the Community Health Promoters, we became family...Everybody in my household walks, I changed my diet & lost weight. The program should never end...”
Changing Social & Physical Environments

- WYHH Network of Community Organizations to Support Walking Groups
- Strengthen Social Relationships/Social Capital
- Supporting Walking Groups (SWAG) Training
- Walking Group Capacity Building Mini-grants
- Policy Advocacy Capacity Building Workshops
Next Steps

• Entrepreneurial mindset in Detroit - unique opportunity.
• Self-sustaining models that maintain a focus on promoting walking in low resourced neighborhoods with high cardiovascular risks.
• Exploring corporate partnerships.
• Foundation support for piloting & investigation phase.
HEALTH INEQUALITIES: CASE STUDY 2

INTERVENTIONS THAT REDUCE INEQUITIES IN ENVIRONMENTAL EXPOSURES AS A SOCIAL DETERMINANT OF HEALTH
Community Action to Promote Healthy Environments (CAPHE)

CAPHE is Funded by the National Institute of Environmental Health Sciences – Grant # RO1ES022616 and by the Erb Family Foundation.
Figure 1: Proportion people of color at the Census tract level—Detroit Metropolitan Area

Figure 3: Exposure and health risk quintile scores at the tract level (mapped on CI polygons)—Detroit Metropolitan Area

Cumulative impact polygons (CI) include: residential areas, child care facilities, health care facilities, schools and playgrounds.

Exposure and Health risk include: 2011 NATA estimates of respiratory risk, cancer risk and diesel PM (non-cancer) concentration.
Figure 4: Vulnerabilities quintile score at the tract level (mapped on CI polygons)—Detroit Metropolitan Area

Cumulative impact polygons (CI) include: residential areas, child care facilities, health care facilities, schools and playgrounds. Vulnerabilities includes: % below the national poverty level, % renters, median house value (reverse coded), % > age 24 with < high school completion, children age < 5, adults age >= 60, and linguistic isolation.
Implications for interventions

• Interventions to *mitigate* adverse health effects of air pollutants
  • Air filters in homes and schools to clean pollutants from the air
  • Land use policies that forbid siting homes or schools within 150 meters of freeways
  • Direct resources to communities experiencing greatest cumulative risk (e.g., community benefits agreements, California policy for distributing $$ to communities with highest cumulative risk)

• Interventions that *reduce exposure* to air pollution
  • Reducing emissions from point sources (e.g., smokestacks on industrial facilities)
  • Reducing emission from mobile sources (e.g., retrofitting diesel truck engines)
Implications for measurement

• Mitigation efforts
  • Measure beneficial effects on health
  • Measure reductions in health inequities

• Reductions in air pollutants
  • Measure reductions in air pollutants, with particular attention to areas with high cumulative risk
  • Measure reductions in health inequities
HEALTH INEQUALITIES: CASE STUDY 3

DIRECTLY ADDRESSING SOCIAL DETERMINANTS OF HEALTH
Changing the Context: Addressing Intermediate Predictors of Cardiovascular Risk

- Public Works Project: Municipal investment in built & social environment in subset of neighborhoods serviced by Gondola
- Sample
  - Neighborhoods in Medellín serviced by Gondola that received public works intervention
  - Comparable neighborhoods serviced by Gondola that did not receive public works intervention
- Study Design
  - Pre-post comparison of intervention and comparable control neighborhoods
- Outcomes: Intervention vs. Control Neighborhoods
  - 66% decline in homicide rate
  - 75% decrease in reports of violence

Cerda et al., 2012
Health Effects of Interventions to Promote Equity
Civil Rights Act (1964) & Voting Rights Act (1965)

- Sample
  - Non-Latino blacks & non-Latino whites
- Study Design: Compared national mortality data for:
  - 1955-1964 (before Civil Rights Act)
  - 1965-1974 (After Civil Rights Act)
- Measures
  - Racial & regional differences in sex-specific age-adjusted mortality due to heart disease, cerebrovascular disease, and cancer
- Findings
  - Significant decline in stroke & heart disease mortality rate for non-Latino black women relative to non-Latino white women
  - Health gains not seen for non-Latino black men

SUMMARY
Social Determinants of Health

- Characteristics of the contexts in which we live, work, and play.
- Inequalities in SDOH largely responsible for health inequities.
- Implications for interventions:
  - Reduce/mitigate adverse effects of unequal contexts (e.g., supporting physical activity even when environments are less conducive)
  - Directly address the SDOH (e.g., infrastructure change, policy change to promote equity)
  - Multilevel: Simultaneously reduce adverse effects AND address the contexts themselves (e.g., walking group intervention + complete streets legislation)
Implications for assessing change

• Assess process as well as impact
  • Does the intervention process reinforce or challenge underlying inequalities? e.g., exclude those most affected from being part of the solution?
  • Were efforts made to modify policy? [not just whether the policy actually changed]
• Timeline
  • Addressing social determinants of health may require longer funding periods and measurement to capture change
• "The Negro baby born in America today ... has about one-half as 
much chance of completing high school as a white baby born in 
the same place on the same day-one-third as much chance of 
completing college-one third as much chance of becoming a 
professional man-twice as much chance of becoming unemployed 
... a life expectancy which is seven years less-and the prospects of 
earning only half as much."1

John F. Kennedy, message to Congress, February 28, 1963