INTREC
INDEPTH Training & Research Centres of Excellence

Block 2

Week 1 - Quantitative research methods
for social determinants of health

Who we are

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Quantitative research

*'Explaining phenomena by collecting numerical data
that are analysed using mathematically based methods
(in particular statistics)'*

Learning objectives

- Have knowledge of relevant statistical terminology
- Be able to understand and critically evaluate the content of scientific articles on social determinants of health
- Be able to prepare in writing a plan for his/her own quantitative analysis (related to their research question from Block 1)

Course outline

- Day 1 – measurement, study design, and sampling
- Day 2 – basic statistics, descriptive analyses
- Day 3 – correlation, regression, longitudinal analysis
- Day 4 – logistic regression and multilevel models
- Day 5 – presentation and interpretation of results

Literature, further reading

- B. Kirkwood & J. Sterne (2003)
  Essential Medical Statistics
- J.M. Oakes & J.S. Kaufman (2006)
  Methods in Social Epidemiology
- http://davidmlane.com/hyperstat/
- Software tips:
  http://www.ats.ucla.edu/stat/
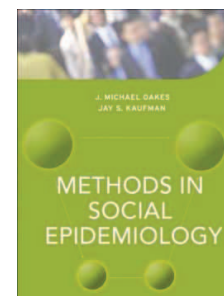
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Lecture 1

Introduction to SDH research and measurement

Outline

- An overview of what is meant by the term "social determinants of health"
- How these determinants are linked to inequality in health outcomes between different social groups
- How these determinants can be measured for research purposes

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Social Determinants of Health

The social conditions in which people live powerfully influence their chances to be healthy. Indeed factors such as poverty, food insecurity, social exclusion and discrimination, poor housing, unhealthy early childhood conditions and low occupational status are important determinants of most diseases, deaths and health inequalities between and within countries

(WHO 2004)
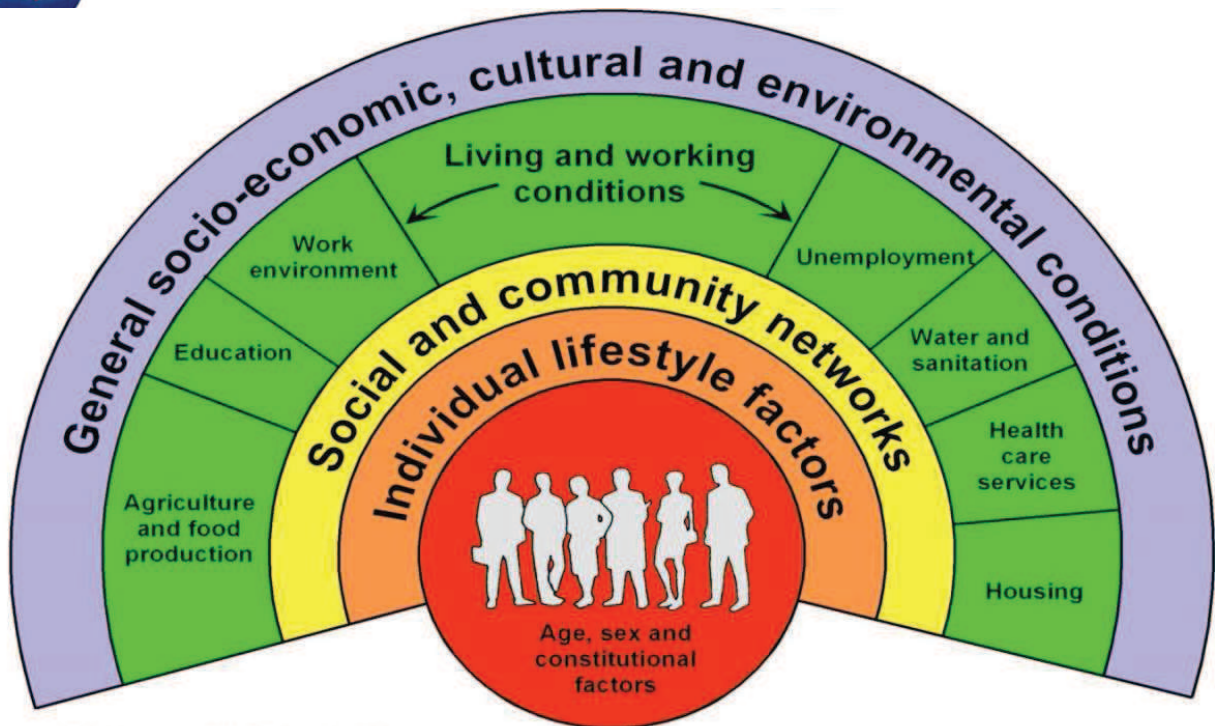
Source: Dahlgren and Whitehead, 1991

Social determinants of health…

- **contribute to health inequalities between social groups** - their effects are not distributed equally or fairly across society.

- **can influence health both directly and indirectly** e.g. educational disadvantage can limit access to employment, raising the risk of poverty and its adverse impact on health.

- **are interconnected** e.g. poverty is linked to poor housing, access to health services or diet, all of which are in turn linked to health.

- **can accumulate across the life course**

Inequality and inequity

- Inequalities in health
  - Inequality in health is an empirical notion and refers to differences in health status between different groups.

- Inequity in health and health care
  - Inequity in health is a normative concept and refers to those inequalities that are judged to be unjust or unfair because they result from socially derived processes.

Health Inequalities

A range of factors contribute to health inequalities:

- Socio-economic or material factors such as government social spending and the distribution of income and other resources in society
- Psychosocial factors such as stress, isolation, social relationships and social support
- Behavioural or lifestyle factors

Source: http://www.theguardian.com/news/datablog/2011/feb/11/marmot-report-health-equality-data
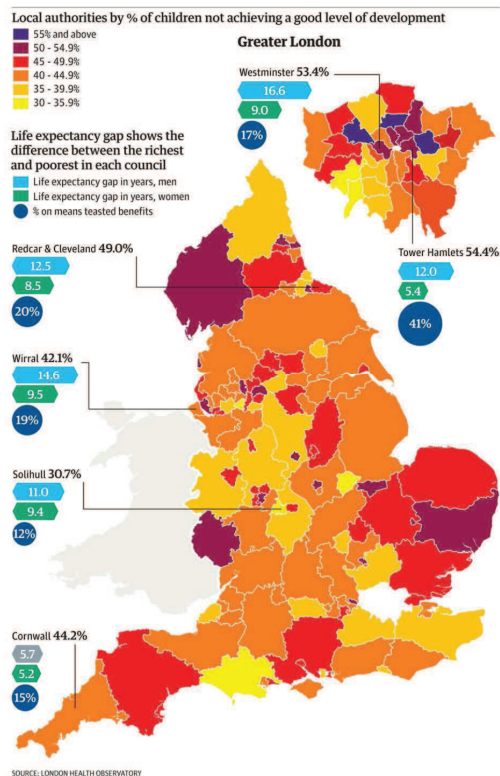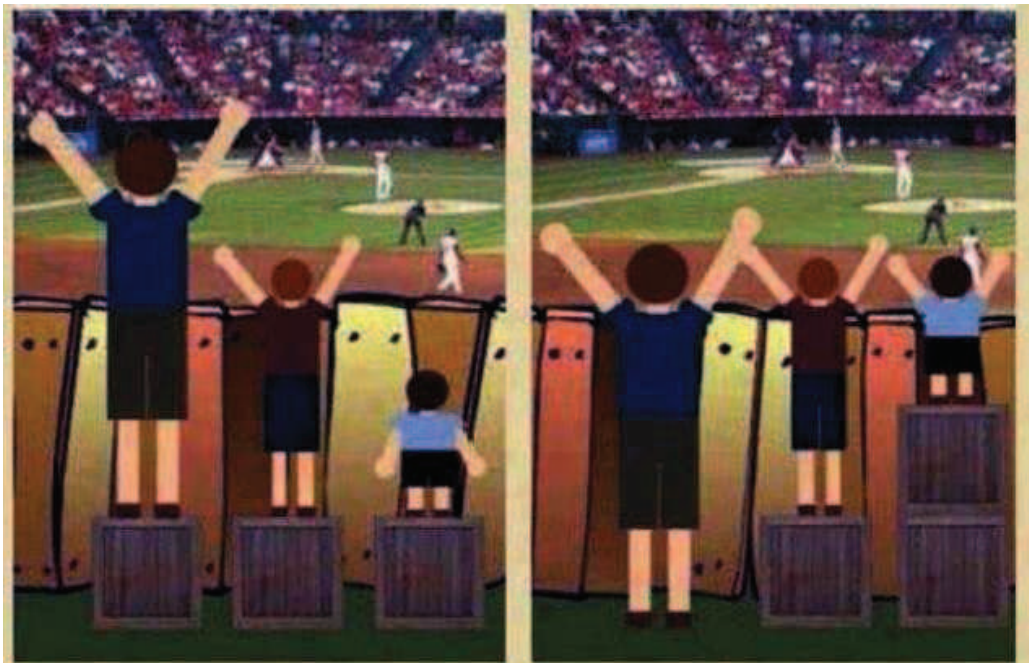

Health Equity

- *The absence of unfair and avoidable or remediable differences in health among social groups*

  (Solar and Irwin 2007)

- Health equity is about the values of fairness and justice.

- Values health as an essential and valuable resource for human development, helping people reach their potential and contribute positively to society.

Equality   Equity

SDH research approaches and principles

1. *Focusing on the most disadvantaged groups*: aims to improve the health of the worst off or poorest groups. This approach can improve the health of those who are worst off, even if the health gap between rich and poor is unchanged.

2. *Narrowing health gaps* : aims to improve the health of those who are poorest by raising their health outcomes closer to those who are most advantaged. This involves target setting to reduce the disparity in health outcomes.

3. *Reducing the social gradient* : involves reducing differences and equalising health all along the income ladder.

Measuring SDH and Inequalities

Adequate data is necessary to help us understand health inequalities and to help identify appropriate targets and interventions to reduce them.

1. Information about death, illness, health and health service use.

2. Information about how these health indicators are patterned across different demographic or socio-economic groups and across different geographical areas

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Measuring social determinants of health

e.g. Poverty - what does it mean to be poor?

Federal poverty guidelines, 2009

Persons in family or household	48 contiguous states and D.C.	Alaska	Hawaii
1	$10,830	$13,530	$12,460
2	$14,570	$18,210	$16,760
3	$18,310	$22,890	$21,060
4	$22,050	$27,570	$25,360
5	$25,790	$32,250	$29,660
6	$29,530	$36,930	$33,960
7	$33,270	$41,610	$38,260
8	$37,010	$46,290	$42,560
For each additional person add:	$3,740	$4,680	$4,300

© 2009 National Center for Children in Poverty (www.nccp.org)
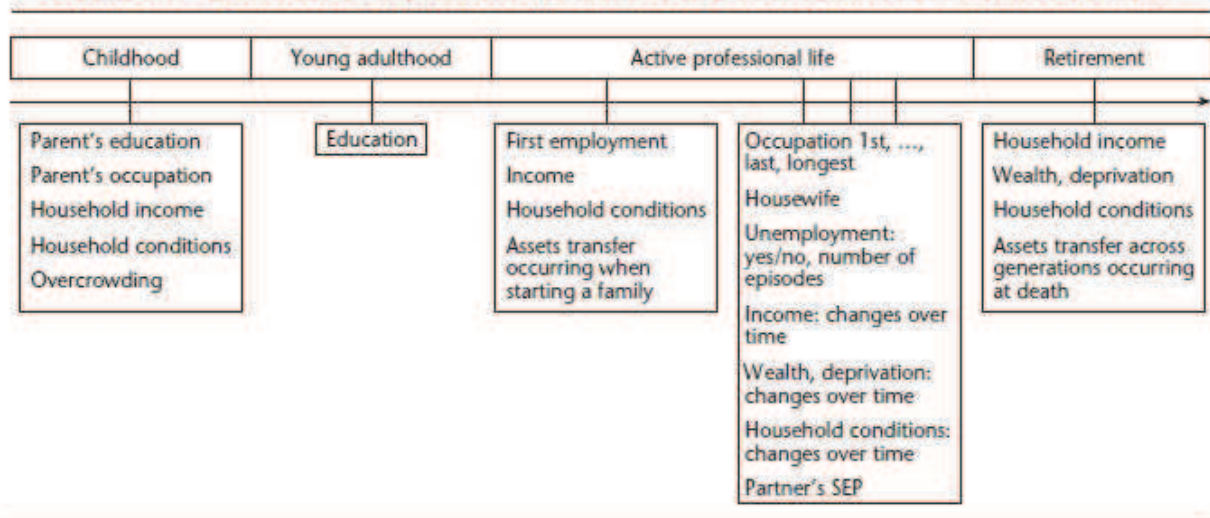Measuring Poverty in the United States

Socioeconomic position/status

- Based on a number of variables:
    - Occupation
    - Education
    - Income
    - Wealth
    - Housing
- Each of which are challenging to measure (issues with reliability and validity)
- Composite or proxy measures
- Life-course socioeconomic position

FIGURE 3.1. EXAMPLES OF INDICATORS MEASURING LIFE COURSE SOCIOECONOMIC POSITION.

Childhood	Young adulthood	Active professional life	Retirement
Parent's education Parent's occupation Household income Household conditions Overcrowding	Education	First employment Income Household conditions Assets transfer occurring when starting a family	Occupation 1st, ..., last, longest Housewife Unemployment: yes/no, number of episodes Income: changes over time Wealth, deprivation: changes over time Household conditions: changes over time Partner's SEP	Household income Wealth, deprivation Household conditions Assets transfer across generations occurring at death

Example: Education

- How can we measure education?
  - Try to use a harmonized measurement to allow comparisons (across countries)
  - Every context has unique features
  - Analysis requires collapsing categories (e.g. <12, 12, 12+ years)
- Other dimensions of education
  - Quality (e.g. teacher training, number of hours/days)
  - Status of institution
  - Education outside of traditional schooling

Social Exclusion and Discrimination

- Social exclusion is the process by which groups and individuals are prevented from participating fully in society
- Can result from a range of factors including poverty, unemployment, caring/responsibilities, poor education or lack of skills, gender, age, or disabilities

Example: Gender

- Gender differences in health and mortality are complex and not yet fully understood.
- The social determinants of health have both similar and different effects on men and women.
- Women seem to have a biological advantage over men in terms of life expectancy.
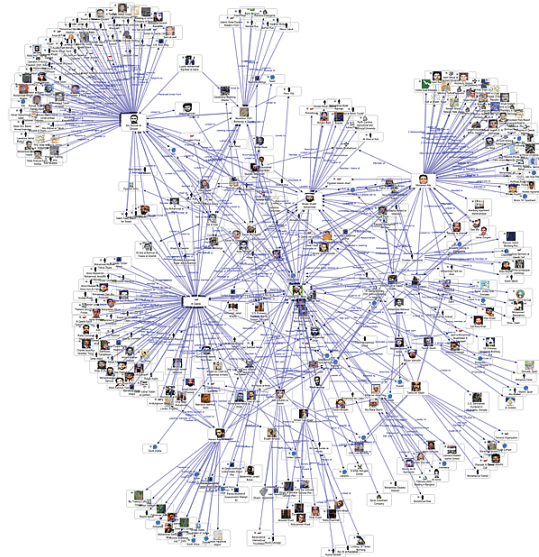
Example: "race" and racism

- Discrimination is multidimensional, so assessment should be comprehensive
- Responses, reactions, and coping are important aspects
- Interpersonal and institutional discrimination

Community and Social Participation

- Neighbourhoods and communities
  - Subjective measures
  - Objective measures

- Social networks

The Built Environment

- Public policy
- Health systems
- Environmental quality

Conclusion

- Social conditions can affect health in many ways
- They create differences in equality and equity
- In order to evaluate these it is important to be able to measure them
- However, measurement can be challenging!

- **Internal INTREC dropbox:**

INDEPTH WHO-SAGE Collaboration

- International Network for the Demographic Evaluation of Populations and Their Health in developing countries (INDEPTH)

- World Health Organisation (WHO) Study on global AGEing and adult health (SAGE)

- 2006-2007 data collection from South Africa, Tanzania, Kenya, Ghana, Viet Nam, Bangladesh, Indonesia, and India

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Background

- The majority of older persons now and into the future will reside in lower-income countries

- The evidence base is very limited in these settings

- Need for improved understanding of ageing processes, of resilience factors for well-being, and of the determinants of health status

Methods

- Collaboration built on survey (WHO-SAGE) and surveillance (INDEPTH HDSS) data

- Kowal et al (2010) **Ageing and adult health status in eight lower-income countries: the INDEPTH WHO-SAGE collaboration**. Global Health Action Supplement 2.

Group discussion - Measurement

- Ng et al (2010) **Health and quality of life among older rural people in Purworejo District, Indonesia**. Global Health Action Supplement 2.

- Aims:
  - Identify the research question answered by the above study,
  - Describe the measurement tools used in the analysis.

Group discussion 1 - Measurement

- Within your small group…

    1. Read through the Methods section and look at the Results tables

    2. Identify the research question(s) evaluated in the study

    3. Create a table which describes all of the measurement tools used (outcome measures and descriptive variables)

    Hint: use the paper by Kowal et al (2010) for further details

Variable	Measurement tool used	Description of tool	Scale	Categories for analysis
Age	-	Participant's age in years	Continuous	50-59; 60-69; 70-79; 80+
Quality of life	WHO Quality of Life tool (WHOQoL)	Eight questions assessing thoughts about life and life situation…	0-100 scale	Quintiles
Function and disability				
…				
…				

Solution

- Research questions:
    - *Are patterns of socio-economic and demographic factors associated with health status among older people in Indonesia?*
    - *Is there any spatial clustering of poor health among older people in Indonesia?*