Environmental health inequalities: relevance of sex/gender from a public health perspective

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Overview

- concepts of environment
- relevance of sex/gender in environmental health: evidence
- gaps & limitations
- perspectives
Research on environmental health: concept of environment

- **biomedical research:**
  - physical, chemical, or biological environmental exposures
  - pathogenetic mechanisms

- **public health research:**
  - natural, built and psychosocial environment
  - pathogenetic and salutogenic mechanisms

[WHO 2006; adapted from Smith et al., Epidemiology 1999]
Relevance of sex/gender: fragmentary evidence

- environmental toxicology
Examples of biological and contextual factors

Body movements
Work schedule
Anthropometrics

Use of protective gear
Type of clothing worn

Location of exposed skin
Skin condition
Use of personal care products

Endocrine status
Stress, Body fat
Alcohol, drugs

Source

Ambient Environment

Personal Environment

Available Dose

Contact with Body

Administered Dose

Transfer across Barriers

Absorbed Dose

Delivery to Target

Biologically Effective Dose

[Arbuckle, Environ Res 2006]
Relevance of sex/gender: fragmentary evidence

- environmental toxicology
- environmental epidemiology
effect modification by sex/gender
  - sex-linked biological differences (e.g. hormones, body size)
  - gender differences (e.g. activity patterns, coexposures, exposure measurement accuracy)
Relevance of sex/gender: fragmentary evidence

- environmental toxicology
- environmental epidemiology
- public health: (built) environment & health
effect of contextual factors (social and built environment) on health: conflicting results on gender differences

- higher impact of residential environment on women's health

- positive effect of green space on respiratory disease mortality only in men
Relevance of sex/gender: fragmentary evidence

- environmental toxicology
- environmental epidemiology
- public health: (built) environment & health
- environmental inequalities / environmental justice
Environmental inequalities / environmental justice

- studies on environmental health inequalities: often no stratification by sex/gender [Bolte 2015; Bolte et al., Eur J Public Health 2010]

- gender as one of several social determinants, but no further consideration of sex/gender aspects

[WHO 2012]
Gaps & limitations

- lacking data
- dominance of risk factor paradigm

- insufficient analyses
  - instead of binary variable: gender groups, gender index
  - interactions between sex-linked biology and gender relations
  - theoretical concepts/models
Perspectives

- How gets gender under the skin?
- How does the environment modify sex-linked biology?
- How do sex-linked biology and gender relations interact?

- Ecosocial theory & concept of embodying inequality [Krieger 2011]
- New concepts within the "global -omics":
  - Exposome
  - Epigenome

[Coughlin, Am J Epidemiol 2014]
Upcoming:
Interdisciplinary research network on sex/gender, environment & health

- researchers from
  - environmental and genetic epidemiology,
  - toxicology,
  - environmental medicine,
  - public health, environmental justice
  - gender studies
and environmental authorities

GeUmGe-NET

- aims:
  - systematic evaluation of state of knowledge, concepts, methods
  - development of interdisciplinary approaches to integrate theoretical concepts of sex/gender into environmental health research
  - implications for environmental health monitoring and protection by environment and health authorities
Thank You

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