Observation of vulnerable population subgroups in environmental health information and monitoring systems

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Overview

• WHO Environment and Health Information System (ENHIS)
• The need to address environmental health inequalities
• Challenges in reporting and monitoring environmental (health) inequalities
• Ongoing work towards establishing European reporting on environmental inequalities
What is ENHIS?

- A set of EH indicators for children’s and general population’s health;
- presented by 21 indicator fact sheets on various environment-related risk factors;
- regularly updated;
- identifying national trends over time and enabling international comparison;

Framework: DPSEEA model

Health is largely affected by decisions made in non-health sectors, especially the environmental sector.

Disadvantaged and vulnerable population groups are most affected by both negative as well as positive developments.
Indicators linking environment and health

Health outcomes

- Gastrointestinal diseases
- Cardiovascular diseases
- Respiratory diseases
- Injuries
- Cancers
- Mobility and transport
- Housing
- Air quality
- Mobility and transport

EH determinants

- Water and sanitation
- Water and sanitation
- Water and sanitation
- Water and sanitation
- Ionizing and UV radiation
- Chemical safety
- Chemical safety
- Chemical safety

WATER

1.1 Outbreaks of waterborne diseases
1.2 Public water supply
1.3 Wastewater treatment
1.4 Bathing water quality

MOBILITY & INJURIES

2.1 Mortality from road traffic injuries
2.2 Mortality from unintentional injuries
2.3 Prevalence of excess weight and obesity
2.4 Percentage of physical active children

AIR QUALITY

3.1 Prevalence of asthma and allergies
3.2 Infant mortality from respiratory disease
3.3 Exposure to outdoor air pollution (PM10)
3.4 Exposure to second hand smoke
3.5 Homes with problems of dampness
3.6 Homes using solid fuels
3.7 Policies to reduce ETS exposure

CHEMICALS, BIOLOGICAL AND PHYSICAL AGENTS

4.1 Incidence childhood leukemia
4.2 Incidence of melanoma < 55 years
4.3 Persistent organic pollutants in milk
4.4 Chemical hazards in food
4.5 Levels of lead in children’s blood
4.6 Radon levels in dwellings
4.7 Work injuries

Urban air pollution indicator

Mean pollution level 1997-2007

- PM10
- NO2
- SO2

Urban population exposed to PM10

Stark between and within-country disparities!!
Dioxine in breastmilk

Methodology for 21 core indicators
International and national data bases
Data from surveys
ENHIS deliverables

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WHO CSDH report

The Commission’s overarching recommendations

1. Improve Daily Living Conditions
   Improve the well-being of girls and women and the circumstances in which their children are born, put major emphasis on safe child development and education for girls and boys, improve living and working conditions and respect social protection policy support at all, and create conditions for a flourishing older life. Policies to achieve these goals will involve civil society, governments, and global institutions.

2. Tackle the Inequitable Distribution of Power, Money, and Resources
   In order to address health inequalities, and inequitable conditions of daily living, it is necessary to address inequalities—such as those between men and women—in the way society is organized. This requires a strong public sector that is communitarian, capable, and adequately financed. To achieve that requires more than strengthened governance;
it requires strengthened governance; legitimacy, space, and support for civil society, for an accountable private sector, and for people active society to agree public interest and relevant in the value of collective action. In a globalized world, the need for governance dedicated to equity applies equally from the community level to global institutions.

3. Measure and Understand the Problem and Assess the Impact of Action
   Acknowledging that there is a problem, and ensuring that health inequity is measured—within countries and globally—is a vital platform for action. National governments and international organizations, supported by WHO, should set up national and global health equity surveillance systems for routine monitoring of health inequity and the social determinants of health and should evaluate the health equity impact of policy and actions. Creating the organizational space and capacity to set effectively and (health equity) report measurements in existing of public-health and health practitioners and public understanding of social determinants of health. It also requires a stronger focus on social determinants in public health research.

WHO work on EH and vulnerability

• Social and gender inequalities in environmental risk as major theme at Parma Conference
• Review of evidence
• Policy brief on inequalities
• „Special section“ on environmental inequalities in EJPH
• Ongoing WHO project towards environmental inequality reporting in Europe

http://www.euro.who.int/en/what-we-do/health-topics/environmental-health
3. We are committed to act on the key environment and health challenges of our time. These include:

(b) the health risks to children and other vulnerable groups posed by poor environmental, working and living conditions (especially the lack of water and sanitation);

(c) socioeconomic and gender inequalities in the human environment and health, amplified by the financial crisis;

(…)

Stronger effects in vulnerable subgroups due to increased individual susceptibility: often unavoidable (and no indicator for inequality)

Stronger effects in “socially vulnerable subgroups” due to increased exposure: avoidable (and an indicator for inequality)
Vulnerability vs inequality

Vulnerability: difficult to identify by monitoring systems

Environmental inequality / health inequality: can be identified by monitoring systems => „social vulnerability“

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Key challenges

- Definition of „vulnerability“ to be monitored
- Objective and material versus subjective and perceived disparities
- Specificity of inequalities
- Lack of data and evidence on vulnerable subgroups
- Lack of data source consistency for long-term monitoring
- Linking environmental vulnerability to health inequity
- Categorizing risk parameters and vulnerability parameters
- Applicability of the information in action terms

Definition of „vulnerability“ for monitoring
Household composition, relative poverty and crowding

Material / objective versus perceived / subjective disparities
**Poverty and housing problems**

- Dampness / not tight roof
- Inadequate heating
- Crowding
- Vandalism / crime
- Neighbourhood noise

<table>
<thead>
<tr>
<th>%</th>
<th>Households with income below 60% of median income</th>
<th>All households</th>
<th>Households with income above 140% of median income</th>
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Source: Eurostat, ECHP data for 2000

**Thermal comfort, noise and air pollution**

- People having reason to complain about air pollution in the immediate neighbourhood of their home (Eurofound, 2007)

<table>
<thead>
<tr>
<th>Countries</th>
<th>Total % of lowest-income individuals</th>
<th>Total % (all income groups)</th>
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<td>60</td>
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<td>UK</td>
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</table>

Source: Eurostat, ECHP data for 2000
Specificity of inequalities and lack of extrapolation

Vulnerable location in Bonn and Vilnius

SES of households and location of dwelling close to busy roads

- 1 - lowest SES
- 2 - 3 - 4 - 5 - highest SES

Bonn
Vilnius
Lack of data and evidence for vulnerable subgroups

Review of risk factor information by social dimensions (international databases)

<table>
<thead>
<tr>
<th>Social Dimension</th>
<th>Number of Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age stratification</td>
<td>19 out of 29</td>
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<tr>
<td>Gender stratification</td>
<td>22 out of 29</td>
</tr>
<tr>
<td>Income stratification</td>
<td>18 out of 29</td>
</tr>
<tr>
<td>Education level stratification</td>
<td>2 out of 29</td>
</tr>
<tr>
<td>Employment stratification</td>
<td>2 out of 29</td>
</tr>
<tr>
<td>Nationality / ethnicity</td>
<td>0 out of 29</td>
</tr>
</tbody>
</table>

Some only for vague age categories
Often irrelevant
Not available for injuries
In relation to smoking
In relation to smoking
Not permitted in various countries
Lack of data consistency for long-term monitoring

Dampness or building leaks

Data from SILC, 2008

Data from ECHP, 2000
Question format

SILC questionnaire (since 2004/5):
Noise from neighbours or noise from the street (traffic, business, factories etc.)?
Yes........................1
No...........................2

ECHP questionnaire (until 2001):
Noise from neighbours?
Yes.........................1
No...........................2

Noise from the street (traffic, business, factories etc.)?
Yes.........................1
No...........................2

Categorizing risk parameters and vulnerability parameters
„Social risk“ parameters

- Housing deprivation / homelessness
- Lack of toilet
- Crowding
- Fuel poverty
- ... 

Risk factor? Social determinant?

Linking environmental vulnerability to health inequity
0 publicly accessible databases identified that enable the analysis of these three dimensions simultaneously

✓ Social determinants => health inequalities
✓ Social determinants => environmental inequalities
✓ Environmental inequalities => health inequalities
- Social determinants => environmental inequalities => health inequalities

Applicability of the information in action terms
Knowing vs solving the problem

Vulnerability/inequality

- Increased number of injuries / accidents within lower income groups
- Lack of hygiene equipment in migrant housing
- Higher noise exposure in relation to age and gender

Mitigation action

- Education? Employment support? General safety measures?
- Renovation grants? Increased housing standards?
- Reduction of noise in general? Sleeping pills for the elderly?

Can the identification of „vulnerable groups“ be followed by targeted interventions specifically reducing the increased exposure for those groups? – In many situations the answer is NOT REALLY.

Often, healthy environments for all will be the most adequate action – vulnerable groups will benefit most.

The need for equity-sensitive environmental policies: the example of thermal insulation

Social characteristics

Housing conditions

Energy consumption

Climate / Health effects
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Status quo

• Environmental inequalities are an increasing concern but there is little (international) data available
• Evidence review showed that a consistent assessment of the magnitude of inequality and the most affected subgroups is needed and best done by country
• Action against environmental inequalities has not been systematically collected and analysed (and probably is rare)
Objective of WHO project

(1) establish a list of environmental health (EH) risk factors for which data on social inequalities can be compiled on national (or sub-national) level;

(2) develop a protocol for the compilation and assessment of national EH inequality data;

(3) assess the feasibility of the protocol by piloting it in the participating project countries;

(4) as far as possible, produce national data profiles and an international summary report on environmental inequality based on the piloting results.

=> Information base for targeted action

List of socially sensitive risk factors

<table>
<thead>
<tr>
<th>Environmental risks</th>
<th>Social determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Traffic noise</td>
<td>Age</td>
</tr>
<tr>
<td>2 Water supply in dwelling</td>
<td>Sex</td>
</tr>
<tr>
<td>3 Shower/bath in dwelling</td>
<td>Income</td>
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<tr>
<td>4 Toilet in dwelling</td>
<td>Education level</td>
</tr>
<tr>
<td>5 Crowding / lack of living space</td>
<td>Employment status</td>
</tr>
<tr>
<td>6 Damp buildings</td>
<td>Nationality/Ethnicity</td>
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<tr>
<td>7 Location close to busy roads</td>
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<tr>
<td>8 Location close to industrial sites</td>
<td></td>
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<tr>
<td>9 Location close to waste sites</td>
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<tr>
<td>10 Air pollution exposure (PM etc.)</td>
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<tr>
<td>11 Ability to pay for housing costs/expenses</td>
<td></td>
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<tr>
<td>12 Ability to keep home warm</td>
<td></td>
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<tr>
<td>13 Distance to green spaces</td>
<td></td>
</tr>
<tr>
<td>14 Location in dangerous areas (flooding plain etc)</td>
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<tr>
<td>15 Home-related injuries and unintentional accidents</td>
<td></td>
</tr>
<tr>
<td>16 Traffic-related injuries and unintentional accidents</td>
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</tbody>
</table>
Defining the common denominator

- Identification of “core set” of inequality indicators for national reporting in 2011
- WHO report on European environmental inequalities

Developing consistent national / international environmental inequality reporting

<table>
<thead>
<tr>
<th>Occupational injuries</th>
<th>Age</th>
<th>Gender</th>
<th>Income</th>
<th>Employment</th>
<th>Education</th>
<th>Nationality</th>
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- Data source: Data on the availability of data on environmental inequality from the National Inquiry (a few countries) and from the national databases. Data is available since 2005 and can be downloaded from the website of the National Inquiry.

- Review of occupational injuries by years of education:
  - Children: There is a strong positive association between the availability of data on occupational injuries and the years of education. For children, the availability of data is highest for those with more years of education.

- Analysis and interpretation: There is a very strong difference in the availability of data on occupational injuries between the low- and high-income groups. The low-income group has very low access to high-quality education, which results in fewer years of education for children. This leads to a higher prevalence of occupational injuries among children in the low-income group.

Policy implications: There is a very strong difference in the availability of data on occupational injuries between the low- and high-income groups. This highlights the need for targeted interventions to improve educational opportunities and access to high-quality education, especially for children in low-income households.
Adding social dimensions into ENHIS

Health outcomes

- Gastrointestinal diseases
- Cardiovascular diseases
- Injuries
- Respiratory diseases
- Cancers

EH determinants

- Water and sanitation
- Mobility and transport
- Housing
- Air quality
- Working and UV radiation
- Chemical safety

Social dimension

- Age
- Gender
- Income
- Education
- Employment
- Ethnicity

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