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The Urban Environment and Health in Developing Countries

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Session Objectives

- Environment: definition, types
- Impact of rapid urbanization on the urban environment
- Health hazards related to urban physical environmental changes
- Extent of inequity in physical environment and health within urban areas
In relation to human health, the environment includes not only the physical and biological elements of nature, but also includes human-based systems—socio-cultural, artifactual, economic, political, and technological—that make up the setting in which people live.

— UN Local Agenda 21
Section A

Impact of Urbanization and Physical Environment
Impact of Urbanization

- Impacts of rapid urbanization are mixed
- In theory, living in urban centers presents great potential gains
- However, substantial inequity exists within urban centers
Skyline of Nairobi

Photo by April Rinne. Creative Commons BY-NC-SA.
Kibera Slum, Nairobi

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Photo by Leigh Rowan. Creative Commons BY-NC-SA.
Positive Impact of Urbanization

- Urbanization processes can be beneficial for environment and health, as cities provide opportunities for ...
  - Employment
  - Education
  - Good standards of living, including housing, water, and sanitation
  - Health services
  - Recreation and entertainment
Negative Impact of Urbanization

- Rapid population growth creates negative economic, social, and environmental consequences

- Poverty is one of the most critical issues in urban areas of developing world

- Poverty creates hazards and health problems related to harmful physical and social environments, particularly in poor urban areas

- The urban poor live in extremely polluted and unhealthy environments that threaten their survival on a daily basis
What Is a Pollutant?

- Pollutants are undesirable solid, liquid, or gaseous matter in a solid, liquid, or gaseous environmental medium.

- Pollution varies depending on housing, population density, public transport, industrialization, water supply, sanitation, and removal of refuse.

- For the urban poor, most threatening environmental problems are those close to home, e.g., dense degraded shelters, scarce and polluted water, lack of sanitation, air pollution, noise, and accumulating garbage.
What Do We Know About the Urban Poor?

- Rapid urbanization has given rise to squatter populations

- An estimated 25 to 50 percent of urban inhabitants in many countries live in impoverished slums and squatter settlements.

- Slums are neglected parts of cities where housing and living conditions are awfully lacking. Slums range from high-density, squalid central-city dwellings to spontaneous squatter settlements—without legal recognition or rights—sprawling at the edges of cities.
Characteristics of Slums

- Slums are characterized by their ...
  - Lack of basic services—water, sanitation, waste collection, storm drainage, roads for emergency access, street lighting, paved footpaths
  - Lack of schools and health care facilities within easy reach
  - Lack of safe areas for children to play
  - Lack of places for the community to meet and socialize
How Much Do We Know About the Urban Poor?

- The facts about the urban poor are either lacking or hidden because data on their living and health conditions are ...
  - Not available,
  - Omitted from the official statistics, or
  - Presented as aggregated data, along with data from more prosperous neighborhoods
Why Are Data on the Urban Poor Omitted or Hidden?

- Often considered illegal
- Often not in the city maps
- Often they don’t exist in the eyes of the government; governments rarely extend basic services
- Often under constant threat of eviction
- They often don’t have votes; they are powerless
Data on the Urban Poor

- First step is to collect better information

- Absence of information makes it difficult to ...
  - Define the extent of the problem
  - Persuade program/policy makers that the problems exist
  - Formulate effective responses to them

- Increasing appreciation that the aggregate urban statistics conceals gross inequalities and need for urban-poor-specific data

- However, data on urban poor are still limited
Section B

Intra-urban Differentials in Physical Environment and Health in Developing Countries
Data sources

- Bangladesh Demographic and Health Survey (BDHS) for two types of comparisons
  1. Dhaka with rest of urban areas
  2. Slums with non-slums

- Urban surveillance system (USS) to provide more detailed data about the slum population of Dhaka
Housing Condition

- A proxy for economic status
- Also reflect the environmental situation of a household
- Analyzed in terms of materials used for constructing roof and wall
Distribution of Households by Wall Materials

- Jute/bamboo
- Tin
- Brick/Cement
- Other

Chart shows the percentage distribution of households in different regions (Dhaka, Other urban, Non-slum, Slum, USS slum) by wall material. For example, in Dhaka, a significant portion of households use Jute/bamboo, while in Slum areas, Brick/Cement is more prevalent.
Crowding Index

- Number of persons per sleeping room

- In the USS slums, about 40% of the households had five or more person per room

- Another 46% of the households had three to four persons per room

- Represents a very high degree of crowding, which is not conducive for health
Dhaka Slums
Water and Sanitation

- Access to safe drinking water is an important indicator of health.

- Many cities in the developing world are growing so fast that they cannot meet escalating demands for water.

- Access to clean water actually diminished in most large urban areas in the developing world during the decade of the 1990s.
Source of Drinking Water in Urban Areas of Bangladesh
Access to Drinking Water in Urban Bangladesh

- A large proportion of households in urban Bangladesh have access to safe water—but that is misleading.

- The sources of water in slums are often shared, and access is very limited.

- One out of six slum households collect their drinking water from outside the slum.

- Two-thirds collect water from sources shared by more than 10 households.
Time Needed to Collect Drinking Water—Dhaka Slums

- One-fourth of households got their drinking water within 15 minutes per trip
- More than 50 percent needed more than 30 minutes to collect one container of water
- For 7 percent of the households, the time needed was more than two hours
- The opportunity cost of time needed is very high
- This leads to use of contaminated surface water for most uses other than drinking
Dhaka Slums

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Toilet Facilities in Urban Bangladesh

The bar chart shows the percentage of modern, water-sealed, pit latrine, and no facility toilets in Dhaka, other urban areas, non-slum, and slum areas.

- **Modern**
  - Dhaka: 70%
  - Other urban: 40%
  - Non-slum: 50%
  - Slum: 40%

- **Water-sealed**
  - Dhaka: 10%
  - Other urban: 20%
  - Non-slum: 15%
  - Slum: 25%

- **Pit latrine**
  - Dhaka: 5%
  - Other urban: 10%
  - Non-slum: 15%
  - Slum: 20%

- **No facility**
  - Dhaka: 5%
  - Other urban: 15%
  - Non-slum: 30%
  - Slum: 40%
Toilet Facilities—Dhaka Slums

- In the USS slum areas, only 5% of households had private toilet facilities.
- More than 50% share toilet facilities with more than 10 households.
- About 43% of slum households have no toilet facility.
Water and Sanitation in Other Settings

- The situation is not very different in other countries
- In many cities, water supplies have diminished on a per capita basis
- In Nouakchott, Mauritania, there is just one standpipe for every 2,500 residents
- In parts of Luanda, Angola, there is just one standpipe for every 600 to 1,000 residents
Water and Sanitation in Other Settings

- An average person in the developing world uses 10 liters of water per day, in contrast to 135 liters per day in the U.K.

- An estimated 25 percent of people in developing country cities use water vendors to purchase their water at significantly higher prices than piped water.
Water and Sanitation in Other Settings

- The residents of slums in Nairobi, Kenya, pay up to five times the price for a liter of water than the average American citizen.

- A study in Karachi found that people living in areas without adequate sanitation spend six times more on medical treatments than those with sanitation facilities.
Water and Sanitation

- People who live in smaller cities are much less likely to have basic services than are people who live in larger cities.

- Nearly 50 percent of households in the cities of sub-Saharan Africa with populations under 100,000 lack piped water, flush toilets, and electricity.

- Similar deficits in the availability of basic services exist in the smaller cities of Asia and Latin America.
Water and Sanitation

- Globally, at least one billion people do not have access to safe water, roughly one-sixth of the world’s population.

- 2.4 billion people in the world do not have access to adequate sanitation, about two-fifths of the world’s population.

- Nearly two-thirds of urban populations in developing countries do not have adequate sanitation.
Pollution of indoor and outdoor air is an important environmental health problem.

Urban areas are responsible for approximately 80 percent of global air pollution.

Currently, over 1 billion urban residents are exposed to elevated levels of air pollution.

An estimated 3 million people die every year, directly or indirectly, from the effects of air pollution.

Nine out of 10 of these deaths in the developing countries.
Pollution and Health

- Uncontrolled urbanization, poverty, and unhygienic infrastructures lead to poor health

- Environmentally related communicable diseases have usually been the most serious

- The urban poor are the most affected

- It is their mortality which underlies the continued importance of communicable diseases in cities
Comparison of urban mortality rates by age and SES in Bangladesh

<table>
<thead>
<tr>
<th>Type of mortality</th>
<th>Dhaka City, 1995-1998</th>
<th>Rate ratio (lowest SES/ highest SES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Overall</td>
<td>Lowest SES*</td>
</tr>
<tr>
<td>Perinatal</td>
<td>52.0</td>
<td>62.1</td>
</tr>
<tr>
<td>Neonatal</td>
<td>35.2</td>
<td>56.1</td>
</tr>
<tr>
<td>Post-neonatal</td>
<td>42.1</td>
<td>79.1</td>
</tr>
<tr>
<td>Infant</td>
<td>77.3</td>
<td>135.2</td>
</tr>
<tr>
<td>1-4 years</td>
<td>16.8</td>
<td>22.0</td>
</tr>
<tr>
<td>&lt;5</td>
<td>101.0</td>
<td>157.2</td>
</tr>
</tbody>
</table>
## Causes of Under-Five Deaths

- Distribution of causes of under-five deaths: Dhaka and Bangladesh

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Dhaka City</th>
<th>Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury</td>
<td>1.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Neonatal tetanus</td>
<td>4.3</td>
<td>7.1</td>
</tr>
<tr>
<td>Measles/complications</td>
<td>2.3</td>
<td>3.0</td>
</tr>
<tr>
<td>ARI-associated</td>
<td>39.3</td>
<td>26.3</td>
</tr>
<tr>
<td>Diarrhea-associated</td>
<td>30.3</td>
<td>17.6</td>
</tr>
<tr>
<td>Early neonatal</td>
<td>20.0</td>
<td>20.7</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>2.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Not identified</td>
<td>15.0</td>
<td>15.2</td>
</tr>
</tbody>
</table>

## Causes of Deaths: Slums vs. Non-slums

Causes of deaths: slums vs. non-slums in Dhaka, Bangladesh

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Slums</th>
<th>Non-slums</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury</td>
<td>3.1</td>
<td>0</td>
</tr>
<tr>
<td>Neonatal tetanus</td>
<td>4.4</td>
<td>4.2</td>
</tr>
<tr>
<td>Measles/complications</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>ARI-associated</td>
<td>41.4</td>
<td>23.4</td>
</tr>
<tr>
<td>Diarrhea-associated</td>
<td>30.1</td>
<td>30.9</td>
</tr>
<tr>
<td>Early neonatal</td>
<td>20.1</td>
<td>19.1</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Not identified</td>
<td>8.2</td>
<td>23.3</td>
</tr>
</tbody>
</table>

Pollution and Health

- ARI was the leading cause of under-five death—substantially higher in urban areas, particularly in urban poor areas; presumably linked to crowding, air pollution, and unhealthy living conditions.

- Diarrhea is the second-leading cause of under-five death—also substantially higher in urban areas, particularly in urban poor areas; presumably linked to the lack of access to safe drinking water, inadequate sanitation, and poor hygiene.
Pollution and Health

- Lack of access to safe drinking water, inadequate sanitation, and poor hygiene are important causes of illness and death.

- Globally, about 2.3 billion people suffer from diseases linked to water.

- An estimated 4 billion cases of diarrheal disease occur every year, causing an estimated 2.2 million deaths in developing countries, mostly in children.
Pollution and Health

- Providing clean water and sanitation greatly reduces child mortality

- A review of 144 studies from the 1980s carried out by USAID demonstrated that infant and child deaths fell by an average of 55 percent once clean water was provided
It appears that the urban population of developing countries are suffering the “worst of both worlds” in their mortality profile.

This implies that the public health situation in many cities combines a mix of threats, which include both non-communicable and communicable diseases.
Summary

- Data are inadequate or missing on the overall urban environmental health profile

- Data on small and intermediate size towns and cities are rare

- This leads to an unrepresentative picture of the conditions and consequent health problems faced by many urban dwellers in developing countries

- This also makes it difficult to accurately plan for the provision of basic services