Health and the built environment in low and middle-income countries

Emily Mitchell
HBEP, City Futures Research Centre, UNSW
Outline

1. The Dual Burden
2. Determinants of Health
   - Globalisation
   - Urbanisation
   - Urban Living Conditions
3. Key Areas for Intervention
4. Future Research Priorities

Source: CW India 2010
The Dual Burden

Diseases associated with both under-nutrition and over-nutrition have led to a mixed epidemic of communicable and non-communicable diseases:

- Infectious diseases (i.e. malaria, diarrhoeal disease, HIV/AIDS)
- Cancer
- Cardiovascular disease
- Diabetes

Source: Youth Xchange
FIGURE 1. Projected deaths due to noncommunicable diseases by country income level, 2005 and 2030. Reprinted with permission from the World Bank.6

Source: Nugent 2008:71
Main Behavioural Risk Factors for Chronic Diseases:

Tobacco use

Physical inactivity

Harmful use of alcohol

Social isolation

Obesity

Source: Acadia 2010
## Multilevel Determinants of Health

<table>
<thead>
<tr>
<th>Global and National Conditions</th>
<th>City-level Determinants</th>
<th>Living Conditions</th>
<th>Behavior</th>
<th>Population Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demography</td>
<td>Local Government</td>
<td>Physical Environment</td>
<td>Consumption</td>
<td>Communicable Disease</td>
</tr>
<tr>
<td>urbanization, density,</td>
<td>provision of services,</td>
<td>and, water, houses and</td>
<td>food, water, alcohol,</td>
<td>diarrheal disease, upper-respiratory infections, HIV/AIDS, tuberculosis, malaria</td>
</tr>
<tr>
<td>immigration, demographic</td>
<td>zoning, transportation</td>
<td>other buildings,</td>
<td>tobacoo, drugs,</td>
<td></td>
</tr>
<tr>
<td>transition</td>
<td>and roads, education,</td>
<td>occupational</td>
<td>energy for heating and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>public safety, property</td>
<td>exposures, highways</td>
<td>cooking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rights and other laws,</td>
<td>and streets, human</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>formal safety nets</td>
<td>waste, industrial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Globalization</td>
<td>Local Economy industries,</td>
<td>waste, temperature,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>industrialization,</td>
<td>employment, markets,</td>
<td>vector breeding sites</td>
<td></td>
<td></td>
</tr>
<tr>
<td>formalization of</td>
<td>corporations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>economy, food security,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>aiding, changing role of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>government, emerging</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>disease, terrorism,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>migration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Macrosocial Factors</td>
<td>Social Factors</td>
<td>Social Environment</td>
<td>Income Generation</td>
<td>Maternal-Child Health</td>
</tr>
<tr>
<td>political and economic</td>
<td>civil society and social</td>
<td>density, diversity,</td>
<td>Waste</td>
<td></td>
</tr>
<tr>
<td>systems, centralization,</td>
<td>movements</td>
<td>equity, integration,</td>
<td>household, human</td>
<td></td>
</tr>
<tr>
<td>stability, inequality,</td>
<td></td>
<td>mobility, social</td>
<td></td>
<td></td>
</tr>
<tr>
<td>culture, human rights,</td>
<td></td>
<td>networks, norms,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>and legal rights, inequities,</td>
<td></td>
<td>violence, internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gender roles</td>
<td></td>
<td>safety nets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural Environment</td>
<td>Access to Goods</td>
<td>Social Environment</td>
<td>Physical Activity</td>
<td>Epidemiological Transition</td>
</tr>
<tr>
<td>geography, climate,</td>
<td>food, water, energy,</td>
<td>density, diversity,</td>
<td>Reproductive Choices</td>
<td></td>
</tr>
<tr>
<td>water, endemic disease,</td>
<td>internet, alcohol,</td>
<td>equity, integration,</td>
<td>sexual behavior, number of partners,</td>
<td></td>
</tr>
<tr>
<td>climate change</td>
<td>tobacco, firearms, other</td>
<td>mobility, social</td>
<td>contraception, purity,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>consumer goods</td>
<td>networks, norms,</td>
<td>abortion, breast feeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>violence, internal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>safety nets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Services</td>
<td>Access to Goods</td>
<td>Physical Activity</td>
<td>Reproductive Choices</td>
<td></td>
</tr>
<tr>
<td>quality, access, number</td>
<td>food, water, energy,</td>
<td>Sexual behavior,</td>
<td>sexual behavior, number of partners,</td>
<td></td>
</tr>
<tr>
<td>and type of services</td>
<td>internet, alcohol,</td>
<td>number of partners,</td>
<td>contraception, purity,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tobacco, firearms, other</td>
<td>contraception, purity,</td>
<td>abortion, breast feeding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>consumer goods</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 23.2** A conceptual framework for multilevel determinants of health in growing global cities—the built environment is impacted by many of these factors and influences urban health throughout these levels. For example, the industrialization of a country may affect highway location, condition, and amount of traffic, influencing the safety of neighborhoods near major cities, and may also affect trends in individual transportation behaviors.

Source: Johnson and Galea 2011:355
Globalisation

Modification of international trade practices

Changes to the global food system

The Nutrition Transition

Source: Alain 2010
Globalisation

Increased use of new technologies such as cars, televisions, computers and labour saving devices

New work and leisure practices

Source: Hello Ji Blog 2008
Source: The Hindu 2010
Urbanisation

Significant levels of poverty

Formation of slums and squatter settlements

Lack of adequate infrastructure and services
Urbanisation

Increased exposure to mass media and marketing campaigns

Higher female participation in the workforce

Less leisure time

Source: Fasttrack 2012
Urban Living Conditions

Slums:
- Insecurity of tenure
- Poor shelter
- Overcrowding
- Hazards
- Inadequate water, sanitation, electricity and other infrastructure

Source: Nimo 2011
Urban Living Conditions

Unsafe road networks

90% of the world’s road traffic fatalities occur in low and middle-income countries

Air and noise pollution

Poor quality walking and cycling environments

Source: Leahy 2011
Urban Living Conditions

Crime and violence

90% of violence related deaths occur in low and middle-income countries

Source: AP 2010
Urban Living Conditions

Food environment

Lack of access to nutritional food sources

Displacement of small food producers and retailers by supermarkets, convenience stores and fast food chains

Loss of agricultural producers in urban areas
Globesity: Fat’s New Frontier
Key Areas for Intervention

Integrated Slum Upgrading

World Health Organization: Healthy Cities Movement

Physical development works

Social development programs

Economic development works

Source: KSUP 2009
Key Areas for Intervention

Example of a sanitation upgrading project in Karachi, Pakistan:

An informal settlement

In the 1980s, residents established the Orangi Pilot Project to address community problems, and particularly sanitation

By 2004, self-built sanitation systems had been organised for more than 95,000 houses – including 6000 sewer lines and 95,000 latrines

Between 1983 and 1993, infant mortality in these communities fell 71%

Source: Diplomat Magazine 2014
Key Areas for Intervention

Transportation and Road Networks

- Traffic regulation and management
- Public transport infrastructure
- Upgrading road infrastructure – including pavements, lighting, speed humps, traffic calming elements, pedestrian crossings
- Promotion of biofuel alternatives and sustainable vehicle types

Source: Dalton 2009
**Key Areas for Intervention**

Example of a sustainable public transport system in Bogota, Colombia:

- Includes 350km of bicycle-only transport lanes
- Restrictions of car use in the city centre
- High capacity bus rapid transit system
- Cycling network

[PLAY VIDEO](source: La Vida Es Loca 2008)

[PLAY VIDEO](source: Dalton 2009)
Key Areas for Intervention

Food Environment

Urban farms and community gardens

Support for street vendors, markets and other urban food sources

Restrictions on fast food restaurants and other sources of unhealthy food

Source: Armstrong-Ogbonna 2012

Source: Miller 2009
Key Areas for Intervention

Example of an alternative food system in Belo Horizonte, Brazil:

- Food declared a right of citizenship
- Creation of a city agency to oversee the new food system
- Participatory budgeting process
- Support for family farmers
- Markets with affordable food items
- Community and school gardens
- Nutrition classes
- Information sharing


Future Research Priorities

Need to explore and develop new research methods and tools

New models for built environment interventions

Impact of different cultural and socio-economic factors on built environments in low and middle-income countries

Source: Roberts, 2012
Understanding *Sustainable Development* (2):

- the ‘Three Socio-Ecological Classes’ (David Korten)

<table>
<thead>
<tr>
<th>Over-consumers 1 billion</th>
<th>Sustainers 3 billion</th>
<th>Marginals 1 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel by car, air</td>
<td>Bicycle, public transport</td>
<td>Foot, maybe donkey</td>
</tr>
<tr>
<td>High fat, calorie meat-based diets’</td>
<td>Grains, vegetables, some meat</td>
<td>Nutritionally inadequate diet</td>
</tr>
<tr>
<td>Bottled water, soft drinks</td>
<td>Clean water, tea/coffee</td>
<td>Contaminated water</td>
</tr>
<tr>
<td>Many disposables</td>
<td>Few packaged goods</td>
<td>No packaged products</td>
</tr>
<tr>
<td>Spacious single family homes</td>
<td>Modest, extended family houses</td>
<td>Rudimentary shelters</td>
</tr>
<tr>
<td>Discard substantial wastes</td>
<td>Recycle most waste</td>
<td>Produce negligible wastes</td>
</tr>
<tr>
<td>Image-conscious clothes</td>
<td>Functional clothing</td>
<td>Second-hand clothing, scraps</td>
</tr>
</tbody>
</table>