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Urban Environment Health Hazards and Health Equity

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Abstract

When humans started to live in large numbers in the close proximity to each other approximately 5000 years ago, health challenges included the import of water, food and other essentials to the population, and transport of excreta and other waste products away from the population. Many million people in low-income and informal settlements ("SLUMS") in cities of our era face similar health challenges. As most of the urban slum dwellers live in tropical countries, their health is also threatened by a variety of tropical diseases influenced by social and environmental determinants. Health equity can only be achieved by "leveling up" living conditions for the poor and by reducing differential exposure and vulnerabilities among different groups in society. People are exposed to a whole variety of factors that can either promote good health or be hazardous to health, including the physical living environment. Modern either can improve health via their material, service-provision, cultural, & aesthetic attributes. They also offer opportunities for cost-effective interventions that can serve many people even if carried out on a small scale. Exciting health-promoting infrastructure (e.g. drains and distribution networks for kerosene for cooking) can, in some situations, be upgraded to meet the local health demands. Health hazards and inequities remain, however, and new threats have emerged, but the knowledge and technologies for creating a healthy city are available.

Keywords: SLUMS, DPSERA, WHO, Population size, birth rate, fertility, life expectancy, poverty

Introduction

It has been pointed out by SEN& KAWACHI & WAMALA that poverty is not only a question of money, but it has four other dimensions. Lack of opportunities (for employment and access to productive resources), lack of capabilities (access to education, health, & other public services), lack of security (vulnerability to economic risks and violence), and lack of empowerment (absence of voice, power, and participation). This paper suggests adding a fifth dimension: lack of a health-supporting physical living environment. These five dimensions stem from inequality as the root causes of poverty.

Social determinants as driving forces behind environmental determinants

Social determinants often cause their health effects via webs or pathways of environmental exposures. A framework to describe such pathways (the driving forces-pressures – state – exposure - -efforts – action) [DPSERA] framework) was developed at

World Health Organization (WHO). The social determinants driving forces lead to pressures on the environment that changes the state of the environment, which create exposures that cause health effects. Overview of indicators and issues in the hierarchy of social and environmental health determinants

DPSEEA Level	Indicator Items	Key Issues
Driving forces	Population size & structure birth rate, fertility, life expectancy, poverty prevalence, social barriers to equality, income distribution, economic level and growth, types of economic activity and trade, health & environment policies and legislation.	Demographic transition, fertility level, aging, economic development, economic inequalities, gender, ethnic & social discrimination, globalization, urban/rural development, urban planning & design
Pressures	Technology use, energy use, agricultural land use & production, water use, water access, availability of sanitation , solid waste volumes , hazardous waste volumes, transport trends, existence of breeding, grounds of disease vectors	Knowledge development, sustainability, resource conversation, emergence of deprived urban areas, infrastructure development
State of the environment	Climate, trends, air quality, river water quality, ground water contamination, drinking water quality, food contamination , housing quality	Geographic constraints, natural conditions, micro-environmental variations
Exposures	Specific exposure studies, studies of specific disease vectors, workplace environment surveys	Risk transition, exposure hot spots, total human exposure
Effects	General health situation, mortality trends, specific environment effects, environment burden of disease, occupational injuries & diseases , traffic crash injuries	Epidemiologic transition, health inequalities
actions	Policies & programs for prevention at each DPSEEA level	Development of new policies to meet the health challenges of the future

The DPSEEA framework is intended to visualize pathways or casual webs for how policies & actions at driving force level are linked to more proximal exposures and finally

the health effects. For example, urban people with low incomes and those affected by social decimations are likely to end up living in "SLUM" conditions with an unhealthy living environment and exposure to pathogens and disease vectors. Lack of research on many of these inter linkages is an obstacle to quantitative impact analysis of the higher level interventions. The developments of environment burden of disease estimates by WHO for different hazards at different levels in the DPSEEA cause – effect framework, & analysis of the environmental health risks in vulnerable groups, such as the children's environmental health analysis are starting to fill the gaps.

Major Environmental Health Challenges in Deprived Urban Areas

Diarrhea, worm infections and other infectious diseases spread via contaminated water & lack of water creates difficulties for families to carry out basic hygiene around the home. In addition, lack of access to water means hours wasted carrying water from fat away or substantial amount of scare household resources spent on essential human needs. It is mainly women and girls that end up responsible for these chores.

Proper sanitation is just as important for health. Women & girls are again vulnerable as many of them, for reasons of culture and modesty, will not attend to their sanitary needs during daylight hours if required to use a communal latrine. In 2002 51% of population in developing countries still lacked proper sanitation whereas 23% lacked safe and sufficient drinking water. In urban areas the coverage is higher, but most people in slums have inadequate facilities. Exposure to disease vectors, including mosquitoes, because of lack of liquid or solid waste management is an increasing health threat in these areas.

More than three billion people depend on solid fuels, including biomass (wood, dung, and agricultural residues) and coal to meet their most basic energy needs: cooking, boiling water, & heating. A study in Thailand showed a very strong social gradient for fuel use: low-income families use fuel-wood & higher income families use LPG or charcoal. In urban areas inequalities are particularly stark.

Indoor smoke exposure doubles the risk of child pneumonia & other acute respiratory infections. It can also increase chronic obstructive pulmonary disease in women, & double the risk of lung cancer if the smoke from use of coal for cooking.

Deprived urban areas often contain workplaces with health hazards because of toxic products, injury and ergonomic hazards, noise, external pollution & traffic generation. The problems in cottage industries are increased because of inappropriate zoning, town planning, and location of industrial activities. The mix of workplaces and settlements increase the health risks when major industrial accidents occur, as in Bhopal, India in 1984. Some serious workplace hazards that been common in developed countries in

the past have now been transferred to developing countries. Work injuries and poor health because of work hazards exposures lead in them selves to poverty: a vicious circle.

Health Equity Issues Related to the Modern Living Environment in Urban Areas

Epidemiological studies have documented increased mortality from motor vehicle air pollution, & poor people often live in the most exposed areas.

The contemporary use of the private motor vehicle is associated with another health threat in urban areas: the obesity epidemic. Walking & bicycling as a natural part of daily transport has diminished & lack of daily physical activity contributes to increasing body weight in many populations. Cars are also implicated in changing dietary patterns with increasing consumption of high-energy & high-fat "fast foods". Major visible economic inequalities within cities contribute to social tensions, & pervasive fear of crime which further limits outdoor physical activities.

Whereas water- & food – borne infections because of poor sanitation & inadequate hygiene have receded, emerging respiratory infections (e.g. , SARS & avian influenza) retain the potential for rapid spread in areas with high population density. Other hazards in urban areas are lead in paint on house and use of asbestos-cement building products.

Cities require constant energy & resource inputs, as well constant waste disposal to be able to sustain human life. To achieve sustainability modern cities need to be planned and managed with these resource and waste issues in mind. An important contemporary resource depletion issue is global climate change. Cities contribute to climate change through their large energy demands. The health effects of a warning world are likely to be overwhelmingly negative, particularly in the poorest communities, which have contributed least to greenhouse gas emissions. Some health effects may affect rural people more than urban people (e.g., effects of reached local food production) whereas other effects are more prominent in cities.

Sea level rise, more violent tropical cyclones and river floods, water- & food-borne gastrointestinal infections, and vector-borne diseases (e.g., dengue fever) are other health risks of the urban poor because of climate change.

Levels of air pollutants, such as ozone, because of motor vehicle emissions tend to be higher on warmer days. Ozone-related deaths may increase by- 4.5% because of climate change by the 2050. This is likely to affect millions of people in urban population across the world.

Urbanization also involves a shift in consumption from wild game meat or small landholder/householder reared poultry and pork to industrially reared pork chickens, etc. This has happened in less than 50 years and has numerous environment consequences, e.g., land-clearing; extensive use of fertilizers; pesticides and water; the recycling of feather;

car case, and waste; and use of veterinary antibiotics and large numbers of livestock that contribute to methane production, a more potent greenhouse gas than carbon dioxide. Urbanization limits possibilities for household food production and contribution to environment damage through long distance food transportation (greenhouse gases etc.).

Comprehensive Approaches to Achieving Equitable Environmental Health Conditions

The millennium development goal target number 11 states: "have achieved by 2020 a significant improvement in the lives of at least 100 million slum dwellers". This is a very modest target as there is already one billion people living in slums and the number is increasing. "Slum upgrading" offers opportunity for rapid scale0up of concrete action in a cost-effective manner. It consists of improving security of tenure and improving the basic services provision (e.g., water services, energy for cooking and lighting, storm water drainage systems, and security lighting) and housing, mitigation of environmental hazards, provision of incentives for community management, improving access to health care and education, and enhancement of livelihoods through training and microcredit.

Improved water supply should be combined with improved sanitation and a separate toilet in each household to facilitate personal hygiene, particularly for women and girls. These interventions are highlighted in the millennium development goals target number 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation."

Another approach is to build whole new housing areas with all the necessary facilities available from the beginning. If it is done in a way that takes into account the fears and desires of the poor, as was done in Singapore several decades ago, it can be very successful.

A comprehensive approach that combines infrastructure improvement, health promotion, and community participation is the health city, municipality and settings approach promoted by WHO and Pan-American health organization for many years. It engages local governments in health development through a process of political commitment, institutional change, capacity building, partnership-based planning, and innovative projects. It promotes comprehensive and systematic policy and planning with an emphasis on health inequalities and urban poverty. There are now several thousand "healthy cities" linked through national, regional, metropolitan, and thematic networks.

Interventions for energy, transport, and industry

Switching from wood, dung, or charcoal to more efficient modern fuels, such as kerosene, LPG, and biogas, brings about the largest reductions in indoor smoke. In many poor urban communities, however, biomass remains the most practical fuel and there,

improved stoves can cut back, indoor smoke levels and fuel use considerably, which improves health and reduces energy costs.

There is a wide range of technological and planning options that supply alternatives to the private motor vehicle for people's mobility needs. The rapid development of the physical size of cities and town planning promoting "sprawl" and a global "car culture" add to the health concerns of private motor vehicle transport. Improved public transport, planning for "walk ability and a reduction of "unnecessary" private motor vehicle travel are essential to create a healthy environment in cities.

Workplace Hazard Interventions

Numerous reports describe prevention methods for specific hazards (lead, asbestos, organic solvents, silica dust, accidents/injuries, etc.), including materials from the occupational health and safety programs of WHO & International Labor Organization (ILO). Interventions concerning these hazards improve health equity because low-income people generally end up working in jobs in the unprotected informal sector with the greatest health risks.

The ILO develops conventions and guidelines to improve occupational health and safety. An important intervention at the local urban level is the labor inspectorate that needs to be appropriately resourced. Trade unions are natural partners for awareness raising and local action, as well as for promotion at government level of healthy work policies and legislation.

Resources for Health Equity Investments:

In early 1970's the UN General Assembly recommended that high-income countries should provide 0.7% of their GDP to development aid and this way later reiterated in other for a, including the Rio Summit in 1922. The level never reached more than 0.36% or US $90 billion. The accumulated shortfall od aid since 1975 is about US $2 trillion, which could be seen as a debt from the rich and poor. The annual gross world product is US $40 trillion, two thirds of which is created in the high-income countries. Aid at 0.7% of GDP would amount to US $180 billion per year.

According to an analysis by Sachs, aid needs to be doubled to achieve the Millennium Development Goals and other global equity aims. One way to collect additional resources for aid would be a small tax on foreign exchange transactions, the so-called Tobin tax. A superficial estimate indicates that a Tobin tax of 0.02% would collect US $499 million per day, or US $ 150 billion per year, similar to the aid commitment made by the high-income countries in the 1970's. However, a detailed analysis is required to make a more reliable estimate.Low-and middle-income countries are not likely in the near future to be able to provide all the funds needed to create a truly healthy living environment. Funding

from the more affluent countries will be required to back up the plans made by peoples and governments in the less affluent countries. An equitable sharing of wealth and resources globally is the greatest inequity challenge facing the world.

Conclusion

- Clean and sufficient drinking water, proper sanitation and drains for waste water, and proper solid waste management are the key health equity interventions in deprived urban areas, cost-effective solutions exist.
- Household energy supply is a major environmental health issue because of the harmful effects of biomass and coal smoke. Alternative fuels for cooking and heating need to be made available and electricity for lighting and refrigerators provides great benefits for health.
- The working environment can be harmful to health of the poor and powerless. Specific interventions exist for all types of industrial activity, including cottage industries.
- Availability of and access to public transport is a key element in improving transport "equity" and reducing the negative health impacts of a "car society".
- Global climate change is likely to particularly affect health of poor people in both rural and urban areas.Actions to reduce its severity is therefore actions for health equity.

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