REVIEW ARTICLE

Urbanization and health - an overview

Chinomnso C **NNEBUE**[1]
Echendu D **ADINMA**[2]
Queencallista N **SIDNEY-NNEBUE**[3]

[1]*Institute of Human Virology/ Department of Community Medicine, Nnamdi Azikiwe University Teaching Hospital Nnewi, NIGERIA*
[2]*Department of Community Medicine, Nnamdi Azikiwe University / University Teaching Hospital, Nnewi NIGERIA*
[3]*Anambra State Urban Development Board, Nnewi NIGERIA*

Author for Correspondence
Dr. Chinomnso C **NNEBUE**
Institute of Human Virology/ Department of Community Medicine, Nnamdi Azikiwe University Teaching Hospital PMB 5025 Nnewi, Anambra State, NIGERIA

Email: nnebnons@yahoo.com
Phone: +234-803-475-6621

Received: May 12th, 2012
Accepted: April 14th, 2014

DISCLOSURES: NONE

ABSTRACT

Background: The rapid increase in the number of people living in urban areas is among the most important global health issues of the 21st century. Also, most developing countries are facing the task of planning and ensuring a sustainable, sane and healthy development of cities.
Objective: To review the relationship between urbanization and health with emphasis on approach and options for the promotion of healthy behaviours and safety.
Methodology: The main sources of information were online journals, Pub Med/Medline and Google. Additionally, publications from the World Health Organisation and public libraries were consulted for articles on urbanization and its impacts on health.
Results: The health of urban populations has changed as cities have evolved as a result of such factors as features of the social environment, the physical environment, and provision of and access to health and social services. The urban context of particular cities may also affect health as well as modify the effect that unexpected stressors have on a city. Reliable urban health statistics are largely unavailable globally. However, available data indicate a range of urban health hazards and associated health risks that cut across different sectors, including health, environment, energy, transportation and urban planning.
Conclusions: Governments are grappling with the challenges posed by the speed at which urbanization has outpaced their ability to provide essential infrastructure. There is need for planned urbanization to help avert the negative effects of urban living on health.

Keywords: *Health impacts, urbanicity, urban drift*

INTRODUCTION

Urbanization or urban drift refers to a process of shift from rural to urban areas in which an increasing proportion of an entire population lives in cities and suburbs of cities.[1]

The health of man and the environment he lives in are intricately linked. Also, the number of people, where they live and how they live e.g. through their use of natural

resources and production of wastes, affect the conditions of the environment. Changes in the environmental condition, in turn, can affect human health through such impacts as poor housing, poor hygiene, etc.

Cities offer the lure of better education, employment, health care, and culture; and they also contribute disproportionately to national economies.[2] As a result, people could even prefer moving from rural and small communities to squatter settlements or overcrowded housing units in the oldest and most densely populated inner parts of urban areas.

It is known and has been reported that rapid, ill-planned and unplanned urban growth is often associated with urban poverty, environmental degradation and population demands that far outstrip service capacity.[2] Ill-planned urbanization results from adherence to pre-conceived ideas or the transposition of planning methods from other countries and other climes without regard to the following: political, economic, demographic, social and cultural factors.[3] This places human health at risk, and can intensify an existing humanitarian crisis. It, also, has consequences for the health security and safety of all citizens in the cities.

The evolution of cities reflects changes in global and domestic political and economic fortunes.[4] In the same vein, the health of urban populations has also changed as cities have evolved. It, therefore, implies that while urban living continues to offer opportunities, today's urban environments can constitute a source of health risks and new health hazards.[2]

Table 1. Differentiation of urban and rural areas

CRITERIA	URBAN	RURAL
POPULATION/	> 20,000 people	< 20,000 people
POPULATION DENSITY (Number of residents per square mile)	> 1,000 people per square mile	< 1,000 people per square mile
INFRASTRUCTURE	>	<
Provision of public utilities and services		
JOBS	White collar,	Blue collar,
Percent population not dependent on agriculture	Higher level industrial based occupation	Agricultural based occupation
COSMOPOLITAN	>	<
	More attuned to western beliefs	More attuned to local and cultural beliefs
LEVEL OF EDUCATION	High	Low
GAZZETTED	Yes	No

Key: > = *More than*
< = *Less than*

There is very little consensus among international and national bodies about what may be called "urban".[5] A listing of country definitions is published annually in the United Nations Demographic Yearbook.[5] Definitions of urban is helpful in

characterizing the unique role which cities may play in shaping health.[6] It has been documented that among 228 countries for which the United Nations has data on; about half (108) use administrative definitions of urban (e.g. living in the capital city), 51 use size and density, 39 use functional characteristics (e.g., economic activity), 22 have no definition of urban, and 8 define all (e.g. Singapore) or none (e.g. Polynesian countries) of their population as urban.[1]

Typically, a community or settlement with a population of 20,000 or more is considered urban.[5] The United States (US) Bureau of the Census defines an urbanized area in the following way: *An urbanized area comprises a place and the adjacent densely settled surrounding territory that together comprise a minimum population of 50,000 people.....* The "densely settled surrounding territory" adjacent to the place consists of an area made up of one or more contiguous blocks having a population density of at least 1,000 people per square mile.[7] The Bureau, thus, provides a dichotomy by which territory, population, and housing units outside the specific size and density parameters are designated as non-urban areas.

Urbanization refers to the change in size, density, and heterogeneity of cities.[6] It is the outcome of social, economic and political developments that lead to urban concentration and growth of large cities, changes in land use and transformation from rural to metropolitan pattern of organization and governance. Factors such as population mobility, industrialization and segregation frequently accompany urbanization.[8,9,10]

In a US comparison of urban versus suburban areas, Andrulis coined the term "urban health penalty".[6] According to Andrulis, urban health penalty refers to a greater prevalence of health problems and risk factors in urban areas.[11]

The process of urbanization is not dependent on definition of urban, *per se*, but rather on the dynamics of agglomeration of individuals. The urban context of particular cities may affect health as well as modify the effect that unexpected stressors have on a city. This concept, urbanicity, refers to the impact of living in urban areas at a given time.[6] Urbanicity implies the presence of conditions that are particular to urban areas or present to a much greater extent than in non-urban areas.[6] For example, pedestrian motor vehicle injuries, homicide, and substance use are all features of urbanicity, whereas the increase in number of motor vehicles as well as the rise in the syndemics of substance abuse and related vices are features of urbanization. Also, the presence of substantial industrial pollution in the cities and the attendant higher prevalence of respiratory diseases in these cities are both features of urbanicity.

In contrast, we would characterize the changing levels of pollution as features of urbanization. Thus, urbanization and urbanicity are complementary dimensions that both shape urban health.

The WHO chose the theme of "urbanization and health" for World Health Day 2010, in recognition of the effect urbanization has on our collective health globally and on every individual. Its goal is to draw worldwide attention to the theme and to involve governments, international organizations, business and civil society in a shared effort to put health at the heart of urban policy.

URBANISM IN NIGERIA

Nigerian urbanism, as in other parts of the world, is a function primarily of trade and politics.[12] In the north, the great urban centres of Kano, Katsina, Zaria, Sokoto, the early Borno capitals (Gazargamo and Kuka), and other cities, served as entrepôts to the Saharan and trans-Saharan trade, and as central citadels and political capitals for the expanding states of the northern savannah.

In the south, the rise of the Yoruba expansionist city-states and of Benin and others was stimulated by trade to the coast, and by competition among these growing

urban centres for the control of their hinterlands and of the trade from the interior to the Atlantic (including the slave trade). The activities of European traders also attracted people to such coastal cities as Lagos, Badagry, Brass, Bonny, and later, Calabar, Port Harcourt and Onitsha.[10] All these cities and peri-urban areas generally tended to have high population densities. The concentration of wealth, prestige, political power, and religious learning in the cities attracted large numbers of migrants, both from the neighbouring countryside and from distant regions - "Sabon-Gari" or new town or "Tudun Wada", which is often shortened to "Sabo."[12]

EPIDEMIOLOGY OF URBAN DRIFT

Reliable urban health statistics are largely unavailable throughout the world. Disaggregated intra-urban health data, i.e. for different areas within a city, are even rarer. The urban poor suffer disproportionately from a wide range of diseases and other health problems. Health data is usually aggregated to provide an average of all urban residents - blurring differences between the rich and the poor - it thus masks the health conditions of the urban poor.

Available data indicate a range of urban health hazards and associated health risks: sub-standard housing, crowding, air pollution, insufficient or contaminated drinking water, inadequate sanitation and solid waste disposal services, vector-borne diseases, industrial waste, increased motor vehicle traffic, stress associated with poverty and unemployment, among others.

Urban health risks and concerns, therefore, involve many different sectors, including health, environment, housing, energy, transportation, urban planning, and others. Health problems of the urban poor include an increased risk for violence, chronic disease, and for some communicable diseases such as tuberculosis and HIV/AIDS.

Between 1995 and 2005, the urban population of developing countries grew by an average of 1.2 million people per week, or around 165 000 people every day.[2] In 2007, the world's urban population surpassed 50% for the first time in history, and this proportion is growing.[2,4,6] By 2030, six out of every ten people will be city dwellers and by 2050, this is estimated to exceed 70%.[2,4,6]

The World Bank estimates that by 2035, cities will become the predominant sites of poverty.[2] More than one billion people – about one third of the urban population – live in urban slums.[2,6] More than half of the world's people live in urban areas, crowded into 3% of the earth's land area.[13] It is estimated that in 2030, urban population worldwide will be 4.9 billion out of the estimated world population of 8.1 billion people, compared to 48.3% (2.8 billion/6.0 billion in 2000).[6] These projections highlight the importance of viewing urban health as an international issue.

Spurred by the oil boom prosperity of the 1970s and the massive improvements in roads and the availability of vehicles, Nigeria since independence has become an increasingly urbanized and urban-oriented society. During the 1970s Nigeria had possibly the fastest urbanization growth rate in the world. Because of the great influx of people into urban areas, the growth rate of urban population in Nigeria in 1986 was estimated to be close to 6% per year, more than twice that of the rural population.[12] Between 1970 and 1980, the proportion of Nigerians living in urban areas was estimated to have grown from 16% to more than 20%.[12] By 2010, urban population was more than 40% of the nation's total.[12] In Anambra State, for instance, the urban population makes up 62% of the total population.[14]

URBAN FRAMEWORK AND HEALTH

A review of the published literature suggests that most of the key factors that affect health can be considered within three broad themes: features of the social environment, the

physical environment, and provision of and access to health and social services.[6]

Table 2. An urban health framework

	Urbanicity	**Urbanization**
Social environment	*Poverty*	*Out – migration*
Physical environment	*Pollution*	*Industrialization*
Provision of health and social services	*Limited access to care*	*Changing fiscal policies*

Social Environment and Health

The social environment refers to properties of the urban community (e.g. cultural milieu, social norms and networks, stressors) that affect individual behaviour. Principal features of the urban social environment include: socioeconomic status, crime and violence-syndemics of kidnapping, suicide bombing, etc; the presence of marginalized populations (e.g. sex workers) with high risk behaviours; and the higher prevalence of psychological stressors that accompany increased density and diversity of cities.[6,8,15,16] These features of the social environment have been changing over the past century and have likely had a different effect on the health of urban populations.

Also, the population strain on available jobs may result in devaluation of hourly wage rates, higher unemployment, and changing socioeconomic status for persons previously living in a given city. This lowering of socioeconomic status can result in more limited access to health care and to poorer health.

Physical Environment and Health

Urban climates are distinguished from those of less built-up areas by differences in air temperature, natural light, humidity, wind speed and direction, and amount of precipitation. These differences are attributable, in large part, to the altering of the natural terrain through the construction of artificial structures and surfaces. The growing demand of goods and population services, have forced the society to artificialise more and more, the processes of transformation of the physical environment and to increase the yield of natural resources. Besides, in ecological terms, the city is conceived as a most artificial ecosystem, and the subsistence of its inhabitants depends on the supply of resources coming from the natural system. Therefore, characteristics of urbanization, including the intensity, rate, and duration of these changes, and the response to change may have health effects.

The altering of the natural terrain, also, has influenced our health. Relevant features of the physical environment important to urban areas include: the built environment, air, water and noise pollution. Environmental particulate matter has been associated with cardiovascular death and asthma.[16] Access to safe water, garbage removal and sanitation become central issues in developing countries, where transmission of infectious diseases is a major public health problem. In developed countries, hazardous waste landfill sites may be associated with low birth weight, birth defects and cancers.[17]

Noise exposure may be associated with hearing impairment, hypertension and ischemic heart disease.[18] It has been shown that persons living in more densely populated cities have worse survival rates from acute cardiovascular events, perhaps, due to the longer response times of emergency medical and fire services.[19,20]

Transportation - public and non-public - is another critical feature of the urban physical environment, both to facilitate population mobility in densely populated urban areas and to deliver emergency medical services. Globally, road traffic injuries are the ninth leading cause of death, and most road traffic deaths occur in low and middle income countries.[21] Almost half of those who die in road traffic crashes are pedestrians, cyclists or users of motorized two-wheelers. Urban air pollution kills around 1.2 million people each

year around the world, mainly due to cardiovascular and respiratory diseases.[13] A major proportion of urban air pollution is caused by motor vehicles, although industrial pollution, electricity generation and in least developed countries household fuel combustion are also major contributors.

Tuberculosis (TB) incidence is much higher in big cities. In the Democratic Republic of the Congo, 83% of people with TB live in cities.[13] Participation in physical activity is made difficult by a variety of urban factors including overcrowding, high-volume traffic and heavy use of motorized transportation, poor air quality and lack of safe public spaces and recreation/sports facilities.

Provision of Health and Social Services

Provision of health and social services has some influence on health distinct from, although often related to, the social or physical environment. Such services include: housing; water; sewage; roads; communication; educational and health facilities.[22]

First, persons of lower socioeconomic status are more likely to face barriers to care, receive poorer quality care, and disproportionately use emergency systems. Secondly, cities in wealthy and less-wealthy countries frequently have disparities in wealth between proximate neighbourhoods. These disparities are often associated with disparities in quality of care e.g. the presence of well-equipped, lucrative, practice opportunities in the same city decreases the likelihood that service providers will work in lower paid, public service clinics, particularly when these last services are taxed by limited resources and wavering political commitment. Thirdly, more positively, social service systems in cities often provide a far wider range of services than are available in smaller cities or in non-urban areas. However, these provisions are often inadequate over time.

How the dynamics of urbanization affect health can be considered with examples. An influx of impoverished persons to a city (e.g. immigration driven by food or work shortages in non-urban or other urban areas) in search of jobs and services may tax available infrastructure, including transportation, housing, food, water, sewage, jobs, and health care. Overtaxed sanitary systems may directly lead to spread of disease, as has been the case in North America and as continues to be the case in the developing world.

More recently, there has been intense interest in the effects on physical and mental health of the built environment and considerations of the design of public space. For example, living in older, unrenovated buildings is associated with a higher prevalence of asthma.[23] The extent to which physical space influences mental and physical health needs further investigation but has been cited in literature.[24,25]

Nutritional Transition and Health

Urban environments tend to promote unhealthy food consumption. It has been shown that physical availability of resources (e.g. healthy foods) is associated with a greater likelihood of urban residents eating balanced diets.[26] A lot many diseases like diabetes, hypertension, cardiovascular diseases, etc. owe their high incidence due to the high fat and low fibre diets and due to a total lack of physical exercise. Even urban educated parents feel proud to be able to afford pizzas and burgers of multinational food chains for their kids. They show off their affluence by buying loads of goodies (which really are “baddies”) and cans of colas for their children, thus, developing their taste buds for fast foods. Homemade food and traditional cuisine become old fashioned for them. Even the poor people do not eat nutritious food. They, very often, depend on roadside food ‘mama put’ which is cheap, oily and full of fat. Experts rightly believe that it is important to lose fat and not just weight.[26]

RECOMMENDATIONS

To prevent this progressive deterioration in health resulting from urbanization, it is essential to direct urban development towards the following goals: stable family life; development of areas where people can live in healthy surroundings regardless of their financial status; creation of a healthy social climate by the development of small neighbourhood units where communal life can be enjoyed and appreciated; prevention of septic fringes and overcrowding; provision of suitable economic opportunities; and restriction of migration to towns to a level which can be comfortably supported.

Urban planning can promote healthy behaviours and safety through investment in active transport, designing areas to promote physical activity and passing regulatory controls on food safety. Improving urban living conditions in the areas of housing, water and sanitation will go a long way to mitigating health risks. Building inclusive cities that are accessible and age-friendly will benefit all urban residents.

Two main policy implications are highlighted: the need for systematic and useful urban health statistics on a disaggregated i.e. intra-urban basis, and the need for effective cross-sectoral partnership.
Good urban planning and governance, exchange of best practice models and the determination and leadership of stakeholders across disciplines, sectors, communities and countries will be critical elements of success. By bringing multiple sectors of society together to actively engage in developing policies, more sustainable health outcomes will be achieved.

Communities should be involved in local decision-making. We need to bring about reforms which ensure that healthcare programmes also educate people about their diets, lifestyles and moral values. Cross-national research may provide insights about the key features of cities and how urbanization influences population health.

There is an urgent need to make urban areas resilient to emergencies and disasters. In some third world countries, like the Philippines, there are people who literally live in the dumpsites. They have developed waste disposal managements, turned garbage into electricity, and in one case, completely made a dumpsite into a vegetable garden. With the help of the government and organizations, the garbage give them food and earnings instead of being a source of health problems.

CONCLUSIONS

Virtually all population growth over the next 30 years will be in urban areas, signaling that urbanization is here to stay. It is pertinent that we promote urban planning for healthy behaviour and safety, design cities to promote physical activity, make healthy food available and affordable, provide health services for all, improve road safety.These will keep cities and villages of the world physically, socially, spiritually, emotionally and mentally healthy.

REFERENCES

1. Urbanization. Available at www.faculty. fairfield.edu/faculty/hodgson//urbanization .ht. *Accessed on 15/10/2010.*
2. World Health Organization. Bulletin of the World Health Organization. 2010; 88:241-320.
3. Fendall NR. Housing, health and happiness. *East African Medical Journal*.1959; 36:473-485.
4. Hall P. Cities in Civilization. New York: Pantheon Books 2001; 10-12.
5. Howard E. Cities of tomorrow. Available at http://www.library.cornell.edu/Reps/DOCS / howard.html. *Accessed on July 1, 2011.*
6. Vlahov D, Galea S. Journal of Urban Health: Bulletin of the New York Academy of Medicine.2002; 79 (Suppl 1): 4.
7. Department of Commerce, Bureau of the Census. Qualifying urban areas for census 2000. Federal Register Part 7. May 1, 2002. Available at: www.census.gov/geo/www /ua/fdrgua2k.pdf. *Accessed on July 1, 2010.*
8. United Nations Conference on Environment and Development (UNCED). Agenda 21, Rio de Janeiro. 1992.

9. Leviton LC, Snell E, McGinnis M. Urban issues in health promotion strategies. *American Journal of Public Health* 2000; 90:863–866.
10. Marsella AJ. Urbanization, mental health, and social deviancy. A review of issues and research. *American Journal of Psychology* 1998; 53:624–634.
11. Andrulis DP. The urban health penalty: new dimensions and directions in inner-city health care. In: Inner City Health Care. Philadelphia, PA: American College of Physicians; 1997. Available:www.acponline.org/hpp/pospaper /andrulis.htm. *Accessed: July 1, 2010.*
12. The Library of Congress Country Studies; CIA World Factbook. Nigeria urbanization. http://www.photius.com/countries/nigeria/ society/nigeria_society_urbanization.html. *Accessed on July 1, 2010.*
13. World Health Organization. Available at http: //www.who.int/bulletin/volumes/88/4/10-010410/en/index.html. *Accessed* on 15/10 /2010.
14. Anambra State of Nigeria. State Economic Empowerment and Development Strategy (SEEDS), 2nd Ed Awka 2007.
15. Freudenberg N. Time for a national agenda to improve the health of urban populations. *American Journal of Public Health* 2000; 90:837–840.
16. Geronimus AT. To mitigate, resist or undo: addressing structural influences on the health of urban populations. *American Journal of Public Health* 2000; 90:867–872.
17. Vrijheid M. Health effects of residence near hazardous waste landfill sites: a review of epidemiologic literature. *Environmental Health Perspective* 2000; 108 (suppl 1):101–112.
18. Passchier-Vermeer W, Passchier WF. Noise exposure and public health. *Environmental Health Perspective* 2000; 108 (suppl 1):123–131.
19. Campbell JP, Gratton MC, Salomone JA. Ambulance arrival to patient contact: the hidden component of pre-hospital response time intervals. *Ann Emerg Med* 1993; 22:1254–1257.
20. Gallagher J, Lombardi G, Gennis P. Effectiveness of bystander cardiopulmonary resuscitation and survival following out-of-hospital cardiac arrest. *JAMA*. 1995; 274:1922–1925.
21. World Health Organization. World Report on Road Traffic Injury Prevention 2004; 33. Available @ www.who.int/violence_injury_prevention/... /road _traffic/world_report/en/. *Accessed on 15/10/2010.*
22. Andrulis DP. Community, service, and policy strategies to improve health care access in the changing urban environment. *American Journal of Public Health* 2000; 90:858–862.
23. Krieger J, Higgins DL. Housing and health: time again for public health action. *American Journal of Public Health* 2002; 92:758–768.
24. Dekker J, Peen J, Gardien R, de Jonghe F, Wijdenes W. Urbanisation and psychiatric admission rates in the Netherlands. *British Journal of Psychiatry* 2004; 184:293-298.
25. Peen J, Bijl RV, Spijker J, Dekker J. Does the prevalence of psychiatric disorders increase with urbanisation? *International Journal of Social Psychiatry* 1997; 43:235-246.
26. Cheadle A, Psaty BM, Curry S. Community-level comparisons between the grocery store environment and individual dietary practices. *Prev Med* 1991; 20:250–261.