

Urban Health in India

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1 Introduction

This paper is going to introduce a framework for the analysis of urban health. This framework conceptualises urban health as being influenced by and simultaneously influencing the characteristics of urbanisation. Based on these considerations, we analyse the influences on urban health in the Indian context and illustrate the effects poor health has on the country's development. Although the overall level of urbanisation in India is rather modest, the Indian case is particularly interesting because the urban population is growing so rapidly. According to UN's prognosis, India will more than double its urban population from 367 million in 2010 to 915 million in 2050 (UN 2011). Many of the people will live in megacities – with 7 out of 49 megacities worldwide being located in India already (UN 2008: 220), making it a an area of mega-urbanisation (Dittrich 2004: 208). In this context, India's urban population is facing a rapid transformation of health determinants – deteriorating environmental conditions, continuing social fragmentation, and overburdened urban infrastructure – to name just a few. Given India's rapid urbanisation, this paper attempts to examine the complex nature of its impact on human health.

In section 2, a descriptive framework for analysing urban health will be introduced. Based on this framework, section 3 will discuss urban health in the Indian context. The section starts with a brief description of the urbanisation process in India. It then goes on to examine the role of urban environments (section 3.1), urban society (section 3.2) and urban health systems (section 3.3). The section closes with remarks on the overall urban health status of India (section 3.4). In the conclusion we will point out the growing disparities in urban health, which urgently need to be addressed for a future urban health agenda.

2 A descriptive urban health framework

Urban health first evolved as a research topic during the age of industrialisation in Europe. The (un-)hygienic conditions of Europe's cities led to a rising burden of diseases and declining life expectancy. This phenomenon has been referred to ex-post as the "urban graveyard effect" or "urban penalty" (Vögele 1998). The cholera epidemics especially necessitated substantial changes in the urban infrastructure. It is noteworthy that it was the series of improvements and innovations in infrastructure (improvement of water supply, sewage treatment, food safety, etc.) that helped to solve the health crisis in Europe rather than medical advancements. (Vögele 1994; McMichael 2000; Vlahov et al. 2004).

Due to the current global urbanisation process, urban health is currently witnessing a renaissance as a research topic. Galea and Vlahov, leading authors in the new urban health movement, define urban health research as an investigation into "the relation between the urban context and population distribution of health and disease" (Galea & Vlahov 2005: 342). It is concerned with the specific urban determinants of health, of diseases and their outcomes.

Today urban health has become a highly diverse research topic. The research interests vary strongly between developed countries and the developing world. In high-income countries researchers focus on problems such as higher HIV-prevalence, higher rates of drug addiction, higher incidences of asthma, or higher rates of trauma in urban areas (Barondess 2008), as well as intra-urban health inequalities (Moore et al. 2003: 271). On the contrary, in low-income countries urban health research is focussed on the deterioration of living conditions in the fast growing agglomerations. Some authors allude to a "new urban penalty" (e.g. Krafft et al. 2003) to address the severity of the urban health problems of the developing world.

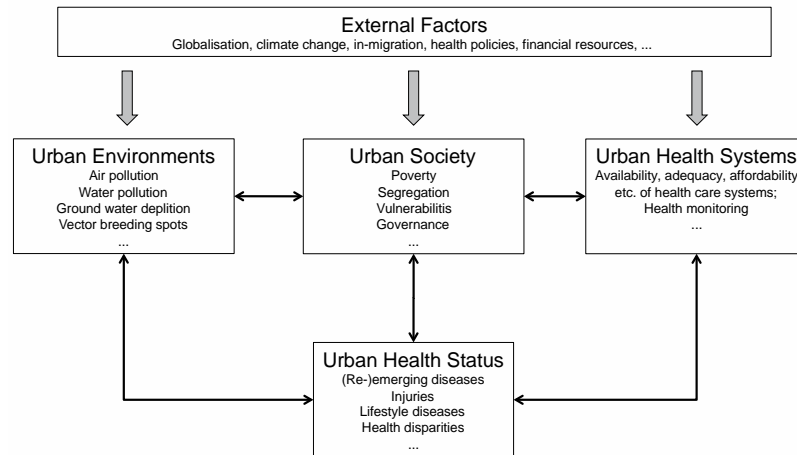
Notwithstanding the geographical focus of the research, the analysis of urban health needs to be holistic, incorporating the major determinants of urban health and therefore the differentiated health vulnerabilities of the urban population (see Mohapatra in this volume). As highlighted by several authors (e.g. Glouberman et al. 2006), there exist at the same time numerous positive and negative health determinants. Up until now, only a few authors have developed a systematic overview of these factors. Galea et al. (2005) for example, provide a comprehensive framework by structuring the different health-influencing factors which have been discussed in literature in the recent past. Nevertheless, their framework must be criticised: it is unidirectional and is focussed only on health outcomes, while the reverse perspective – health as a determinant of social and economic development – is ignored.

From an alternative perspective, urban health should be seen as a complex field not only influenced by various factors but simultaneously influencing them. Urban health therefore goes beyond the assessment of the health status of urban populations and beyond the identification of differences in people's health status. Besides the analysis of health inequalities and health determinants, further questions must be raised: what does (ill-) health mean for development? Is the health care sector fit to react to (re-) emerging diseases such as HIV, TB, dengue, diabetes, etc.? How are lifestyles affecting health outcomes and to what degree are they affected by the rising burden of disease? How can urban environments be designed to provide healthier living conditions, for instance by minimising vector breeding?

Figure 1 shows the urban health framework. Three main categories are employed to summarise this health framework. Firstly, factors influencing health and secondly, areas affected by health: the urban environment, urban society and urban health systems. Under these categories we list some examples; however, these examples alone cannot represent the whole picture. Double arrows are used to indicate the mutual influence between the categories: poverty, for example, influences the circumstances of living (exposure to health threats), as well as the ability to seek treatment (coping with ill health). At the same time, the health status could be a reason for poverty; the performance of urban health systems obviously influences the health status, and in turn the health systems would (in an ideal world) be adjusted to the needs of a population (i.e. the health status of a population). The framework also mentions external factors which indirectly influence urban health by changing urban environments, societies and health systems. Examples of these influences are again manifold, yet, contrary to the aforementioned three categories, their influence is unidirectional. Climate change, for example, will affect urban health in many ways: rising average temperatures will result in increasing incidence of heat waves, leading to deaths from cardio-respiratory diseases; changes in precipitation patterns and rising temperatures will result in a spread of disease vectors like ticks and mosquitoes; rising temperatures are also associated with a higher incidence of food-borne diseases; disasters associated with the expected higher number of extreme weather events (such as storm-induced inundation) will also have multiple adverse health effects (Kovats & Akhtar 2008). In a comparative study of eight megacities from the developing world, Heinrichs et al. (2011) show that adverse health effects due to global climate change can be expected in all of the cities studied.

Previous unidirectional methods have failed to see urban health as a specific parameter in a highly interconnected urban system. Cities are

FIGURE 1: A descriptive urban health framework



Source: Butsch/Sakdapolrak/Saravanan.

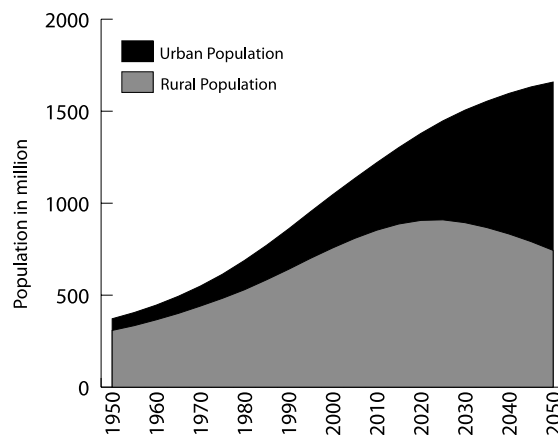
manmade surroundings in which interacting humans shape environments according to their needs. Cities need ecosystem services in urban environments as well as in the urban fringe area. Urban dwellers rely on water, air and food to fulfil their basic needs (Millennium Ecosystem Assessment 2005). The mutual interactions of society and environment in dense urban settings create complex relations and feedback mechanisms. In this context, human health is the product of various influencing factors, but also an influencing factor itself. These complex interplays have to be taken into consideration when urban health is discussed. In the following section we will illustrate these considerations with examples from the Indian context.

3 Urban health in India

Compared to the global urbanisation process, India's urbanisation follows a unique pattern. South Asia has 4,300 years of urban history. As early as 2350 BC the first cities flourished in the Harappa culture (Ramachandran 2001: 23). Despite this tradition, the share of the urban population in modern India is relatively low, comparable to the least developed countries. In the future, the share of the urban population will grow in India much faster than in the past: the average growth of the urban population will be 6% per decade. This means that India will become predominantly urban

some time between 2040 and 2045 (UN 2011). Figure 2 shows that around 2025 the rural population will reach a peak and then decline in absolute numbers in the years following 2025. India will more than double its urban population from 367 million in 2010 to 915 million in 2050. Thus India has to expect an additional 548 million urban dwellers in the next forty years. This is more than the population of the European Union with its 27 member states. Today 15% of the urban population live in one of the four largest megacities, Mumbai, Delhi, Chennai and Kolkata. By 2020 42% of India's urban population will live in cities with a population greater than 1 million inhabitants (UN 2011).

FIGURE 2: Population development/prognosis India



Source: Butsch/Sakdapolrak/Saravanan, based on UN 2011.

3.1 Poor environmental hygiene

The unregulated growth of the Indian cities is mainly driven by the private sector. Obviously this leads to numerous negative consequences (Ganeshwar 1995). Urban environments are heavily affected by air pollution, water pollution and the collapse of the waste management system – to name only the most obvious threats. The provision of basic amenities is a severe problem in many cities. These shortfalls are documented in numerous city development plans produced for the Jawaharlal Nehru National Urban Renewal Mission (JNNURM 2011). The living conditions of the slum populations in particular, which constitute a significant proportion of the population as a

whole, are often unhygienic and highly unhealthy: in Mumbai for example more than 60% of the population are slum dwellers (Baud & Naiman 2008).

One of the key provisions influencing health is water. The often neglected wastewater is an especially important factor and a carrier of infectious and non-infectious diseases. In India only about 35% of the wastewater from class I cities (more than 100,000 inhabitants) and class II towns (between 50,000 to 100,000 inhabitants) is processed, posing potential hazards to human populations (Bhardwaj 2005). Wastewater generation by industries and the domestic sector in the rapidly growing Indian cities is increasing rapidly. Without provision of adequate sewerage treatment, wastewater is therefore becoming a serious health threat. On the other hand, wastewater is perceived as a boon for the peri-urban and rural hinterlands where water is scarce. In their case study on the Musi river in Hyderabad, Buechler et al. (2006) estimate, that about 16,000 hectares of land generate an income of one million Indian Rupees (INR) from wastewater irrigation. In Vadadora, in Gujarat, wastewater irrigation generates an annual production equivalent to about 266 million INR. While the reuse of wastewater may have large benefits, it is simultaneously a risk and generates medium and long-term costs (Scott et al. 2000), particularly in terms of public health. Cooper's (1991) study identifies several health risks, such as the presence of harmful organic compounds and pathogens.

Current urbanisation processes in India are linked to India's New Economic Policy (NEP). NEP has contributed consistently to higher growth rates since the 1990s as well as to increases in the national income. There has been an increase in industrial investment and impressive growth of new economic sectors (ADB 1999). According to India's Central Pollution Control Board (CPCB), notified industries, such as iron and steel, are the highest water polluters. They are responsible for 87% of the total water pollution (Table 1). Leather industries (only those which are officially reported) are the second largest polluter. This does not include all the large informal businesses that do not appear in the official records. The leather industries are major contributors to India's total exports. Being small in scale and home based, they are often unaccounted for in official statistics. Many of these "silent polluters" cluster around urban centres, such as Kanpur, Tiruppur and Surat. In general, small-scale industries represent 40% of the industrial production, and 35% of the total exports; they employ about 17 million people in 3.2 million industrial units. Of these industries, engineering, paper mills and textiles are the largest wastewater generators (Table 2). This small-scale industrialisation in urban regions has created new demands for water, sanitation and food security. In addition, there is now the problem of

adequate wastewater treatment in India's urban and peri-urban regions (Saravanan & Mollinga 2011).

TABLE 1: Relative share of total pollution among Central Pollution Control Board (CPCB) notified industries in India

Industry	Total water pollution load (in percent)	Toxic pollution load (in percent)
Iron & Steel	87.4	39
Pulp & Paper	4.6	6.2
Aluminium	2.5	7.6
Sugar	1.6	1.2
Copper	0.9	2.6
Zinc	0.4	1.2
Oil Refinery	0.2	7.8
Pesticide	0.1	5.8
Leather	0.1	14.2
Dyes Intermediataries	Negligible	1.1
Fertiliser	Negligible	1.1

Source: Pandey 2005.

In addition to the threats from polluted water, other environmental factors also affect human health. The re-emergence of malaria (Wadhwa et al. 2010) and the spread of dengue epidemics (Shah et al. 2004) are also linked to urban environments. Construction activities, green belts, open drainage and increasingly the sealing off of land provide ideal conditions for the breeding of various disease vectors. In addition, the vessels used for storing water often become breeding sites. Because of this, the shortfalls in water provision can cause disease.

Increasing air pollution, mainly due to motorised vehicles is also another factor affecting human health. Shortfalls in the public transport system, the spread of urban areas and rising incomes have led to a dramatic growth of motor traffic since the 1990s (Aggarwal & Butsch 2011). The prevalence of two-stroke engines has especially contributed to pollution, in the form of carbon dioxide emissions and "suspended particular matter" (SPM). Combined with indoor air pollution, a consequence of insufficient

infrastructure and poverty, and the air pollution in Indian cities results in an increase in incidences of respiratory diseases.

TABLE 2: Wastewater generation by small scale industries in selected industrial sectors in India

Industry	Wastewater generation (million litres per day)
Engineering	2125
Paper and Board Mills	1087
Textiles	450
Organic Chemicals	60
Tanneries	50
Pharmaceuticals	40
Dye and Dye Intermediaries	32
Sops, Paints, Varnishes and Petrochemicals	10
Edible Oil and Vanspati	7

Source: Kathuria & Gundimeda 2001, cited in Maria 2003.

However, due to protests and civil engagement, the rules and regulations have been changed in some Indian cities. Delhi, which was labelled “asthma capital of the world” in the 1990s, reduced its air pollution after a massive NGO campaign. The Centre for Science and Environment brought the health risks from air pollution to the public’s attention and achieved changes in the regulations for polluting industries. Delhi’s buses and rickshaws were forced to run on compressed natural gas, which led to a decline in the pollution load. In spite of these exceptions, air pollution in Indian cities is still among the highest in the world. A massive and concerted action is needed in order to reduce this major health threat in the future (Goyal et al. 2006).

The aforementioned examples show some of the determinants of diseases currently present in India’s urban environments. Nevertheless, urban environments have to be understood as being the product of complex processes themselves. Minimising the adverse health effects of environmental pollution would require political will, regulative power and a strong system of governance.

3.2 Poverty and growing socio-economic disparities

The urbanisation process in India, as in other countries, is accompanied by a growing process of social polarisation (Butsch 2011; Sakdapolrak 2010). In the course of rapid economic transitions, changes in lifestyle contribute significantly to changing patterns of disease. The growing middle class – estimated at 300 million people – faces higher risks through non-infectious disease caused by “modern” nutrition, lifestyle patterns, and socio-cultural practices. Shetty points out that there have been great changes in the consumption of animal products, sugars and fat. A study from Delhi shows that wealthier population groups consume more fat than the urban poor and the rural populations. This puts them at a higher risk of obesity and other related diseases, such as diabetes or coronary heart disease (Shetty 2002: 179; Singh et al. 2006).

At the same time, urbanisation is associated with growing urban poverty. Bähr & Mertins (2000: 20) call it the “urbanisation of poverty”. The absolute number of the urban poor has grown from about 60 million (1973–74) to 80.8 million (2004–05). Furthermore, the proportion of urban poor in relation to the total poor population increased from 15% (1960) to 25.7% (2004–05) (Amis 2001: 354; Mehta & Shah 2001: 10; Planning Commission 2008). The extent of urban poverty in India is further substantiated by estimates given by Ravallion et al. (2007: 38), who analysed World Bank data. According to these estimates, more than a third of the world’s urban poor live in India.

Poverty influences people’s health status in many ways. Three will be highlighted here: firstly, it is generally assumed that less income is related to less access to basic health-related goods and services (food, health care). As a result, poor people with less income have an inferior health status (Alsan et al. 2008). As Subramanian et al. (2003) show not only absolute income, but also the extent of income inequality within a neighbourhood, has an impact on health status.

Secondly, as Parnell et al. (2007: 361) remark, the poorest city dwellers are often forced to live in slum settlements, where they are exposed to various health risks. The Census of India (2001) estimates that around 75 million people live in slums; this would account for 26% of India’s urban population (GoI 2010). Living in slums is associated with substandard housing conditions, which can increase vulnerability to disease (Smith et al. 2003). Several studies have shown how different aspects of housing influence health (e.g. Harpham et al. 1998; Hyndman 1998; Marsh et al. 2000). A high population density, for example, increases the risk of respiratory diseases, asthma, tuberculosis and other infectious diseases (Harpham et al. 1998: 136; Marsh et al. 2000; Harpham 2009: 109). It also results in long-

term negative effects, such as an increased cancer risk (Baker et al. 1990). Poor ventilation (Hyndman 1998) and indoor air pollution are also associated with ill-health (Kremer 2004: 72–74).

Thirdly, poverty is frequently associated with poor educational status. The literacy rate of slum dwellers in India is 69% – much lower than among non-slum dwellers (80%) (Chandrasekhar & Gebreselassie 2008: 90). Many studies have shown that education is an important determinant of health (see for instance Grossman & Kaestner 1997; Groot & Maassen van den Brink 2007). Silles (2009: 127), for example, has demonstrated that with one additional school year, the probability of a good health status increases by 5%. The education of a person not only has an impact on the health status of that person, but the accumulated educational status of a household also influences the health status of its members (Lindelow 2008).

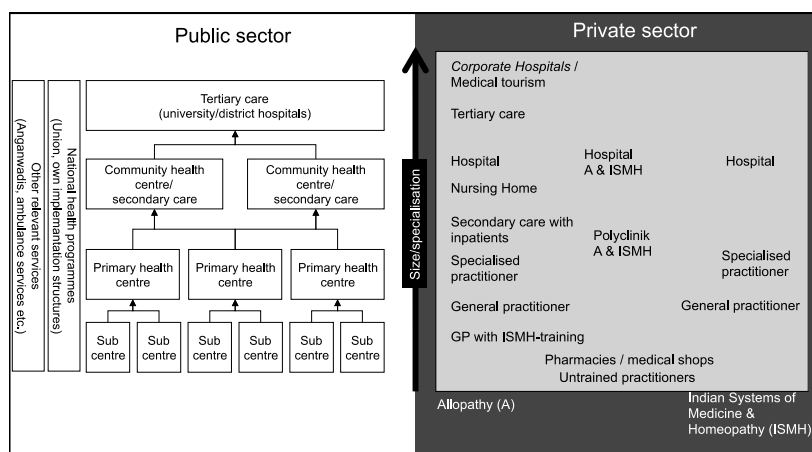
As illustrated, social polarisation in urban India results in many adverse health effects for the poor. On the other hand, an inferior health status may often cause poverty. Whitehead et al. (2001) refer to this as the “medical poverty trap”. High costs for medical treatment, especially in the private sector, lead to high rates of debt. The poor not only have a higher exposure to health threats, but also often times can only cope with disease by burdening their family – socially and financially. Coping with disease thus burdens future generations.

3.3 Diverse health systems favouring the rich

In urban India the health system is highly diverse, ranging from private health care services to public health care to traditional healers. However, the private health sector has gained increasing importance and has grown quickly in recent years. This is surprising because ever since 1946, following the recommendations of the “Bhore Commission”, the Indian government’s official policy has always been to install a state-financed health care system offering universal care at low costs. Contrary to this policy, the level of investment in public health care infrastructure has declined significantly since the release of the New Economic Policy in 1991. “Health for all”, the ambitious goal of the Alma-Ata declaration, which was the guiding principle of the 1983 National Health Policy (NHP), has been abandoned in the 2002 NHP. As Rao (2005) points out, the state’s role will change in the future from providing services to financing services.

In this context, urban health systems are facing various problems. The combination of a growing urban middle class, the growth of urban populations, and stagnation in the public health sector have led to a flourishing private health system in India’s cities (Figure 3). Today India’s health care sector has a dual structure: on the one hand there is a public health sector,

FIGURE 3: Health care providers in India: the dual structure of provision



Source: Butsch 2011.

which theoretically offers services at primary, secondary and tertiary levels free of cost or at heavily subsidised rates. On the other hand, there is a private health sector, offering all levels of specialisation and different systems of medicine at a wide range of costs and quality. While in the public health sector the number of treatment facilities, the available staff and the provision of medicine are completely inadequate, in the private sector quality varies hugely and the cost of many providers is prohibitive – even for the middle classes (World Bank 2001; MoHFW 2002; Butsch 2008). Under the umbrella of private health care we find a vast spectrum of providers. Within this category different problems occur. At the lower end (in terms of prices and quality) untrained practitioners operate. If they practice western medicine, they often prescribe inadequate medicines or treatments. The same holds true for those practitioners who were formally trained in an Indian system of medicine but who are unwilling or unable to practise it. Most of the primary care for the urban poor seems to be provided by these practitioners (Butsch 2011). At the upper end there are nationwide hospital chains, which offer medical services provided by internationally trained personnel in “five star surroundings”. Hospitals run by these companies have up-to-date equipment and in many cases they target an international clientele. These care providers confront civilians with various problems: access to these facilities is restricted to a small portion of the popu-

lation and their patients often undergo unnecessary treatments (Butsch & Sakdapolrak 2010).

The concentration of public, tertiary health centres and impressive private hospitals in cities makes it easy to overlook the fact that there are huge deficits in the provision of health care to the majority of the urban population. Agarwal & Sangar (2005) point out that the access to health care services of the urban poor is comparable to the restricted access of rural populations. The fact that shortages in the rural areas are more obvious, and that health care policies and subsidies focus on the rural areas, result in the neglect of urban public health care systems. With the start of the national rural health mission (NRHM) launched by the Indian government in 2005, the scarce resources of the public sector were diverted to rural areas at the cost of deteriorating services in the cities. Given the rapid growth of India's urban population (see Figure 2), the problems in urban health care will increase dramatically in the future. The prevention and treatment of diseases will remain a privilege of better-off households unless there is a change in policy, an increase in public health investments and new plans to make existing (private) health care accessible to all. As of now, access to health care services is mainly dependent on socioeconomic status. Social polarisation is thus reflected in the huge gap between the ability of the rich and the ability of the poor to cope with ill health. New instruments like the "Rashtriya Swasthya Bima Yojna" (RSBY) insurance scheme are by far not sufficient, as the coverage does not entitle subscribers to use middle- or high-priced private services.

Urban health care systems, especially public (preventive) services, need to be planned and organised according to the needs of the population. Health monitoring systems, gathering data from all sorts of health care providers, are needed to provide preventive services. These systems should target specific diseases and identify shortfalls in the provision of curative services. Today urban health inequalities are strongly influenced by the lack of regulation of the private sector and the lack of investments in the public sector. If the current situation prevails in the future, urban health will impede and constrain development and limit economic growth – not only in India's cities but in the whole nation.

3.4 Increasing disparities in health

Since independence, India has witnessed a steady improvement in the health of its population. The mortality rate fell from 27.4 (1947) to 7.6 (2005) (WHO 2007a: 82); life expectancy at birth has doubled from 34 (1947) to 64 years (2007) (Nanda & Ali 2006: 18; WHO 2007b; UNICEF 2010); and the infant mortality rate fell from 146 to 57 (2005–06) (Nanda & Ali 2006:

18; WHO 2007a: 84). As Betz (2002: 462; see also Agarwal & Sangar 2005: 141) notes, this positive trend has slowed down since the 1990s while the mortality rate (under 5) decreased between 1981 and 1991 by 3.6% annually; the comparable reduction between 1991 and 1996 was only 2.0% (Peters et al 2002: 273).

The current pattern of disease (causes of deaths and Disability Adjusted Life Years – DALYs) shows that India is presently suffering from a double burden of disease (Misra et al. 2003: 64). It is in the midst of an “epidemiological transition”, in which communicable diseases continue – although decreasing – while the proportion of non-communicable diseases begins to expand.

In 2005, infectious diseases caused 36% of all deaths in India. Among them, tuberculosis is a major public health issue in India. India contributes up to one third of the global amount of TB cases (NCMH 2005: 30; Nanda & Ali 2006: 21). Every year about 2.2 million new cases are added to the 15 million active cases (Nanda & Ali 2006: 21). Tuberculosis is responsible for approximately 450,000 deaths annually (NCMH 2005: 30). Among women of reproductive age, it is the main cause of death (Nanda & Ali 2006: 21). HIV/AIDS is also spreading rapidly. In 2003 the number of cases increased by 610,000 from 4.5 to 5.1 million (Nanda & Ali 2006: 21). Together diarrhoea and acute respiratory infections account for just under a fifth (1998) of the total diseases in India. They are responsible for 25–30% and 20–35% of deaths among children under five years (Nanda & Ali 2006: 21–22).

In 2005, 53% of all deaths were due to non-infectious diseases. Among them cardiovascular diseases played a dominant role, being the cause of more than half of deaths reported in 2005 (WHO 2007a: 89). The importance of high blood pressure, diabetes and morbid obesity also continues to increase. Diabetes in particular is an “urban disease”. According to the National Family Health Survey 2005–06, the prevalence of diabetes in urban areas is 1,374 per 100,000 among women and 1,383 per 100,000 among men, compared to 641 per 100,000 among women and 860 per 100,000 among men in rural areas (IIPS & Macro International 2007: 421–422).

Peters et al. (2002: 278) remark that urban dwellers have a consistently better health status than rural populations: the infant mortality rate in urban India is 41.7, in rural areas 62.1 (2005–06). This figure hides the fact that there is a marked intra-urban health disparity, which is particularly stark in fast-growing million- and megacities (Asthana 1995: 177). Table 3 shows that the health status of the urban poor is on a par with that of rural populations (Singh et al. 2004: vii; Agarwal et al. 2007: 122). The infant mortality rate among the urban poor (54.6) is significantly higher than that of the non-

TABLE 3: Selected indicators for the health status of urban poor and urban non-poor and overall rural population in India (2005-06)

Health indicators	Urban poor	Urban non-poor	Rural population
Women age 20-24 married by age 18 (%)	51.5	21.2	52.5
Women age 20-24 who became mothers before age 18 (%)	25.9	8.3	26.3
Higher order births (3+ births) (%)	28.6	11.4	28.1
Births assisted by a doctor/nurse/LHV/ANM/other health personnel (%)	50.7	84.2	37.4
Children completely immunized (%)	39.9	65.4	38.6
Children under 3 years who are underweight (%)	49.8	26.2	45.6
Under-5 Mortality (per 1000)	72.7	41.8	81.9
Households with access to piped water supply at home (%)	18.5	62.2	11.8
Household using a sanitary facility for the disposal of excreta (flush / pit toilet) (%)	47.2	95.9	26.0
Women age 15-49 with no education (%)	49.8	13.7	49.7

Source: UHD 2005-06 based on Indian National Family Health Survey 2005/2006.

poor urban population (35.5). Other health indicators, such as the proportion of underweight children (see Tab. 3) or the proportion of anaemic women, are even worse among the urban poor than among the rural population (UHD 2005–06: 2). Worse still, intra-urban health disparities continue to increase. Between 1992 and 1998 the quotient of child mortality ratio in the poorest quintile compared to the richest quintile increased from 2.5 to 3.5 (Singh et al. 2004: 10). Singh et al. (2004: vii) observe that the urban poor are not only more vulnerable to infectious and water-borne diseases but also to non-infectious diseases. Peters et al. (2002: 202) point out that this might be related to the higher consumption of tobacco and alcohol. Nevertheless, the prevalence of non-infectious diseases such as diabetes is much higher among wealthier groups.

Marmot et al. (2008: 1661) state that health inequities are a global phenomenon and that in all societies “social injustice is killing people on a grand scale”. In urban India these health inequities are partly responsible for the persistence of socioeconomic differences. For example, higher mortality rates among the breadwinners in slums result in higher school dropout rates, as the younger generation has to contribute to the family income. In this way, health status, social processes and social structures, as well as economic development, interact and reinforce each other.

4 Conclusion

The proposed framework for the analysis of urban health applied to the Indian context has demonstrated that urban health is closely connected with the specifics of India’s urbanisation. India’s urban environment, social structures and urban health care systems, the major determinants of urban health, are currently undergoing drastic changes. At first glance, the health status of India’s population has improved tremendously since independence. Various differences in lifestyle and in access to resources result in polarisation: the most healthy and the least healthy citizens now live in urban India.

However, poor health is not only a problem of the urban poor. Urban health problems are already, and might become increasingly, an obstacle for India’s development. They retard economic productivity and they contribute to the perpetuation of differences in income. Health is not only influenced by environmental and social factors, it is itself an influencing factor in a complex and interrelated urban system.

Several policy implications and research desiderata arise from this analysis. First, the most pressing issue is to bring urban health on the general political agenda. Setting regulations for the flourishing private health care sector, increasing access to health services for the poor and improving the urban environments are the most important areas that require urgent action. Secondly, research should provide the basis for informed decisions by politicians. Up until now, urban health problems have not been fully understood by India’s politicians, parties and officials. Differentiated analyses of the burden of disease among urban populations are not available; therefore, specific interventions are difficult to plan and to implement. Convincing solutions for fighting the annual epidemics of malaria and dengue are still lacking. New diseases, such as HIV/AIDS, have not yet been analysed with regard to their impact on the social system in urban India.

By the middle of this century, every second Indian will live in cities, mostly in megacities. It is obvious that India’s unhealthy urban growth needs to be transformed rapidly in order to provide healthy cities as living environ-

ments for half of the Indian population. Effective, knowledge-based health governance is needed in planning and politics if poor urban health and health inequalities are to be overcome.

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