

Proposal for grouping the Papers in Subsessions in the Session Human Health in Urban and Peri-Urban South Asia

Introductory note on urban Health

C. Butsch, S. V. Saravanan, P. Sakdapolrak

SUB SESSION 1 - HEALTH SYSTEMS AND POLICIES

Urban health problems and patterns in south india. A case study on bangalore city and cantonment

Shadaksharaiah

The development of modern health care system has reduced the impact of grave diseases like Plague, Small-pox, Malaria and Enteric Fever which has resulted in reducing death rate and brought down rate of infant mortality considerably. The concern of public health and "great sanitary awakening" led to the Public Health Act of 1848 in Great Britain. India was then a country not only illiterate, but entirely ignorant of the simplest rules of hygiene. The system of medicine in India decayed in the course of time.

Modern public health services are concerned largely with preventing disease, prolonging life and advancing health through organized efforts. These comprises; sanitation, control of contagious infections, health and hygiene education, early diagnosis and preventive treatment and good living standards. The provision of medical relief on western lines for the teeming millions of India was a gigantic task and the facilities always fell short of the need. Efforts were made to assess the growth of public health and sanitation of urban health care of the growing city of Bangalore. The introduction of Vaccination which was introduced in the State due to illiteracy and unwillingness of the natives did not show any active interest in their endeavor. There were many difficulties in the way of medical services such as the size of the area, the number of people to be reached, financial constraints, lack of infrastructure, equipment and trained sanitarians, ignorance and fatalism of the masses and their unwillingness to submit to vaccination. Against such odds, the local self - governing institutions waged a bitter struggle armed, but still could not reach the expectations of the time.

Twentieth century Bangalore witnessed growth of population from a little over a lakh in the beginning to the sixty lakhs by the end of this century leading to inadequate infrastructure and basic facilities like land, water, sanitation, transport and recreational facilities such as tanks, lakes, parks, hilltops and greenery. One of the major reasons for such deterioration is the extinction of water bodies in and around Bangalore city. Bangalore was served by a large number of tanks and lakes which completely took care of its water requirements where as now it started facing a major threat because many of these tanks, lakes and water sheets submerged with the rise of unplanned and unorganized residential and industrial layouts. This forced heavy pressure of labor population leading to the growth of unorganized and unauthorized slums all over Bangalore complicated the problems of public health and hygiene drastically. But it has become challenge to the governmental organizations and agency institutions not only to protect the health and hygiene standards of city but also its sustenance. In view of the global enlargement of Bangalore city with multi dimensional growth and people thronging into city day in and day out forced in creating new outlets and new layouts without sufficient facilities. Thus, urban health issues remained a

matter of great concern and debatable ones. Bangalore as a metropolitan is an example for all these issues hence taken as a case study.

The paper purports to highlight a brief historical sketch by revealing the problems of metropolitan's especially health and hygiene. An attempt is made to review various locations, development of health and hygiene in the changing pattern of urban growth in 20th century South Asia

Health policies in India and Bangladesh. An investigation based on institutional theory

E. Graner

When so-called developing countries embarked on processes of "modernisation", this often went along with rather hegemonial definitions about modernity and development. During these processes, the health sector was increasingly defined in terms of (Western) scientific knowledge and standards of living, based on allopathic approaches to curative and preventive treatment and longevity. This was crucially triggered by educational elites with their rationality deeply rooted in a Western educational background that also defined their social positions.

Based on this understanding the paper will discuss health policies from the perspective of discourse theory. For analysing these different approaches, institutional theory can provide a powerful framework, as discussed by D.C. North and G. Hodgson. Thus, any health policy is primarily seen as the outcome of (re-)negotiation processes between a variety of agents (stakeholders) based at the national and local but also at the global level. Secondly, it is a crucial argument from the side of institutional theorists that policies are not necessarily made to be socially efficient but that they represent the power positions of those (re-)defining policies.

The paper will present an analysis of current health policies in two countries, India and Bangladesh. In both countries, "Health For All" Policies were promulgated as the first step to adopt global policies, following the semial conference at Alma Ata in 1978. Yet, this was drastically revised when states were pressurised to reduce funding of the sector during the SAP-policy period, an intervention that was strongly opposed in India. Recent health policies reflect the need of aiming at achieving the Millennium Development Goals. Institutional arrangements for health care have been substantially reformed during the past decade, aiming at private-public partnership models, particularly in urban areas. At the same time, it is there were disparities in health as social disparities, in general, are highest. The paper is based on a review of relevant national and global policies, as well as project evaluation report and critical reviews by scholars. In addition, interviews with key informants in the health sector have been conducted in both countries and in Nepal.

Utilisation of and satisfaction about major health care facilities among urban poor living in Dhaka

MMH Khan, Oliver Grübner, Patrick Hostert

Introduction: Information on health seeking behaviour and health care utilisation has important policy implications in health system development. Studying health seeking behaviour is particularly important for various reasons. For example, about one-third of the developing countries' urban populations are living in slums and differ from non-slum populations in terms of e.g. socio-economic, housing and environmental conditions. In addition, they often represent higher burden of health problems (e.g. water-borne diseases)

as compared to non-slum populations. They are often neglected and unequally treated by the city authority. Utilisation of different health services are influenced by various factors ranging from individual, household, community, to regional characteristics including perceived benefits of health care, satisfaction about the quality of services, and cost of health care utilisation. In this paper, we attempt on the one hand to determine the major types of health services used by the urban poor living in slums, and on the other hand attempt to determine the factors that influence to use of the most important services.

Methods: Baseline data of a one-year cohort study conducted in early 2009 in Dhaka were used. Information was collected from a total of 1,938 adults living in nine slums which are geographically well distributed in Dhaka. Several socio-demographic, environmental and behavioural variables such as area, age, sex, education, marital status, family income, housing conditions and smoking were analysed using appropriate statistical techniques.

Results: The major sources of health care services utilised in the last month preceding the survey are pharmacies (40.4%), government hospitals (12.5%), private clinics and hospitals (4%) and MBBS (Bachelor of Medicine and Bachelor of Surgery) doctors (2.0%). The utilisation pattern of health care services differs significantly by slum areas. The utilisation of pharmacy was significantly higher among people belonging to higher age groups, males and lower working hours/day. Similarly, use of government hospitals was associated with age, marital status and birth place. Better education was a factor for the utilisation of private health facilities and a trained medical doctor (MBBS). Higher income was also associated with the utilisation of MBBS.

Conclusion: In the informal sector mainly pharmacies constitute the main segment in the provision of health care in Dhaka for the slum people. This sector requires strengthening and back up support to improve the quality of services.

Urban-migrants, health-burden and citizenship. Status and policy initiatives in India

A. Shah

Increasing urbanization in India poses specific challenges in terms of ill-health, limited access/affordability to medical services and loss of work and livelihood. The challenges get multifold for the migrant population as they strive for recognition and citizenship in the urban areas. Despite certain apparent advantages, migrants in urban areas often fail to obtain legal space to live. This holds true particularly for the circular migrants who work spent part of the year in urban economies while retaining their links with the rural areas. In the event of ill-health these migrants, often single men, have to revert back to their homes in rural areas, which in any case is ill-equipped with proper health services.

Overall, the scenario suggests a highly extractive form in which the urban economy deals with the migrant workers; the situation becomes worse when they fall sick or their ability to perform hard manual work declines owing to unregulated labour processes on the one hand, and absence of entitlements to claim subsistence allowance for sustaining their livelihood for the remaining part of their working life. Lack of proper housing also exposes these workers to the air and water pollution in the cities. While they share their predicament with the rest of the informal sector workers, being migrant in the urban areas makes it worse.

The paper will examine the present scenario and discusses the implications of the recent policy initiatives for providing support to the migrant workers, especially their living conditions

and health services in urban areas. The analysis will be based mainly on secondary data pertaining to conditions of housing and amenities among major urban centers in India, and will also draw upon experiences of NGOs working with the migrant workers in the city of Ahmedabad in Gujarat.

SUB SESSION 2 - URBAN HEALTH DISPARITIES IN SOUTH ASIA

Mushrooming of slums in bangalore city and cantonment. Health and hygiene perspective

G. Ramesh

In upcoming metropolitan cities, the creation and existence of slums is perhaps a phenomenon which cannot be avoided due to the growth of innumerable industries, which provide employment opportunities for skilled and unskilled workers and therefore attracted a large number of people into the city from the neighboring regions. However, the housing facilities made available in the city has not kept pace in providing planned residential accommodation thereby leading to the growth of innumerable slums in and around the city base. The movement of heavy human traffic, in search of their destiny moved towards the city base and encountered problems of housing, water, lighting, roads and other basic amenities. When the masses of unskilled labor poured into the city they faced inadequacy in terms of financial and materialistic ability to settle in city surroundings. Finding no alternative they started settling within the vicinity of the factory even though it was congested. Many a times they had to do with out any basic amenities, living by the side of railway tracks, roadsides and drainages. These regions grew into slums with a disproportionate population and un-authorized living, creating more problems to the civic life of urban surroundings. Such slums became prone to all types of diseases and epidemics and created hazardous condition in the urban surroundings.

Bangalore, due to its equitable and salubrious climate very soon developed into an important trading and administrative centre during 18th Century. The fall of Tipu sultan in 1799, the British restored Mysore to Wodeyar's family and retained Srirangapatna fort. As climate did not suit the British Army, it was transferred to Bangalore in 1807 and Cantonment area was developed near Bangalore Pettah or city. Bangalore became a twin city, with the pettah whose residents were predominantly Kannadigas and the Civil and Military station better known as Bangalore cantonment whose residents were mostly migrant laborers from Tamil Nadu. The demographic explosion has invariably contributed to the rise of many slums and created their hazardous impact on urban economy. A rough estimate of 126 slums with a population more than 1.8 lakhs people residing with sub standard life styles and meager facilities. The overgrowth of city has also led to unplanned urban expansion with multifarious problems like good health, hygiene, shortage of water and contaminated drainage as well as basic necessities of power, transport, and sanitary facilities.

The government along with the help of N.G.O.'s is making its earnest efforts through various policies and programs to solve these issues and problems there by to make a civilian environment fit for living. In view of all these, the present study would be to make an earnest effort to not only in identifying the problems of slums by the Governmental organizations but also the action taken by the semi governmental agencies and N.G.O.s towards the redressal of the urban problems.

Health Disparities in the Emerging Megacity Pune/India

M. Kroll

Target of the research project is to understand and explain differences in health status between different socioeconomic groups in the emerging megacity Pune - against the background of the urbanisation dynamics in the newly industrializing countries of South Asia.

While the general interrelationship between socioeconomic disparities and health status has meanwhile been well investigated in western societies, there is a research gap in respect to the concrete health relevant consequences of profound societal polarization processes as they are observable in the megacities of the newly industrializing countries. The existing research studies on Western or North-American societies are not transferable to Asian megacities as their social, political, economical, and ecological framework is differing in many respects. Hence not only the health determining factors, but also the culturally influenced perception of health and disease as well as the local health system and national health policies are of a different reality.

Furthermore, most studies on human health in India focus on the differences between urban and rural health, assigning urban populations a better health status because of better health infrastructure in cities. This assumption often anticipates a differentiated reflection on urban health problems of different groups; moreover, a comprehensive health monitoring system, which could provide information on the burden of disease of different socioeconomic groups as well as on general health trends, does not exist in India. These deficits hinder the adaptation of the local health infrastructure to the local needs of different population groups to improve urban health.

In the paper findings from a household survey in Pune covering 900 households in six different areas with different socioeconomic profiles as well as expert interviews with medical practitioners will be presented. Based on these results, health transition scenarios for (mega)urban societies will be discussed.

The spatial variation of well-being in slum settlements of Dhaka, Bangladesh

O. Gruebner, Md. Mobarak Hossain Khan, Sven Lautenbach, Daniel Mueller, Alexander Kraemer, Tobia Lakes and Patrick Hostert

The growing number of people living in slums and unhealthy environments is of rising concern in rapidly urbanising megacities. Urban health is determined by a wide variety of factors which can be grouped into the social environment and the natural and artificial physical environment. It can be said, that the health status of urban populations is a function of living conditions which are influenced by individual, household, neighbourhood, municipal, national and global developments. Epidemiologic studies concerning public health in slum communities have so far aimed at the comparison of at least two population groups, e.g. a slum community and residents of an urban affluent area. Only few studies exist that consider the spatial dimension of health outcomes within urban slums. Investigating the spatial variability of health status helps to identify patterns of good or poor health at different spatial scales thereby providing insight into the complex causes and controls of pathogens leading to ill-health.

The goal of this spatially explicit epidemiological approach is to investigate the spatial variation of health status within specific slum settlements and to compare the patterns between different slums of Dhaka. We focus on self-rated mental health status of slum dwellers measured by the WHO-5 Well-being Index. For quantifying health status in a spatial

context the framework of spatial statistics is used. Autocorrelation analysis is applied for different neighbourhood relationships in order to identify the spatial patterns. We further check for local clusters to gain knowledge about the type and location of specific clusters of WHO-5 scores at the household and neighbourhood level.

We were able to show that global and local clusters are present in several spatial relationships. This supports our hypothesis that WHO-5 scores are structured at different spatial scales. Since the various methods used in our analysis point to the same results we interfere that health status is unequally distributed in and between the slums with clusters of poor and also good well-being in the neighbourhood as well as in the household level. We argue that several spatial relationships should be considered in order to adequately identify the patterns when health is studied in a spatial context.

Foodways and nutrition in urban India: changes and counter-changes

B. Sébastia:

India is well known for its high rate of undernutrition which is evaluated to 20% by WHO. If malnutrition is related to undernutrition, it is aggravated by new factors notably change of food, and lifestyle which affect mostly urban population. As the consequence of these changes, metabolic syndromes (diabetes, dyslipidemia, obesity, hypertension) and their related diseases (cardiovascular disorders, nephropathy, retinopathy, arthritis) are increasing among middle class and slums' populations. These disorders, which are expected to increase strongly in the next decades, constitute an important problem of public health to which India will have to face.

Taking in consideration aspects such as agriculture policy, economy, sociology as well as Indian culture, this communication will be an attempt to analyse the change of nutrition and foodways. It will also explore some initiatives which begin to emerge to counteract bad foodstuffs and habits in order to prevent metabolic disorders.

Assessing Differential Health Vulnerability at the Slums in Chandigarh, India

S. Mohapatra

Rapid population growth, high densities, poverty, differential access to housing, public services, poor sanitation and infrastructure led to increasing vulnerability in India's urban centers. "Double Exposure" i.e. Economic Globalization & Global Climatic Change (Leichenko and O'Brien, 2008) has further degraded the resilience and coping capacities of poor and vulnerable communities that constitute a sizeable population of most Indian cities where vulnerability contributes more to overall risk than hazard. This has placed further stress on already overstretched coping mechanisms of Indian cities. These above mentioned factors and circumstances have implications on urban health. It is therefore imperative to understand the transformative processes in general and health vulnerability in specific. In India, slum and its residents are considered vulnerable where slum populations are generalized as a group and vulnerability as homogenous which is not correct. In this study, 18 slums in Chandigarh, has been selected as sample. Chandigarh is one of the planned cities of post-independent India, yet it has more than 30% population residing in the slums. A composite index of bio-physical, socio-economic and institutional indicators (Birkman, 2006) related to health vulnerability functions like susceptibility, sensitivity, exposure and adaptation measures according to the local context was developed. Indicators like location, house structure, services, health status, education, employment etc. on which health vulnerability

was calculated, and slums were categorized in three groups: extremely, moderately and less vulnerable. The indicators of individual slums were analyzed with the support of inputs derived through participant observation and discussion with community representatives. The framework helps in identifying specific vulnerability function which made a particular slum vulnerable so that actions are suggested for improvement of that particular function.

An adaptive ecosystem management approach to human health in Chennai, India

T. Vasantha Kumaran, Ramu and P. Jayashree, York-Madras Project Team

Problem Investigated: The paper is a re-look at a case study of human health in Chennai slums and describes, briefly, a 7-year study of water-human health relations in an 'objectionable' slum, known as Anjukudisai, bringing out certain newer arguments about the health vulnerability and resilience of the slum population of Chennai. The paper describes the results of the study following closely an adaptive ecosystem management framework used in the study.

In order to understand and deal with human health issues, it is useful to recognize human beings as actors within complex interrelated and dynamic systems. Such systems have social, cultural, economic and political aspects. They also are interconnected with biological and physical elements.

Human behaviour, constrained by socioeconomic factors, often leads to ecosystem degradation and frequently causes reactions that jeopardize people's health. Furthermore, the structure of human institutions often prevents holistic integrated thinking and action. Urban health issues are closely linked to both environmental and socioeconomic conditions. The impact of environmental degradation is often most severe on the poorest segments of society: slum dwellers, women, children, and the aged.

The Ecosystem Approach: The ecosystem approach provides an integrated framework for describing socio-ecological systems and identifying key issues and stakeholder concerns, analyzing problem situations and alternative courses of action, and designing and implementing adaptive management programmes to resolve priority issues. The ecosystem approach relies on systems methods and collaborative, participatory processes in all phases of the framework:

Phase 1: The description phase involves the development of a conceptual model of the ecosystem and development of gender- and age-aware stakeholder issues frameworks.

Phase 2: The analysis/design phase explores alternative courses of action, develops a communal vision of how to proceed, and designs an adaptive management programme to realize the vision.

Phase 3: The implementation phase involves an on-going cycle of governance, management and monitoring activities to transform the communal vision into reality.

Results and Discussion: Anjukudisai is located on the bank of the Cooum River, with 256 family units having 5.0 as average family size and 1,500 as estimated population. The people of this slum live in constant fear of relocation but they were there for long years. The social structure of population is of men with no permanent income and they are addicted to alcohol and substance abuse. The children are faced with the problems of malnutrition and there are many school dropouts. The lifestyle of youth is in such a sad situation that they spend their time in gambling and anti-social activities. There are cases of prostitution and juvenile delinquency. Women are subjected to lot of stress and health related risks. It is

disturbing to notice that there are HIV positive cases. The most important issues identified were: slum as a location of most-vulnerable populations and objectionable conditions; surface water quality and water-borne diseases (for example, typhoid, cholera, diarrhoea, dysentery); public participation in management of environment and health problems; and malaria. Also indicated were: air pollution and respiratory illness; lack of coordination and cooperation among government agencies/departments; poor governance; solid waste; tuberculosis; filariasis; and a variety of other pathogenic parasites and enteric pathogens. The paper presents a community action plan for resolving the human health issues and the related problems identified, with the participation of the slum people.

Demographic and socioeconomic vulnerability of infectious childhood diseases in urban India

S. Ghosh

Although remarkable declines in infant and child mortality have been observed in developing countries during the last quarter of the twentieth century, the incidence and the prevalence of infectious diseases, particularly acute respiratory infections (ARI), diarrhea and measles among under-five children still persist at an alarmingly high level, especially in sub-Saharan Africa and South Asian countries. Although health profile of a population depends on combinations of many factors such as environmental, social and biological risks, proportion of population facing these different risks and the sociocultural-demographic profile of a particular region or space. While pathogens have been identified as causes of disease, exposure to them, while necessary in the contraction of disease, is not sufficient to cause disease. Inadequate access to and utilization of basic services, amenities and opportunities including preventive and curative healthcare are the most important reasons for the higher incidence and prevalence even in urban areas because of rapid and unplanned urbanization coupled with globalization. Against this backdrop the present study would like to investigate the demographic and socioeconomic risks of infectious childhood diseases, especially that of diarrhea and ARI in urban India by using National Family Health Survey (NFHS)-3 data. It is expected to find differences in levels of infectious diseases related to economic class, urban/urban-slum location, and social class, even after controlling other potential confounding variables. It is hypothesized that prevalence of infectious diseases would be higher among slum children compared with urban non-slum children, particularly among the lowest social stratum. The preliminary multivariate logistic regression analyses show that slum children are more susceptible to infectious diseases compared to non-slum children, while household economic condition, access to basic amenities such as potable drinking water and sanitation facility, maternal education, mass media exposure and child immunization etc. have very significant influence on the prevalence of infectious diseases in urban India.

SUBSESSION 3 - CASE STUDIES ON HEALTH IN URBAN AND PERI-URBAN AREA

Positive changes and impacts on the Human Body and Health system through consumption of Rooftop Rain water with indigenous filtration media's" Karimnagar District, Andhra Pradesh, India.

R. A. Babu

From the ancient periods of times, the civilization started at water resources and formed as basis for all living organisms. This made the living organisms including human to draw water from the various forms as it is available in various forms. This utilization has been started

increasing over a period of time with increase demand in various forms. The utilization of water resources not only confined to the living organism but also to the industries, infrastructure and to the other developmental activities. Based on this utilization, water is being used enormously over this period. At the end of the day, when looked back to the utilization of water with increased demands conservation of these resources is found utmost important. Thus the conservation of water resources and judicious utilization has been simultaneously increased over this period. At the same time, with increased human activities on the earth system made the changes in the climate due to which rainfall pattern and its intensities has been changed and thus resulted into the erratic rainfall in most of the areas. This erratic rainfall has resulted in various ways on the earth system which made the living organisms to survive difficult. One of the main affect can be seen in the form of drought in the agricultural areas i.e., the rural areas wherein the shortage of water is the main cause for the survival of human and animal. Sometimes, this made the rural farmers to migrate to other urban and sub-urban areas in search of their livelihood by selling their livestock. Some of the research studies also found that this erratic rainfall has also impacted on the economic growth of the country with lower agricultural production. Though projects and programmes have been implementing in various forms but the availability of the water either for drinking or for agriculture is one of the main concerns. It was also found that due to unavailability of water for drinking purpose most of the local water bodies are being used and found that these are most vulnerable in contamination stage. With this various types of diseases wherein farmers and villagers are unable to afford the diagnosis consultation fee and at the same time all their monetary resources are being spend on this instead of their for livelihood consumption. As we all know that Rooftop rain water by harvesting is the emerging and promoting technology by various organizations and Government. Hence, a project-cum-study on "Rooftop rain water harvesting" has been implemented in Karimnagar district of Andhra Pradesh. One of the main objectives was to monitor the "Positive changes and impacts on the Human Body and Health system through consumption of Rooftop Rain water with indigenous filtration media's". It has been found that the local water bodies have found with high Fluorides, Odour, Colour, Total Dissolved Solids (TDS), Total Hardness, Nitrites and Iron are the major chemicals and elements which are affecting the community in various biological problems. These are mainly on teeth decay, bone pains and its disintegration, Spinal cord problem, Stomach pains, body pains, Headaches, Joint pains in legs, hands and leads to limbless for human and livestock, Gas formation in the stomach, Indigestion problem, Stone Formation and affecting kidneys etc. As the existing water bodies contaminates with various types of physical and chemical elements, it was found that though these bodies are not fit for consumption but there was no alternate for the villagers. At the same time, fluoride content was found much higher (3 mg/lit) compare to all other parameters due to which disintegration and strength of bones along with severe pains was found. Because of this severe impact, human in and around the village has lost interest and also could not able to keep much afford and strength on the other regular activities such as agricultural, livestock and other personnel activities. The main impact was observed with the fluoride affected people was to spend most of the time at one place either by laid or sit at one place for certain period in a day. This will help them to reduce the pain and relax to some extent for the efforts which they put for their own few activities. This project has made some changes in these biological systems of the human and also reduced the investments that are being made on the diagnosis with the consumption of rooftop rain water. The above impact has been observed with detailed transect walk, focus group discussions and interactions with the youngsters and old-age people about the change in the taste and quality of water which were being consumed the rooftop rain water after filtration. This consumption is being made through filtration of rooftop harvested water through a charcoal filter and being stored in the storage tank. The impact has been found in various forms viz., Drastic change in the Biological pains & problems, Diagnosis towards the diseases and pains has been reduced,

No doctor fee for 4 - 6 months, Availability of potable water for the pregnant women, Using this rain water for Cooking & Drinking and utilizing for 6 months, With the usage of Rain Water, Fetching for water is reduced, Water available at door step, Rest of the house holders coming forward to take up the Activity, People from nearby villages are coming and learning & sharing the experiences about the biological impact, construction, utilization and maintenance of the RWHS. Hence, it has been proved to the larger extent that the consumption of rooftop rain water with different and advanced filtration systems can result in the Positive changes and will have greater impact on the Human body and their health system.

Slums as a narrative machine. Urban health constructs of Chennai slums

J. Nandhini et al., T. Vasantha Kumaran

The Purpose: One of the dominant concerns of the present age is improving the living conditions of the rapidly increasing population, living in cities of the emerging economic giants. Beginning in 2007, more than half the world's population will live in cities. Urbanization in India has seen faster growth in population residing in slums, which is about 5-6 per cent per annum. This paper has the purpose of relating some of the urban health constructs of the people of select Chennai slums and the discussion is on discourses concerning: health perceptions, including epistemologies, influences of socio-cultural norms, gendered perceptions and relations to health and (d) exposures and vulnerabilities.

The authors recognize the slum communities of Chennai as narrative machines, which are capable of elucidating their urban health constructs as they see them. Hence, some perspectives recounted through narrative discourses are pooled together here for insights into the working of the narrative machines – two Chennai slums: Anjukudisai and Kalyanapuram.

Methodology and Research Questions: Narrative analysis is a new strategy for medical geography. It works with cognitive methods, focusing on the cultural behaviour of the vulnerable in the two slums. Discourse analysis represents the voices of the vulnerable in the slums. The constructs discussed are those that have emerged from the narrative and discourse analysis. The research has explored the questions that follow: How do people conceptualize health? What do the vulnerable do to continuously cope with water-related risks and to maintain and protect their health? What are the constraints and the enabling factors for coping and adaptation among the vulnerable? In what way is coping a negotiated process?

The Constructs: Vulnerability and capacity to cope are the two sides of the same coin. The more one is vulnerable, the less one has the capacity to cope, and the more one tends to adopt coping mechanisms. And culture is fundamental to understanding health and medicine because personal health behaviours and professional practices of medicine are deeply influenced by culture. Men and women respond to health differently: men show neglect whereas women show great concern, for themselves and the dependent. Some of the crucial constructs of the slum communities are:

- For women, 'absence of disease' is a sign of good health.
- For men and women, 'being active and able to do regular work is a symptom of good health'.
- Women think of 'body resistance or stamina as good health'.

In their discourses, the constructs have taken several different forms. Some of them as narratives are:

- We have food but disturbance of mind makes us restless, unable to eat.
 - If we are of free mind, then we can avoid sickness and have a long life.
 - An unclean slum man may be healthy, while a woman with clean clothes and living in more spacious house, with hygienic surroundings, could be afflicted with major illnesses.
 - Disease is not a result of cleanliness and hygiene, for having been here for more than 30 years, nobody in my family has ever been sick.

The paper examines and analyses the meanings and implications of the constructs and narratives for coping and adaptation and then generates strategies for overcoming vulnerabilities.

Water, sanitation and health in two villages of Tamil Nadu, India

N. Annammadevi, T Vasantha Kumaran

Problem of Analysis: The water supply and sanitation programmes of the villages in Tamil Nadu, India are *government-provided* and *supply-driven* and traditional customs and practices impact on the community and household management of health. Without doubt, the village water supply and sanitation facilities are unsustainable and hence jeopardising the health of the people they are supposed to protect.

Research Methodology: The research here adopts participatory approaches to learning, understanding and generating workable strategies, and attempts to provide a case study, which can usefully inform policy. The study also uses questionnaire survey and key informant interviews to reach definitive conclusions on the water supply, sanitation and health question.

Study Area: The paper focuses on the water supply, sanitation and health situations in two villages, namely, Silamalai (of Bodinaickanur taluk) and Pottipuram (of Uthamapalayam taluk of the district of Theni) in Tamil Nadu, India. As villages under the grip of desertification for long years, the two are the representatives of such villages along the foothills of the Western Ghats, more particularly of those in the semi-arid tracts of Tamil Nadu. The cultural practices and norms of the people greatly impinge on the sanitary and health practices of the two communities and the study thus offers a case of academic as well as practical significance.

Findings, Conclusions and Suggestions: A large majority of 73.4 per cent of the people does not boil the water and drink as it comes whereas 75.5 percent agree that contaminated water causes sanitation and health problems; 36.7 percent put their garbage into the drain and 75.5 percent using open defecation. They are a major health problem: 51.1 per cent of the people are affected with diarrhoea, 20.3 per cent by cholera, and 8.2 per cent by chicken pox.

The major conclusions of the study are that: there is a gap between policy and practice; limited resources have been invested in sanitation; consultation between governments and the community has been absent; social classes and caste-based practices increase the complexity of establishing sustainable water supply and sanitation; people's perceptions affect water supply and sanitation management; communities depend blatantly overtly on government to provide and maintain public facilities; and mismanagement of resources has led to water scarcity.

The paper suggests policy changes and interventions in regard to water supply, sanitation and health in rural Southern India, keeping in view the limited nature of generalization from the two villages for an entire, vibrant region of India. 'There are lessons to be learned from the villages' is however beyond question.

Water use and periurban health: emerging issues in South Asia

V. Narain

This paper describes the various ways in which urbanization processes and the policies and institutions shaping them affect the health and well-being of periurban residents in South Asia with regard to the access to and consumption of water.

The word 'periurban' usually denotes areas at the peripheries of large cities. These may be villages bordering cities, or unplanned settlements at their periphery. Many of these lack formal tenorial status, and are outside the ambit of organized sources of drinking water supply. In periurban Delhi, this means that the residents resort to contaminated groundwater, exposing them to various waterborne diseases. The wide variations in access to safe water and sanitation between the residents of the core and periphery explains the incidence of several skin diseases among the latter. In periurban Gurgaon and Faridabad, two emerging cities of Northwest India, residents have lost access to water of a sufficient quality and quantity as lands on which water sources are located are acquired for urban purposes; factories relocated from the city in response to Supreme Court orders to keep the main city clean contaminate local aquifers, and construction of highways disrupts water collection routes. In India and Pakistan, sewage based irrigation is emerging as an important source of irrigation supporting periurban agriculture. Though the WHO advises its treatment before use, the use of untreated sewage water has led to the increased incidence of disease among the irrigators as well as consumers of sewage irrigated crops. Besides, in some parts of the region, the presence of migrants and the element of 'anonymity' associated with being a periurban resident has been associated with unprotected sexual activity and increased incidence of AIDs. The paper focuses on the policy and institutional issues because of which these problems arise and the interventions needed to address them.