

# IMPORTANCE OF HEALTH INFRASTRUCTURE AS AN INTEGRAL PART OF URBAN DEVELOPMENT IN INDIA

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## ABSTRACT

The health infrastructure plays an important and integral role in development of any society. In terms of public health, these infrastructures are the formal and enduring structures that support public health. Unfortunately, during early days health infrastructure and health scenario in India was very poor. These days Urbanization and industrialization has resulted in migration of people from villages to cities. This increased population has put health sector under pressure. Health infrastructure is an important indicator to understand the healthcare delivery provisions and mechanisms in a country. It also signifies the investments and priority accorded to creating the infrastructure. Therefore focus on health infrastructure is very much relevant to urban planning and development. Currently there is renewed interest in the health impacts of urban development and need for proper health infrastructure. This is due to the improved understanding of relationships urban environment and chronic diseases. This paper explores health consequences due to urban development and need for adequate and appropriate healthy infrastructures and also the role of local, state and national govt. Health impacts should be considered as primary outcome of health infrastructures and urban development.

**Key words:** health, infrastructure, urban development, Urbanization, health index

## INTRODUCTION

Urban development, also called city and regional development, is a multidisciplinary field which is focused to improve the welfare of people and communities by creating more convenient, equitable, healthful, efficient, and attractive places to live now and for the future. The central point of urban development activities is a "master plan," which can take many forms, including comprehensive plans, neighbourhood plans, community action plans, regulatory and incentive strategies, economic development plans, and disaster preparedness plans[1]. Traditionally, these plans include assessing and planning for community needs in areas like: transportation, housing, commercial/office buildings, natural resource utilization, environmental protection, and health infrastructure etc.

The health infrastructures and the urban development share common goals and objectives. Both aim to improve human well-being, emphasize on needs of the community and service delivery, manage complex social systems, focus at the population level, and rely on community-based participatory methods. Throughout their development, both fields have broadened their perspectives. Initially, public health most often used a biomedical model and urban planning often relied on a geographic model. However, both fields have expanded their tools and perspectives, in part because of the influence of the other[2].

Urban planning and public health have been intertwined for most of their histories. In 1854, British physician John Snow used geographic mapping of an outbreak of cholera in London to identify a public water pump as the outbreak's source[3]. Healthy Cities movement, which began in Europe and the United States during the 1980s and now includes projects in approximately 1,000 cities that in various ways highlight the role of health as much more than the presence of medical care[4]. In 1926, the United States Supreme Court, in validating zoning and land-use law as a legal government authority in *Village of Euclid v. Ambler Realty*, cited the protection of public health as part of its justification[5,6].

## **URBAN DEVELOPMENT**

Urban development or urbanization is the physical growth of urban areas as a result of rural migration. Urbanization is not merely a modern phenomenon, but a rapid and historic transformation of human social roots on a global scale, whereby predominantly village culture is being rapidly replaced by predominantly urban culture. Urbanization is an index of transformation from traditional rural economies to modern industrial one. It is progressive concentration (Davis, 1965) of population in urban unit.[7-9].

Historical evidence suggests that urbanization process is inevitable and universal. Currently developed countries are characterized by high level of urbanization and some of them are in final stage of urbanization process and experiencing slowing down of urbanization due to host of factors[10]. A majority of the developing countries including India, on the other hand started experiencing urbanization only since the middle of 20th century. The Eleventh Five-Year Plan envisioned Indian cities to be the engine of economic growth over the next two decades[11].

The health infrastructure plays an important and integral role in development of any society. Urbanization has resulted in increased population in the cities and has put health sector under pressure. In some ways, public health is a modern concept of human development in science, although it has roots in antiquity. The term "healthy city" used by today's public health advocates reflects this ongoing challenge to collective physical well-being that results from crowded conditions and urban development.

In the developing world, people living in towns and cities today have advantages that are not shared by many rural dwellers. Cities can be tremendously efficient. It is easier to provide water and sanitation to people living closer together, while access to health, education, and other social and cultural services is also much more readily available. However, as cities grow, the cost of meeting basic needs increases, as does the strain on the environment and natural resources[12,13].

## **CONTEXT AND THE SCOPE OF THE STUDY**

The National Urban sanitation Policy launched during 2008 visualizes “All Indian cities and towns become totally sanitized, healthy and liveable and ensure and sustain good public health and environmental outcomes for all their citizens with a special focus on hygienic and affordable sanitation facilities for the urban poor and women.” The overall goal of National policy is to transform Urban India into community-driven, totally sanitized, healthy and liveable cities and towns. Specific goals include: Awareness Generation and Behaviour Change, Open Defecation Free Cities, Integrated City-Wide Sanitation, Sanitary and Safe Disposal, and Proper Operation & Maintenance of all Sanitary Installations.

Karnataka has been declared as third most urbanized state in India due to rapid economic growth and urban population increase witnessed in the last two decades. As per provisional data of 2011 census, 35% of the state population lives in urban areas. The state needs to renew its focus towards developing health infrastructure in urban areas and hence there is dire need for proper planning, management and execution of health related activities at urban local body levels with the active involvement of stakeholders.

The present study explores the public health and health infrastructure, problems, solutions and role of government. And Municipal administration of the city Shimoga.

## **METHODOLOGY**

The most of the work is carried out with secondary data collection and review of available data from various sources including the officials of City Municipal Corporations, Shimoga-CSP ASCI, Petrol bunks, RTO office, Hospitals etc. The primary data was collected to a limited extent through rapid field surveys and consultations with random sampling.

## **HEALTH INFRASTRUCTURE AND URBAN DEVELOPMENT IN SHIMOGA**

### **Profile of Shimoga**

Shimoga district is located in the southern part of Karnataka state. The district is famous for its art, culture and natural resources. The country's famous Jog falls is quite known. The Shimoga city has mainly developed as a

trading hub for the agricultural products, which are predominantly grown in the district. The location of the industrial estate in Machenalli triggered the industrial growth. The city is also an administrative centre. It is also the centre for trade and commerce, education and industries.

### **Location and regional linkage**

Located in the central part of Karnataka state, Shimoga district is landlocked, Shimoga lies between the latitudes 13O55'N and 75O34' E at a mean altitude of 569 meters above sea level. Shimoga is around 274 km on road from Bangalore. From the state capital Bangalore, Shivamoga can be reached on road by car or bus by taking the National Highway, NH-206. All major and minor towns of Karnataka have bus access to Shimoga[14].

### **Economy**

Agriculture and animal husbandry are the major contributors to the economy of Shimoga. Rice, Areca nut, Cotton, Maize and Ragi are the major crops cultivated in this district. The farmers from Shimoga are said to be very innovative and have managed to cultivate crops like Vanilla and Jatropha previously unheard of in India; yielding high monetary benefits.

### **Population growth trend**

Shimoga is the district headquarters with a population of 322428 (census 2011) consisting of 161,978 males and 160,450 females, as per 2011 census. Males constitute 51% of the population and females 49%. Total children (0-6) in Shimoga city are 31,626 as per figure from Census India report on 2011. There were 16,130 boys while 15,496 are girls. Child sex ratio of girls is 961 per 1000 boys[15], the number of households being 76013. The city showed an increase in population growth between 1991 and 2001 because of the amalgamation of the surrounding areas into the city area and the consequent increase of the area of the city from 16.26 sq.km to 50 sq.km, which is the present area of the city[14]. The population growth between 2001 and 2011 is 18%

### **Literacy**

Shimoga has an average literacy rate of 88.02 %, higher than the national average of 59.5%: male literacy is 91.32%, and female literacy is 84.70% Shimoga has an average literacy rate of 83.79 per cent, higher than the district average of 78.27 per cent.

### **Existing land use**

The land use of City Municipal Council, Shimoga area shows almost about 50% of land area under residential land use. Traffic and transportation covers about 22%. Land use % of Land use1.Residential 49.04%, 2.

Commercial 5.38%, 3.Industrial 4.16%, 4.Public & Semi Public 7.38% , 5.Transportation & Communication 21.93%, 6.Parks, Playgrounds and open spaces 10.54%, 7.Utilities and services 1.93% Total 100[16]

## **HEALTH CHALLENGES FACED BY CITY**

Health challenges, particularly evident in cities relate to water, environment, diseases like cardiovascular diseases, cancers, diabetes and chronic respiratory diseases, unhealthy diets and physical inactivity, increased alcohol consumption, unhealthy lifestyle, and risks associated with disease outbreaks. Proper diversion of human waste was a necessary tenet of public health in urban areas. City living and its increased pressures of mass marketing, availability of unhealthy food choices (junk foods) and accessibility to automation and transport all have an effect on lifestyle that directly affect health of an individual

## **WATER FACILITY**

The primary source of water for Shimoga city is the Tunga River. 34.05 Million Litres per Day of water is supplied to the city every day. 6.81 Million Litres per day are supplied from old scheme, which is not a dependable throughout the year. The remaining 27.24 Million Litres per is supplied from the Tunga Reservoir at Gajanur as source. In addition to this, about 1 Million Litres per day of water is obtained from bore wells. Non Revenue Water (NRW): In the old system, nearly 40 per cent of water loss due to leakages & unauthorized connections was indicated by City Municipal Corporation (CMC) officials. The distribution losses are accounting more than designed losses. Only 75 per cent of the households are connected to the water supply system indicating a sizeable gap between the total number of properties and the number of house service connections.

## **SLUMS & HOUSEHOLDS SANITATION**

Urban sanitation presents one of the most significant services in urban development. Concentration on open defecation levels in slums along with complementary sectors like solid waste management, storm water drains and water supply, an essential component of sanitation is dealt at vast. This also demarcates service level benchmarking and factors leading to health hazards.

According to the AshaKiranMahiti (a web-based project on slums of Karnataka prepared by Municipal Reforms Cell, Karnataka) has identified 55 slum areas in Shimoga. – 41 notified and 14 non-notified. The total population living in the slums is 68355. Primary. 23% slum household is dependent on community toilets. Open defecation is quite considerable, being 10% in slum household and 5% in non-slum household. Except a few, even the conditions of public toilets are far from good. They lack regular maintenance and cleaning[14]. Drinking Water supply, street lighting, roads, drainage for Slum is not good improvement and upgradation is needed.

## **SCHOOL SANITATION**

Schools are the most important places of learning for children and they have a central place in the community. Water and sanitation have an impact on the enrolment and attendance of children in the schools and their health conditions, more important in adolescent girl child. It is in this regard, the City Sanitation Plan has taken School Sanitation as one of the major component. There is no pure drinking water supply, no good toilets speciality for students in Shimoga. It was found that the sanitary facilities are quite adequate for the staff, but there are holes in the same for the students

## **WASTEWATER TREATMENT**

The existing underground drainage system covers about 40% of the area of the area of the Shimoga city (176 km length). Sewage from the city flows directly into the river without any form of treatment. Assessment of the future sewerage production has been made on the basis of the projected population and the present per capita water supply. By 2045, approx. 55 million liter per day sewerage will be produced

## **THE DRAINAGE SYSTEM AND STREET SWEEPING**

The drainage system consists of open drains for Kitchens and bathroom wastes. The street sweeping activity is carried by pourakarmikas using conventional long handle brooms, wheelbarrow, and baskets for sweeping. The roads are categorized as Type A (cleaned daily), Type B (cleaned twice a week) and Type C (cleaned once a week). On an average, 94.1 metric tons are generated from street sweeping per month, out of which 62.8 metric tons (66.73% by weight) is collected/month[17], remaining garbage is left as it is thereby. The drainage system consists of open drains for Kitchens and bathroom wastes. There is a need to undertake a comprehensive study of storm water drainage system and take up its implementation in a scientific manner.

## **WASTE GENERATION AND SEGREGATION.**

The daily waste generated in Shimoga is about 223.3 Tonnes per Day with a daily collection 139.7 Tonnes per Day. This covers about 60% of waste that is being collected and transported daily. At present there is no segregation of waste being practiced in Shimoga City Municipal Council[18]; People are not satisfied with the existing solid waste management system, as is indicated by primary surveys. Majority of slum households feel that Solid Waste Management (SWM) system is just average, whereas non-slum households feel that the same needs major improvement. From the total generated waste of 223.3 Tonnes per Day the collected waste is 139.7 Tonnes per Day. Municipal Solid Waste is being collected, transported to the processing facility located at Anupinakatte, which is at a distance of 7 kms from the city.

## HOSPITALS AND HEALTH CLUBS IN SHIMOGA

There are around 30 Hospitals with bed facility (includes District hospital, primary health centres and private nursing homes) in Shimoga. In Shimoga the shushrutha bio-medical waste management society(R) Machenahalli industrial area, deals hospital waste management work. Shimoga have many Health clubs which include Tunga gym, Sahyadri college gym and Nehru stadium gym, Rotary and Country clubs etc both for ladies and gents.

## AIR POLLUTION DUE TO VEHICLES AND INDUSTRIES

Transport sector is one of the leading causes of greenhouse gases and health damaging pollutants. The vehicle population in the State has increased almost five folds, from 14.33 lakh in 1990-91 to 69.4lakh in 2006-07. Around 10 thousand vehicles (includes two wheelers, light and heavy vehicles) are added to Shimoga every year[19].

Iron based, Agro-based, Automobile-based and engineering are the major industries in Shimoga[17]. Foundry activity has a long history in the district and Pearlite Liners, is one of the oldest industries of Karnataka (earlier known as Bharath Foundry) is presently largest Private sector employer in the district[20],Karnataka Soaps & Detergent Ltd. Paper Packaging Ltd., Shimoga, Government Milk Diary, Vishveswaraya Iron & Steel Ltd. The Southern Gas Ltd, Bhadravathi Mysore Paper Mills Ltd, Oswal Palm Oil Industries (P) Lt., Asiatic Industrial Gases Ltd.

## PARKS AND PLAYGROUNDS

The space for Parks, Playgrounds including spaces is around 10.54%, in Shimoga, which needs lot of attention[21]. Vinobanagar have more parks, vidyanagar have only one park in sahyadri college ground. Also there is a Gandhi park in the heart of the city.

## KEY FINDINGS

- Tunga the river is famous for the sweetness of its water. There is a belief that "Thungapana Ganga snana" which means we should drink the water of river thunga and take bath in river Ganga. But most people do not have purifiers in the houses.
- Life style of slum people is far from good, due to lack of proper infrastructure. They lack regular maintenance and cleaning, slums improvement and up gradation is needed.
- There is a need to undertake a comprehensive study of waste water drainage system and take up its implementation in a scientific manner. Sewage from the city flows directly into the river without any form of treatment.
- There is lot of scope for study and improvement in water drainage system. And its implementation in a scientific manner.

- People are not satisfied with the existing solid waste management system, as is indicated by primary surveys.
- Air polluted by vehicles and industries is the main cause of most of the diseases like Astama, Headache, ENT irritation, Sneezing, Sinusitis, Cardiovascular and Respiratory problems, premature fatigue, Sleeplessness etc..
- Hospitals with bed facility should be increased in proportional to the population of the growing city as well as for the people who visit the city for medical care.
- The State needs promote fuel efficiency by incentivizing the use of hybrid/electric vehicles and LPG/CNG for road-based public transport. The State govt. must improve access, efficiency, effectiveness and comfort of public transport to reduce growth of private vehicles.

### **ROLE OF GOVERNMENT AND LOCAL BODIES**

- Water supply for domestic, industrial and commercial purposes
- Public health, sanitation, conservancy and solid waste management
- Slum improvement and up gradation
- Provision of urban amenities and facilities such as parks, gardens play grounds
- Burials and burial ground; cremations, cremation grounds and electric crematoriums

### **FUNCTIONS OF SHIMOGA CITY MUNICIPAL COUNCIL**

- Supply of protected drinking water,
- Maintenance of Play Grounds, Recreation Centers and Parks,
- Cleaning of Streets, Drains and Scavenging,
- Maintenance of Hospitals and Dispensaries,
- Control of Epidemics and Endemics,
- Registration of Births and Deaths,
- Maintenance and Improvement in Slum Areas,
- Maintenance of Street Lighting,
- Maintenance of slaughter houses and markets.



## DISCUSSIONS

Urban development policy and karnataka is governed by planning legislation, municipal legislation, development legislation, regulatory legislation. The people living in urban areas can take advantage of the well-established infrastructure and available social benefits. Therefore in this context health infrastructure is one of the key urban development issues. Slums lack of good drinking water, drainage system roads; street light and they need improvement and up gradation. Shimoga is educational centre of the district and has many established educational schools and institutes. But as compare to private schools government schools lack sanitation good drinking water and better toilet facility. Waste water treatment is the existing underground drainage system covers about 40% of the area of the area of the Shimoga city remaining 60%. Sewage from the city flows directly into the river without any form of treatment and is affecting the public health. The drainage system consists of open drains for Kitchens and bathroom wastes. On an average, 94.1metric tons is generated from street sweeping per month, out of which 62.8 1metric tons (66.73% by weight) is collected/month and remain garbage is left as it is thereby. Shimoga was zero pollutant area in earlier days as it was surrounded by forest. In Shimoga lacks good parks except one big Gandhi Park at the heart of the city and few can be seen in gopalgowdabadavene and vinobanagar extension. Roads in Shimoga are getting better, it has NH206 highway which connects to Bangalore city and has railway station, and the process of urban development has been favourable with well established public services for the people living in cities

## SOLUTIONS

- Promote urban planning for healthy behaviors and safety.
- Improve urban living conditions, including access to adequate shelter and sanitation for all.
- control of many infectious diseases including polio, diphtheria, yellow fever and smallpox
- Involve communities in local decision- making.
- Ensure cities are accessible and age- friendly.
- Effective health and safety policies such as road traffic safety and occupational safety; improved family planning; tobacco control measures
- Promotion of health tourism.

## CONCLUSIONS

Improved urban health infrastructure is definitely the need of an emerging urban economy like India. Shimoga is one of the fast developing cities in Karnataka and is developing rapidly in the last five years. There is a scope for improvements in all the areas including health infrastructure. Shimoga needs modern public health practices which requires multidisciplinary teams of professionals including physicians specializing in public health/community medicine/infectious disease, epidemiologists, biostatisticians, public

health nurses, medical microbiologists, environmental health officers, sociologists, community development workers, communications officers.

Shimoga needs establishment of healthy public policy at the local level through health promotion.

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