



International Journal of Development and Sustainability

Online ISSN: 2168-8662 – www.isdsnet.com/ijds

Volume 2 Number 3 (2013): Pages 1645-1670

ISDS Article ID: IJDS13012002



Urban poverty and health risk factors: A case study of slum dwellers of Jammu (J&K) India

Piyush Malaviya *, Naseeb Kumar Bhagat

Department of environmental sciences, University of Jammu, Jammu, India

Abstract

Health is an important issue of present time. Poor migrant people of other states come in search of job every year. Due to high cost of land in metropolitan cities they cannot afford a piece of land as the result of which they often select neglected areas or open space available along sewage drain, roadside, railway tracks, unstable slopes and form slum there. Generally, these locations are in the area which is unfit for human habitation. Unhygienic conditions, open defecation system, burning of wood inside ill ventilated rooms, ill- habits such as chewing of tobacco, smoking, drinking, least care about health, domiciliary deliveries etc. are the major risk factors to the people of study area.

Keywords: Slum, Open-defecation, Unhygienic, Metropolitan, Migrants

*Copyright © 2013 by the Author(s) – Published by ISDS LLC, Japan
International Society for Development and Sustainability (ISDS)*

Cite this paper as: Malaviya, P. and Bhagat, N.K. (2013), "Urban poverty and health risk factors: A case study of slum dwellers of Jammu (J&K) India", *International Journal of Development and Sustainability*, Vol. 2 No. 3, pp. 1645-1670.

* Corresponding author. E-mail address: naseebroyale@yahoo.com

1. Introduction

Since 1950, urban population has grown from under 17% of the world's population to approximately 50% in 2000 AD. It is estimated that 90% of future population growth will be in urban areas and most of the growth is likely to be among the poor (UNICEF, 1997). Environment and health are the major issues of present time. These issues are even more relevant in the developing world, where billions of the world's poor live in substandard housing conditions known as slums. Poverty and slum dwellers both are the faces of same coin. In common words, we can say that slum is an overcrowded area of city or town usually selected by the poor for habitation.

Developed countries have developed more infrastructures to support a healthy environment that are strongly linked to municipal and global health initiatives, but to some extent, poverty and health problems become an unending vicious cycle. In Thailand, Ross and Pongsomlee (1995) provided a succinct summary of the nexus between environmental degradation and poverty -"the environmental conditions are suffered by all residents and visitors, but unequally. Poor people, especially those without land and those dependent on the water bodies such as rivers, stream etc. for their water supply, suffer most and have the least means available to adapt or protect themselves. These are also the people who gain the least from economic growth".

Every year there is influx of migration from rural areas to urban areas in search of better income and comfort. Migration may be inter state or intra state. It includes both skilled workers such as painter, carpenter, cobbler, masons etc. while unskilled include laborers. Along with these migrants there is transfer of poverty from rural areas to urban areas. Both the push and pull factors are equally responsible for urbanization. The primary concern of these jobless poor is of employment. The only amenity they need is place to sleep. They often select place which is near to their job market and saves transport costs. Due to high cost of land in metropolitan cities they cannot afford a piece of land as the result of which they often select neglected areas or open space available along sewage drain, roadside, railway tracks, unstable slopes and form slum there. Generally, these locations are in the area which is unfit for human habitation.

Residential structures made of flimsy materials are prone to ignite, frequently collapse, and offer scant protection, leaving their residents vulnerable to injury, violence, illness, and death. Further, since many of these settlements are illegal, slum dwellers often have no official addresses and are commonly denied basic rights and entitlements, including the right to vote, public education and health care.

A slum is a compact area with 300 residents or which had 60-70% of the households having poorly congested rooms with inadequate infrastructure, lack of proper sanitation and drinking water facilities (Slum Survey, 2001). Slum is a residential area that has been constructed illegally and where housing condition is not in compliance with current planning and building regulations (UN, 1996). Slum includes dwelling which on account of overcrowding, dilapidation, and lack of ventilation are detrimental to the safety, health and social morale (Census of India, 1961).

Slums are known by different names in different parts of the globe such as Ranchos in Venezuela, Callampas in Chile, Favelas in Brazil, Vilas misarias in Argentina, Colonias laterias in Mexico, Barang barang in Phillipines, Basti, Jhuggi jhompri in India.

Degraded urban environments are cesspools of diseases. Approximately 0.5 billion people lack adequate sanitation, contributing to more than 5 million deaths each year, of which more than half are children (United Nations, 2001). Currently, about 50% of the developing world's population is exposed to polluted water sources. According to Economic and Social Commission on Asia Pacific (ESCAP), The percentage of urban population living in slums in Asia Pacific is tabulated as Table 1.1.

Table 1.1. Urban populations living in squatter and slum settlements

S. No	Country	<i>Population (in %age)</i>
1.	Indonesia	54
2.	Bangladesh	47
3.	India	36
4.	Philippines	28
5.	Sri Lanka	21
6.	Thailand	16
7.	Malaysia	15
8.	Republic of Korea	01

Source: ESCAP (1993)

India is a developing economy and slum population is growing at an alarming rate. In 1980, 17.5% of urban population was residing in slums. It is now reported that one third of the total slum population lives in cities like Kanpur, Mumbai, Kolkata, Nagpur, Chennai, Delhi, Bangalore, Hyderabad etc. Asia's largest slum is found in Mumbai i.e. Dharavi. In cities with population over one million nearly one fourth (24.1%) of the population is residing in slums. Nine states / union territories (UT) namely Himachal Pradesh, Nagaland, Mizoram, Sikkim, Arunachal Pradesh, Manipur, Dadra and Nagar Haveli, Daman and Diu and Lakshadweep have not reported any slum population in their cities or town (Census, 2001). Migrants squat on any available land in the pursuit of their trade. Squatter settlements are unhygienic and exposed to environmental ill effects.

The present work will help the concerned authorities such as Jammu Municipal Corporation (JMC), Jammu Development Authority (JDA) and town planners for the welfare of this deprived section of the society and at the same time to improve the quality of their immediate environment. A fairly large number of cases of outbreak of epidemics are attributed to unplanned human activities. Unplanned development will sooner or later lead to the inevitable consequences especially on well being of urban peoples.

2. Review of literature

According to UN-Habitat report (2002), a contagious settlement with households that lack security of tenure, structural quality, access to safe water, access to sanitation facilities is known as slum. Durand and Royston (2002) estimated that between 25 to 70 percent of urban dwellers in developing world are living in slum like conditions. In a study conducted by Sheuya (2007), it was revealed that overall a billion people in the world live in slums where, environmental determinants lead to diseases.

In India, cities with million plus population nearly have one fourth of their population living in slums (Census, 2001). Slums have become an inevitable part of the major Indian metropolitan cities. The situations in metropolitan cities like Mumbai, Kolkata, Delhi, Chennai, Bangalore, Hyderabad and Kanpur etc. is becoming worse year by year because of mushrooming of slums (Gowda and Shivashankara, 2008). Mumbai is the most populated city inhabited by highest percentage of slum dwellers in comparison to other million plus cities (Singh, 2006). Poor migrants often select neglected area such as landslide prone or flood prone area or unsafe polluted area around factory in order to save the cost of land, in 1984 due to Bhopal gas tragedy more than 20,000 slum dwellers died due to release of MIC (Dhara, 2000). This factory was built nearby already existing slums (Dhara, 2002). The uncontrolled migration and haphazard growth of slums are creating physical, demographic and environmental imbalances in Punjab, Haryana and Himachal Pradesh and demands for upgradation of urban infrastructure (Kumar, 2007).

2.1. Environmental and housing conditions in slums

Slums in cities of most developing countries are characterized by poor infrastructure facilities such as solid waste disposal, sewage disposal, and drainage which lead to environmental degradation and in absence of sufficient number of community toilets, these people are forced to excrete in the open (Bhardwaj, 2007). The accumulation of garbage in four informal settlements in Nairobi city, namely Kawangware, Korogocho, Viwandani and Njiru was found to be a consequence of lack of dumping sites in the communities and the inability of the city council to collect the garbage for appropriate dumping (Amuyunzu and Taffa, 2004). The authors also reported that the uncollected garbage often accumulated and blocked drainage and the poor drainage turned the informal settlements muddy and impassable during the rainy seasons. In another study, Kimani et al. (2007) reported that informal settlements in Nairobi continues to be characterized by poor living conditions, including lack of affordable house, clean water, inadequate toilet facilities, poor garbage disposal and drainage mechanisms. The slum dwellers of Ghana also lack basic environmental facilities such as sanitation, drinking water supply, electricity etc. (Osumanu, 2007).

Jamwal (2004) reported that clogged drains, putrefying waste, children defecating in the open are common pictures in the slum areas of Delhi. The slum dwellers of Kolkata having duration of stay below 10 years required more living space, proper sewerage and drainage system, adequate water supply, while those, whose duration of stay was more than 10 years preferred peaceful environment, security of tenure and control of antisocial activities (Bhattacharya, 2006). Sundari (2003) reported poor solid waste management in the slums of Tamilnadu with 67% households having no arrangement for the safe disposal of waste while only 27% having access to municipality dustbins whereas, 6% were found disposing their garbage by burning. Similarly, Goyle et al. (2004) reported that garbage was found littered around all the squatter settlements of

Jaipur and after collection, the residents disposed it off near their dwellings. Chatterji (2005) reported that in Dharavi "the largest slum of Asia" people are concerned with the issues like water, drainage, garbage disposal and pollution. Mony et al. (2006) advocated that the slum dwellers of Vellore town discard their garbage along street sides that degrades the quality of life. Sharma (2009) reported that slum dwellers of Jammu throw their solid waste and other garbage in the open which pollute the surrounding environment. In this area, the housing conditions were also of substandard type, as most of the dwellers lived in kutcha houses.

Ray (2002) also reported that slum dwellers of Calcutta reside in unhygienic environmental conditions manifested by overcrowding and poor building materials. Due to poor drainage system water logging in the slums of Tamilnadu becomes critical during monsoon seasons and rain water often enters into houses of these poor people as only 5% of the households had well drainage system (Sundari, 2003). The lack of infrastructural facilities including waste collection and sewerage, public transportation, education and electricity supply affect all aspects of life. Sundari (2003) revealed in her findings that 79% of migrant households of Chennai lived without latrine facility and used open fields for defecation. Only 13% of the migrant households living in these slums were found to have access to the community toilets, provided by the municipality. Likewise, Mehta (2004) revealed that five million slum residents were living without toilets facilities in Mumbai. In another study, Gupta et al. (2007) reported poor environmental conditions in the urban households of the slum dwellers of Chandigarh, as only 33.4% of the urban poor were found to have access to the sewerage system in comparison to 98% in case of urban areas. Owing to absence of sufficient number of community toilets, the people residing in slums of Jammu are forced to excrete in the open (Sharma, 2009).

The situation of sanitation in Accra metropolitan area, Ghana was reported to be very serious, as provision of toilets facilities was related to the household wealth. Pit latrines were common in low income households while flush toilets dominated wealthy groups (Boadi, 2002). In another study, Boadi (2005) revealed that in Ghana, human excrement, garbage and wastewater were usually deposited in surface drains, open spaces and streams. More than 90% of all urban poor of Tmale were found to store solid waste inside their house for at least 24 hours before taking outside (Osamanu, 2007).

Most of the communicable diseases are commonly found in the slums due to poor housing conditions and environmental factors which account for 25% of all preventable ill-health (WHO, 1998). Ballantyne and Oelofse (1999) reported that slum dwellers of the Mizamoyethu community of Africa lives in poor housing conditions and for them it is the first element that needs to be upgraded if quality of life is to be improved. According to World Bank report (1993), most of the environmental burdens in African cities results from lack of affordable housing for the poor which lead to the formation of slums and squatter settlements. Living conditions in many urban slums are worse than those in the poorest rural areas of the country.

Boadi (2002) reported that about 30-60% of the urban resident of Africa lives in slums and squatter settlements which are built on floodplains, marshy places and dumping sites at periphery of cities due to inadequate land and inability of poor to afford secure land. The dwellings are usually constructed of discarded materials including paper, cardboard, wood and galvanized iron sheets (Boadi, 2002). The houses of slum dwellers of Mirpur and Vastak area of Dhaka were also found to be of poor quality as most of the houses in both the communities (90-94%) had earth foundation and were low in elevations. Few houses had

bamboo platforms on poles. The walls of the majority of houses were made predominantly of bamboo matting, plastic cover and other substandard materials (Rashid, 2007).

Malik et al. (2002) studied the working environmental conditions of child labourers in a slum area of Kolkata. 18% of the working children were found working under total exposure to sun and rain, 11.3% in open air, 20% in ill-ventilation, 17.3% in inadequate light and remaining worked in overcrowding conditions. The poor living conditions are commonly exhibited in slums of Indian cities. In Tamilnadu, 43.4% of the slum dwellers were found living in kutchra houses, out of which nearly 53% had single room accommodation and rest had two room structures (Sundari, 2003). Hayami et al. (2006) documented that in Delhi the condition of slum dwellers was highly miserable as the shelter was made up of mud, brick, tin and bamboo.

Similarly, the problems of indoor pollution in Tmale region of Ghana were commonly found in low wealth households owing to congested rooms and lack of ventilation (Osamanu, 2007). The slum dwellers of Jaipur located along the roadside were found prone to the ill effects of the dust, smoke, intense noise and air pollution (Goyle et al., 2004). Thapa (2003) surveyed slum areas of Jammu city and observed that congestion was common in these slums and the heights of roofs were quite low, ventilation was poor and sanitation was absent.

2.2. Water quality status in slums

According to WHO report (2003), poor water quality is a leading cause of morbidity and mortality worldwide and a defining danger to life in slums. Growing number of poor people who lack basic needs, such as access to clean water and food are more susceptible to diseases driven by malnourishment and air, water and soil pollutants (Pimentel, 2007). The conditions of slum dwellers of Sub-Saharan countries were found to be highly miserable, as not only the quality but availability of drinking water was also a major issue in these countries. In Nairobi, 94% of slum residents were found buying domestic water from the vendors and paid about 8 times more for it than their non-slum counterparts. In addition, water supply was irregular and vendors were found to charge increased prices indiscriminately. Hygiene was also compromised during periods of water shortage (Kimani et al., 2007). Likewise, members of slum settlements in Nairobi city used sewerage water, rain water and water from broken pipes for various purposes such as drinking, washing etc. (Amuyunzu and Taffa, 2004).

Afsar (1999) reported that urban slum dwellers in Bangladesh were devoid of water supply to their homes and the average time required to collect water from a common standpipe or well was 30 minutes per trip and at least two trips were necessary just to collect a bucket of drinking water. Further Osamanu (2007) reported that most of the urban poor of Tmale city of Ghana collect water from sources located distantly. In another study, the municipal water supply to the 128 migrant households in Tirupur slums was found to be of poor quality and unfit for human consumption (Sundari, 2003). Goyle (2004) observed that the two squatter settlements of Jaipur city had to go more than a kilometer to bring a bucket of drinking water. In another study, Karwsara (2005) revealed that more than half (56.50%) of the slum dwellers of Delhi utilized shallow dug hand pump water containing lot of sand particles and impurities.

Gupta et al. (2007) reported that the residents of urban areas of Chandigarh were more conscious about their health as 94% households treated their water before drinking in the form of filtration, boiling etc. However, the rural and slum households were least bothered about these things as, only 10.8% and 2% used these techniques, respectively to make water safe for drinking.

2.3. Health and disease related issues in slum areas

Slums adversely affect the health status of inhabitants due to lack of basic infrastructure and health services (Yusuf, 2007). In Manila and Philippines, children living in squatter settlements were found to be nine times more prone to tuberculosis (TB) than children living in other areas (Fry et al., 2002). Overcrowding in slums is common cause of psychological stress and increases the rate of disease transmission due to frequent contact (Sundari, 2003).

Type of fuel also has considerable effect on the health of individual. In the urban slums of Surat, two third of girl child were found to have history of persistent cough whereas 52.8% of girl child of Middle Income Group (MIG) area suffered from same problem. The difference in these two groups was attributed to variation in the type of fuel they used, as kerosene and wood were the main cooking fuel used by the poor slum dwellers while LPG was common in the later case (Vipul, 2008). Similarly, daily-integrated exposure of infants and women to Respirable Suspended Particulates (RSP) in two slums of Delhi during cooking were low in kerosene-using houses than those of wood-using houses (Saksena et al., 2003).

Injection Safety Awareness and health related knowledge among slum population located near Nehru Place (Ambedkar camp) in South Delhi, India was very weak as only about 51% of the respondents were found aware about the transmission of diseases through unclean syringes (Misra et al., 2003). The awareness and attitude towards AIDS in slum of Chennai was very poor as only 67% of males and 55% of females were aware of the sexual mode of transmission. About 34% of males and 50% females opined that AIDS is a hereditary disease (Kalasagar, 2006). Thus, there is intense need for addressing HIV/AIDS, TB, and vector borne diseases in informal settlements and mobilization of health services for these urban poor (David et al., 2007). Slum dwellers constitute a major portion of urban population and most of these are usually migrants from rural and tribal areas and prone to the risk of acquiring HIV (Mishra et al., 2008).

Attack rate of ARI (Acute Respiratory Infections) and ADD (Acute Diarrhoeal Diseases) was found to be 14.6% and 7.73%, respectively in under 5 years children of Gokalpuri slums of Delhi. This illness was attributed to lack of sanitation and lack of potable water for drinking (Gupta et al., 2007). Rahman (2006) advocated that there is a strong relationship between environmental conditions and occurrence of diarrhoea. The incidence of diarrhoea among urban poor of Aligarh city was reported to be 96% which was attributed to outdoor defecation, use of manual latrines, lack of sanitation, buying prepared cheap food items from vendors. Likewise, prevalence of diarrhoea among children in the slums was found to be 32%, compared to 13% in Nairobi as a whole, and 17% in rural areas (Klimani et al., 2007). One fifth of the girls (21.6%) had history of diarrhoea in urban slum of Surat city of Gujrat within last 15 days of study as compared to 10.6% in MIG (Middle Income Group) area, which was due to prevailing insanitation in the slum areas (Vipul et al., 2008).

Singh and Rahman (2002) cited that malaria is among the leading diseases in the developing world and slum dwellers are the worst sufferers from frequent attack of malaria, owing to poor environmental conditions. Malaria is a common epidemic in the slums of Nairobi province and no immediate steps have been taken by the authorities to address this problem, as it is associated with poor environmental conditions (Yazoume, 2007). Sundari (2003) reported that dysentery, viral fever and malaria were among the top most diseases in the Coimbatore slums of Tamilnadu.

The health and medical facilities in the migrant households of Coimbatore was found to be negligible, as the hospitals were available within a radius of 1 km for about 60% of the migrants. Though free health care facilities were available from the nearby Government hospitals for minor ailments, the slum dwellers had to spend on medicines for major health problems, which was beyond their ability. The number of household borrowings on ground of health had also increased from 65 (8%) before migration to 135 (17%) after migration (Sundari 2003). The accessibility and utilization of the healthcare services among a migrant community inhabiting slums of an eastern Indian city Bhubneshwar was very poor. They had to travel and spend a lot of time as there was no Government hospital or clinic in the vicinity and about 73% of the households visited private practitioner including unqualified practitioners available in their town (Babu, 2008).

2.4. Immunization status and childhood morbidity in slum areas

Knowledge and extent of the morbidity and its determinants is very important as it reflects both well and ill being of the community. The five leading illnesses among children aged under-5 years in four informal settlements in Nairobi City, namely Kawangware, Korogocho, Viwandani and Njiru were identified as respiratory tract infections, diarrhoea, malaria, skin problems and malnutrition. The mothers linked these illnesses to lack of adequate and clean water, unsafe waste disposal systems, lack of adequate and nutritious food and air pollution (Amuyunzu and Taffa, 2004). Vaid et al. (2005) reported that slum dwellers of Vellore town of Tamilnadu were more vulnerable to childhood morbidity than those of non slum dwellers. Infant Mortality Rate (IMR) was 37.9 per 1000 live birth, which was attributed to poor antenatal and postnatal care. Gladstone et al. (2008) reported that morbidity in Vellore town due to respiratory and gastrointestinal illness was higher among urban slum dwellers.

Puri et al. (2006) stressed that the infant mortality is greatly correlated with place of deliveries, neonatal and antenatal practices. They reported that 84% mothers in urban setup and 72.1% in slum setup were registered at Government institutions for their deliveries. Sinha (2006) conducted a study in Sangam Vihar, an urban slum of Delhi and revealed that prenatal mortality was 37.54 per 1000 births. In another study, Gupta and Pandey (2007) reported that 97.0% of the deliveries were conducted in institutions such as nursing homes, hospitals etc. in case of new urban colonies of East Delhi, while it was only 29.0% for the slum dwellers of same locality. Likewise, the Antenatal Care (ANC) among women of slum areas and non slum area of Mumbai was found to be quite different as in case of non slum area 74% of women received 3 or more ANC check up whereas in case of slum area only 55% women received the same (Madhiwalla, 2007).

Gupta et al. (2007) reported that the level of care during deliveries was quite low among the females of slum areas where 68% of the deliveries were carried out in the houses, without a skilled birth attendant such as nurse, mid-wife or doctor in slum areas as compared to 21% and 7% deliveries in the rural and urban

areas of Chandigarh. The antenatal check up of pregnant mothers of slum areas was only 27.8% while it was 88.4% in the rural and 93.4% in urban areas of Chandigarh. The prevalence of various harmful practices regarding care of newly born babies like, application of kajal, delay in initiation of BF (Breast Feeding) was prevalent in slums of Chandigarh (Puri et al., 2008).

The immunization of BCG in slums of East Delhi was reported to be 80.1% while in new urban colonies of East Delhi it was about 99.0% (Gupta and Pandey, 2007). In a comparative study of antenatal care in slums and urban areas of Chandigarh city, Puri et al. (2006) revealed that immunization of tetanus toxoid was 90% in urban area as compared to 70% in slums. Likewise, iron supplementation was found to be 86.7% in urban mothers while, in case of slums it was only 44.2%. Gupta et al. (2007) revealed that the immunization status of the children at the age of two years in the slum area of Chandigarh was 30% in comparison to 62.5% in rural areas and 74% in urban areas.

Gupta (2007) considered ARI (Acute Respiratory Infection) and ADD (Acute Diarrhoeal Diseases) as the main cause for children morbidity in Gokalpuri slum area of Delhi and also suggested that immunization programmes and improvement in the environment should be implemented. In another study, prevalence of diarrhoeal diseases among the children of slum dwellers of Nairobi was reported to be 32% while in rural area it was quite low (17%) (Kimani et al., 2007). Similarly, Gupta (2007) reported that in eastern Delhi, the incidences of diarrhoeal diseases (per 1000) were highest among children of slum dwellers (25.1) and least among the new urban colonies (2.2). This difference was attributed to poor unhygienic living conditions in the former case. In a study conducted by Preyer (2001) in Dhaka, the nutritional and morbidity status of slum dwellers was reported to be worst than those having better income or living standards.

The world conservation strategy (IUCN, 1987) and the World Commission on Environment and Development (WCED, 1987) stressed that environmental protection must address the needs of those people who depend directly on the environment for their livelihood. The poverty and poor environmental conditions is a crucial factor to be considered if the quality of life of slum dwellers is to be addressed.

Slum settlements are unhygienic and exposed to environmental ill effects, as they have inadequate access to basic amenities. These settlements are mushrooming in big and small cities and there is urgent need to check this urban sprawl. Efforts should be made to bring them within planning and to improve their lives (Goyle et al., 2004). Quality of living has a direct relationship with the quality of urban environment therefore, efforts should be made to improve the quality of life of slum dwellers. This can be achieved by incorporating the proper housing provisions, adequate sanitation, better wage, free education, free medical aid etc. There is urgent need to check urban sprawl and slum settlements on the outskirts of the cities (Kassas, 1997).

In India, the large metropolitan cities are growing very rapidly and unfortunately slums are growing many times faster. Poverty, agony, misery, exploitation, humiliation, insecurity, inequalities, and environmental degradation are also multiplying tremendously in the recent decades. These are indeed manifestations of our society and faulty planning. This crucial problem is aggravating with increasing migration from both rural and urban areas. It needs an urgent attention and immediate remedies. In sum, as regards the syndrome of poverty, distressed migration and ecological degradation in India, it is required to look for a novel approach. Concrete plans and its effective implementation for the benefits of national growth and migrants are

absolutely necessary. The effective policy needs to be framed for the development not only in rural but also in small and medium sized cities. There is an urgent need to generate job opportunities in all regions of India so as to reduce the gap of inequalities. This will assist in combating with poverty, human misery and agony.

3. Study area and Methodology

3.1. Study area

The present study area is a slum settlement located in Muthi area of Jammu city. Geographically, it lies at 32°45'06.31"N latitudes and 74°48'54.31"E longitudes and is approximately 7 km away from heart of the Jammu city in north western direction. The total number of households covered in the study area was 98 and the total population was 357. The Jammu city is typical foothill urban centre located at the southern extremity of Jammu Shivaliks which lies in the northwestern part of the India. The total area of Jammu District is 3097 km² and its population is about 1571911 (Census 2001).

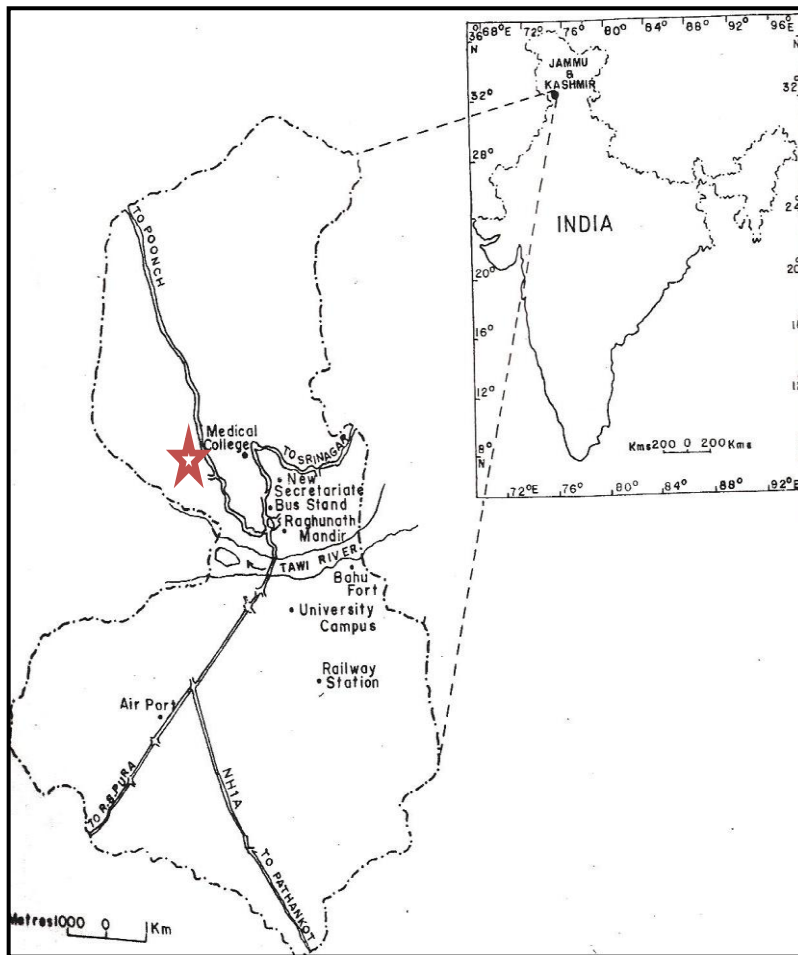


Figure 1. Map showing the location of study area (★ study area)

The Jammu hills are about 300-400 m above mean sea level. The climate of Jammu experiences subhumid monsoon type and has four well defined seasons namely, summer (April to June), Rainy season (July to September), winter (October to February) and spring (March to April).

3.2. Methodology

A door to door survey was conducted to study the health related risk factors among the slum dwellers of Muthi area of Jammu city. All the slum dwellers were migrants from different states viz. Chattisgarh, Bihar and West Bengal. Each slum household was visited several times to establish a rapport with them. One or two leaders were identified from each area. Through them the purpose of the study and its significance was explained to the people. Though the schedule was prepared in English, all questions were put in a conversation style in Hindi. Respondents were contacted by home visits.

Data were collected from primary as well as secondary sources. The primary data were generated through field work. The secondary data were borrowed from the published records and reports released by different organizations both at national as well as at local levels. In the present study both primary as well as secondary data have been used, the nature of the problem was such that it required intensive and extensive field work. Since the slums of the study area have not been notified by Municipal Corporation of Jammu or any other concerned authority, very less information was available from Census Organization and other Government offices. Thus, lots of data have been generated by field work, surveys by using questionnaire and by interviewing the people so that it become possible to narrow down to the root cause of problem and the level of health related awareness among the slum dwellers of present study area.

Consent was obtained from all residents before conducting the interview. The criteria for selecting the respondents were, they must be above the age of eighteen years and they should be residing in the study area for at least more than two years. These criteria were met by selecting ninety eight households. Inmates of the study area were exposed to self developed questionnaire which included risk posing factors such as housing conditions, indoor and outdoor environment, types of defecation system, place of deliveries of pregnant mothers, eating habits, sewage and solid waste disposal system etc..

The questionnaire contained both close ended and open ended questions. The study was conducted for a period of 3-5 months during March 2008 to December 2008. The interviews were conducted in Hindi though the questionnaire was prepared in English. Other interviews were conducted during rainy days when the slum dwellers did not go out for the work. The duration of each interview varied from 20-30 minutes. Most of the interviews were conducted in the evening when most of the people were back at home after their whole day work. However, some of the interviews were conducted during the day time when female respondents were available in their houses.

To analyze the data, collected information was classified. The classified data was tabulated and percentage was calculated for the same.

4. Results and discussion

4.1. Poor housing conditions

The information related to the housing conditions such as type of house and material used in the construction of the houses, type of floor, number of person per room, provision of ventilation etc. are covered under this aspect and shown in Table 4.1. Due to poverty, the slum dwellers could not afford a piece of land and usually selected a neglected area or vacant plots available within the heart of cities and develop slums there. All the slum dwellers were found to have kutcha houses, where wood was commonly used as a supporting material with a covering of plastic or the polythene sheets. In the similar manner, the houses of slum dwellers of Coimbatore area of Tamilnadu were made up of similar kind of material with more than 43.4% of households living in kutcha houses (Sundari, 2003).

Table 4.1. Poor housing conditions in the study area

S.No	Observation/ Response	Number (%)
Type of house		
1	(a) Kutcha	98 (100)
	(b) Pucca	NIL
2	Material used in the construction of the houses	
	(a) It is same for all the houses	98 (100)
Number of persons per room		
3	(a) 1 person/room	17 (17.34)
	(b) 2-3 person /room	14 (14.28)
	(c) 3-5person/room	57 (58.16)
	(d) More than 5 person/room	10 (10.20)
Type of floor in the house		
4	(a) Rough & damp	57 (58.16)
	(b) Cemented	12 (12.24)
	(c) Any other	29 (29.59)
Type of accommodation		
5	(a) Single room accommodation	63 (64.28)
	(b) Double room accommodation	23 (23.40)
	(c) Three room accommodation	12 (12.24)
	(d) More than three room accommodation	NIL

Note: figures in the parenthesis indicate the percentage

It was observed that every house had a single small entrance in the form of small door. Windows and other provisions of ventilation were found to be absent in most of the houses. Congested lanes littered with garbage made life of these urban poor miserable. The problem of congestion inside the houses was so acute that people of all the three generation were pushed inside the single room which made them vulnerable to the contagious diseases as well as hampered their privacy. The situation due to congestion was so acute that 64.28% of the respondents had single room accommodation, 23.40% had double room accommodation, and 12.24% had 3 room accommodations. Similar to this study, the single room accommodation was very common among the slum dwellers of Coimbatore of Tamilnadu (Sundari, 2003) and Aligarh city of Uttar Pradesh (Rahman, 2008). In another study performed by Ray (2002) in Calcutta, problems of congestion were found to be acute as near about 96% of slum dwellers had single room accommodation. On contrary, the slum dwellers of Sagar district of Madhya Pradesh enjoyed better standards of living as more than 90% slum dwellers had 2-3 room accommodation, which was attributed to considerable efforts by the concerned authorities there (Koshal, 2003).

Single room accommodation was highly prominent in these slum-dwellers due to low income. All the houses in the locality of present study were kutchra houses, which were not fully protected during storm and rainy weather. The houses were so fragile that repairing was required after every three or four months. The single room packed with variety of material showed lack of good house keeping among these dwellers. Types of floor play an important role in the housing conditions as it determine the health of the dwellers as cracks and crevices serve as breeding place for large number of pathogens. In the present study, the condition of the floor was found to be miserable as more than fifty percent dwellers had rough and damp type of floor where cracks and crevices were common. The condition of the floor was particularly important as it was used as sleeping platform by most of the dwellers. 58.16% of the respondents had the floor which was damp and rough while only 12.24% had well-maintained cemented floor and remaining had sub standard type of floor.

The general observations of the surroundings revealed that the growth of wild plants such as, Congress grass (*Parthenium* spp.), (*Cannabis* spp.), Castor plants (*Ricinus* spp.) and Aak (*Calotropis procera*) were common. Additionally, *Typha* spp. was commonly seen in the low lying marshy area.

4.2. Unhygienic and unsanitary conditions

The information about sanitation and Solid Waste Management (SWM) in the locality such as type of sewerage system, solid waste management system, defecation system, pool formation, if any during rainy season, problems due to lack of sanitation in the area was taken into consideration in the present study and tabulated in Table 4.2.

The sewerage system was of sub-standard type that clogged during rainy season as the result of which over spillage was common. 71.42% of the respondents complained about the lack of proper sewerage system and demanded immediate improvement, while 12.24% respondents considered the sewerage system to be good owing to the establishment of the locality on raised land and easy drainage of the water while 16.32% felt that it was satisfactory. The findings of Sundari (2003) revealed that the sewerage and solid waste

management system in the slum areas of Tamilnadu was almost absent as more than 95% of the houses were found to be without sewerage system.

Table 4.2. Unhygienic and waste management status in the study area

S.No	Observation/ Response	Number (%)
<i>Type of sewerage system in the locality</i>		
1	(a) Good	12 (12.24)
	(b) Satisfactory	16 (16.32)
	(c) Bad and need improvement	70 (71.42)
<i>Type views about solid waste management system in the locality</i>		
2	(a) Good	11 (11.22)
	(b) Satisfactory	12 (12.24)
	(c) Bad and need improvement	75 (76.53)
<i>What do you do with solid waste?</i>		
3	(a) Remain scattered	34 (34.69)
	(b) Dump away from habitation	21 (21.42)
	(c) Burning	43 (43.87)
<i>Any low lying area which lead to pool formation?</i>		
4	(a) Yes	68 (69.38)
	(b) No	30 (30.61)
<i>Defecation system/ excreta disposal system in the area.</i>		
5	(a) Pit latrines	NIL
	(b) In open areas	98 (100)

Note: figures in the parenthesis indicate the percentage.

In the present study, the management of domestic waste was not proper, as the waste remained scattered in the lanes and in the vicinity of the houses. Burning was found to be a common practice to reduce the load of solid waste as 43.87% people tackled the menace of solid waste by it, followed by 34.69% respondents who don't cared for the management of solid waste, followed by 21.42% respondents who dumped it away from their habitation. The Solid Waste Management of present study area was comparable with those of Mony et al. (2006) and Rahman (2006) who carried out study in the slums of Aligarh city and Vellore town, respectively where waste was found scattered in the streets and nearby the dwellings. On the other hand, the slum dwellers of Calcutta used nearby flowing canal as solid waste dumping site (Ray, 2006).

According to the 69.38% respondents, pool formation was common in low-lying area around the habitation which was main cause of foul smell and served as a feeding and breeding ground for mosquitoes.

The pool formation was also observed by Rahman (2006) around the habitation of the slum dwellers of Aligarh city, Uttar Pradesh. A major cause of water pollution and foul smell in the present study was attributed to open defecation as all the inmates go for open defecation in the nearby agricultural fields or along the Ranbir canal. Open defecation system was also found to be prevalent in the slums of Tamilnadu where more than 79% slum dwellers went for defecation in the open areas (Sundari, 2003).

The general observation with respect to the water environment in the present study showed that there were several low lying areas in the southern side of the habitation area where pool get formed during the rainy seasons and people often used these pools as dumping site for the solid waste and due to these pools the possibility of ground water pollution cannot be ignored. Moreover, open defecation system not only causes foul smell but also is a source of ground water and surface water pollution.

The littered night soil in and around slum area, overflowing sewage water drains, open dumping of solid waste were the chief causes of environmental degradation in the locality.

4.3. lack of safe drinking water and indoor air pollution

The quantitative data obtained through household survey related to the water such as source of drinking water, availability of water, its supply and quality, water borne diseases, accessibility to water resources and type of fuel used for cooking were collected and shown in Table 4.3. In the study area, water supply was found to be irregular and problem was observed aggravated during summer months.

The drinking water supply was found to be inaccessible for the entire colony of the study area, as water supply was not available within the premises of these urban poor. Near about 68.83% respondents have to travel distance ranging between 50-100 meters, while for 23.46%, drinking water was available within 100-200 meters and for the remaining 8.16% it was available within 200-300 meters radius. The water for other uses such as washing clothes, cleaning utensils, bathing etc. was collected from nearby flowing Ranbir canal or the nearby tube-well located in the southern side of the colony. Not only the quantity but quality of the drinking water was also found to be below optimal standards as the water pipes were found broken at several points which resulted into impairment of the water quality. People were often seen breaking water pipes at several points in order to meet their water requirements. The water supply was found to be unfit for drinking as majority of the slum dwellers complained about the water quality during the personal interactions. On the same line, the quality of drinking water was found substandard in the slums of Tamilnadu (Sundari, 2003) and Delhi (Karswara et al., 2005).

In the present study, the incidence of water borne diseases such as cholera, dysentery, diarrhea etc. was common in the slum. The distribution of the respondent's percentage according to their response regarding outbreak of water borne disease viz. cholera, dysentery and others were 31.63, 23.46 and 44.89, respectively.

Table 4.3. Drinking water status and indoor air pollution

S.No	Observation/ Response	Number (%)
Source of drinking water		
1	(a) Tube well	55 (56.12)
	(b) Municipal water supply	43 (43.88)
Regularity of water supply		
2	(a) Daily	67 (68.83)
	(b) Alternates day	21 (21.42)
	(c) Twice a week	10 (10.20)
Source of water for other use		
3	(a) Canal	55 (56.13)
	(b) Tube well	33 (33.67)
	(c) Municipal water supply	10 (10.20)
	(d) Ponds	NIL
Common water borne disease in the area		
4	(a) cholera	31 (31.63)
	(b) Dysentery	23 (23.46)
	(c) Others	44 (44.89)
Awareness about water pollution		
5	(a) Yes	17 (17.34)
	(b) No	81 (82.65)
Common source of water pollution (n=17)		
6	(a) Solid waste	04 (23.52)
	(b) Sewage water	03 (17.64)
	(c) Surface run off	08 (47.05)
	(d) Others	02 (11.76)
Type of fuel used for cooking		
7	(a) Wood & dung cake	67 (68.8)
	(b) Stove	17 (17.34)
	(c) Heater	12 (12.34)
	(d) LPG	02 (2.04)
Type of kitchen		
8	(a) In a separate room	07 (7.14)
	(b) In the open	63 (64.28)
	(c) In a common room	06 (6.12)
	(d) Mobile or traditional chullah	22 (22.44)

Note: figures in the parenthesis indicate the percentage

The awareness of causes and ill effects of the water pollution was reported to be negligible as only seventeen respondents out of ninety eight respondents were found aware about it. Out of these respondents,

47.05% considered surface run off as the major source of water pollution, followed by 23.5%, 17.6% and 11.8% of the respondents who laid stress on the dumping of solid waste, sewage and other factors, respectively as the causes of water pollution in general as well as in their locality. The study about the awareness and the effect of water pollution was very limited in developing countries especially in India, which is a matter of great concern as number of deaths due to water related diseases is very high in the country.

The houses of these slum dwellers were made up of sub-standard type of material and without the provision of adequate ventilation. The problems due to indoor pollution were found to be very common owing to lack of separate kitchen and smoking inside the room. Additionally, the use of fuel wood and coal as cooking fuel inside the commonly shared room was found to be source of indoor pollution in the slum dwellers of present study area. Indoor pollution was also reported by Malik et al. (2002), in the slums of Kolkata which were again attributed to the ill ventilation prevailing in the small congested huts.

The common victims to the indoor pollution were reported to be women and children who reside in the house almost of all the time. The common causes for the indoor air pollution in the present study were found to be burning of fuel wood, followed by smoking and others such as intestinal gases, use of coal inside the house to keep themselves warm during extreme winter conditions.

The type of fuel has considerable effects on the health of individual. The fuels commonly used by these slum dwellers include wood, charcoal, kerosene oil etc. which not only adversely affect their health but are also cause of environmental pollution. In the present study, most of the households (68.8%) used fuel wood, dung cake and others used kerosene stove (17.34%), electric heater (12.34%) and LPG (2.04%) for cooking. On contrary, use of clean fuel such as LPG in the slums of Vellore town was common, with few households (2.05%) using fuel wood and other pollution generating fuels (Mony et al., 2006). This may be attributed to better economic status of the slum dwellers of Vellore slums. The fuel wood used by the slum dwellers of study area for cooking was either collected illegally from nearby area such as along the Ranbir canal, and road side or was purchased from the market at very high rates. A small kitchen in a corner of hut was found to be a usual practice among these slum dwellers while some families use single room for various purposes such as sleeping, cooking, eating etc..

4.4. Prevalence of unhealthy habits

The personal habits such as alcohol consumption, smoking and chewing of tobacco were highly prevalent among these slum dwellers. The distribution of the respondents according to these habits clearly indicates that 65.30 percent of these people were habitual of consumption of alcohol and smoking, followed by the 23.46 percent having the habit of chewing tobacco. The chewing of tobacco was also found to be common among females.

For minor illnesses or any other health related problems, most of the households preferred traditional medicine or therapy (37.75%) while 22.44 percent told that they bother least about minor illnesses, followed by 21.42% respondents preferred to go to private clinic whereas only 18.36% consulted Government medical institution. The women of Jammu slums experienced frequent illnesses due to tough working

environment but they did not opted for proper treatment due to the fear of losing their job, in case they were advised rest by the doctor (Kotwal et al., 2008). The reasons for the least preference for the Government hospitals was heavy rush, rude behavior of the staff, long waiting period and non availability of medicines.

4.5. Domiciliary deliveries and traditional health related practices

Place of child deliveries, antenatal and post natal care were also taken into consideration in the present study and are summarized in Table 4.4. The deliveries of pregnant mothers were commonly carried out in the houses. The percentages of such cases were 77.55%. It was only 22.44% of the dwellers who used or consulted hospitals or private clinics as the place of deliveries. On contrary, very few deliveries were carried out in the houses as reported by Mony et al. (2008) in his study in the slums of Vellore town of Tamilnadu. In present study most of the dwellers preferred Government medical institutions rather than private due to high fees and charges of the latter. Out of those who carried domiciliary deliveries, most of the deliveries were carried out either in the absence of mid-wife or trained persons and it was attributed to be a major cause for the high Infant Mortality Rate (IMR) among these urban poor. Under the category of domiciliary deliveries, 47.3% of the respondents had their deliveries under untrained persons, only 52.63% involved expert for this purpose. The knowledge about the family planning and child care was found to be insufficient as only 34.69% people were being aware about it.

5. Recommendation and suggestion for controlling the mushrooming of slums

Mushrooming growth of slum population exerts increased pressure on provision of minimum basic services such as housing, water supply, health, education etc. Supply of these services is one of the biggest challenges to all urban planners and policy makers. Slums serve as breeding grounds for environmental degradations and social evils such as thefts, gambling, drinking, and prostitution. Growth of slums indicates the utter failure of Government to meet the housing needs for the poor. There is an immediate need to address the problem of slums because, if the cities will not deal with the problem of slum in a constructive way, the slums will deal with the cities in a destructive way. Hence, on massive scale, efforts for the development of slum dwellers need to be made. Keeping in view the problems of slum dwellers of the study area and to overcome the menace of slums, along with the social and environmental upliftment of the slums, following remedial measures are suggested:

- 1) Awareness about the environment: As most of the people of the study area were found to be unaware about the problems associated with the environment and are unwilling victims of the pollution at their house and at the working sites, there is urgent need to make these people aware about the cause and effect relationship of environmental problems.
- 2) Provision of low cost housing: As most of the slum dwellers belongs to low income group who cannot afford a good or pucca house, by providing low cost houses to these people, their status and living conditions can be improved and at the same time their vulnerability to the ill housing conditions can be reduced.

- 3) On site upgradation: It can be achieved by improving sanitation facilities, solid waste management, electrification, proper drinking water supply etc.
- 4) Relocation of the slums: Like the slum of Muthi area, other slums of Jammu city are located on hazardous locations such as along the open sewerage drain, in the vicinity of factory or flood plain and there is urgent need for relocation of the slum to safer places to avert any type of tragedy.
- 5) Vocational and training courses: Courses such as dairy farming, weaving and tailoring, candle making, mushroom cultivation, vermicomposting etc. should be started by the Government and Non-Governmental Organizations (NGOs) so that their economic standard can be uplifted and at the same time their quality of life can be improved.
- 6) Rural and cottage industries upgradation: Rural and cottage industries such as rice-milling, garment industry, cotton and wool industry need to be upgraded with subsidies and incentives, which will prevent the migration from the native town to other states.
- 7) Irrigation development: As it is evident from the present study that failure of agriculture and less productivity was the major push factor for migration of slum occupants, enhancement in productivity of their native land by improving the irrigation techniques could minimize their dependence upon rainfall.
- 8) Promotion of education: The promotion of education will help in the overall development of slum dwellers and will also make them aware about their rights and to a greater extent will improve the conditions of the poor and illiterate especially women. Large number of programmes has been launched by the Government such as NREGA (National Rural Employment Guarantee Act), IAY (Indira Awaas Yojna) etc. for the upliftment of the poor and to increase their purchasing power but due to illiteracy and unawareness, most of these schemes become futile.

6. Conclusion

The increase in urbanization and urban poverty in India is a warning signal for the Government and other concerned authorities to focus attention on provision of basic amenities for the dwellers especially, urban poor and slum dwellers. It appears from the present study, the overall living conditions of dwellers are quite poor. Due to sub optimal environmental surroundings, lack of basic needs such as, potable drinking water, sanitation, waste management, health and medical facilities, poor socio-economic status, the slum dwellers are leading a miserable life. The slum dwellers must be provided with both healthy environment and economic incentives that will enable them towards healthy life. Further, environmental education must be provided to slum dwellers so that they can be made aware about the impacts of pollution and unhygienic surroundings on their health as these poor people serve as both agents and victims of environmental degradations. Finally, research is needed to determine best practices for improving amenities as well as quality of life of the slum dwellers. There is strong urge to deal with slums in a constructive way otherwise problems of slums will deal with cities in a destructive way. Table 5.1 provide complete summary of health risk factors and possible causes for the same.

Table 4.4. Antenatal and post natal care and other habits

S.No	Observation/ Response	Number (%)
1. Place of deliveries of pregnant mothers		
1	(a) Institutional	22 (22.44)
	(b) Domiciliary	76 (77.55)
2. Place of institutional deliveries (n=22)		
2	(a) Govt. hospitals	18 (81.81)
	(b) Private nursing / clinics	04 (18.18)
3. Domiciliary deliveries are often carried out under		
	The guidance of (n=76)	
3	(a) Expert/mid wife	40 (52.63)
	(b) Untrained person	36 (47.36)
4. Do you take antenatal and post antenatal care?		
4	(a) Yes	21 (21.42)
	(b) No	77 (78.57)
5. Whether you aware of family planning and child care?		
5	(a) Yes	34 (34.69)
	(b) No	64 (65.30)
6. Distance from primary health centre (PHC)		
6	(a) Less than 1 km	NIL
	(b) 1-5km	NIL
	(c) More than 5 km	98 (100)
7. Any type of health related problem during last fifteen days?		
	(a) Malaria and Viral fever	32 (32.66)
7	(b) Respiratory disease	21 (21.42)
	(c) Diarrhoea	12 (12.24)
	(d) Skin diseases and others	33 (33.67)
8. Sources of information about various health related programmes		
	(a) Television	23 (23.46)
8	(b) Radio	21 (21.42)
	(c) Newspaper	07 (7.14)
	(d) Others	47 (47.95)
9. Personal habits		
9	(a) Smoking and alcohol consumption	64 (65.30)
	(b) Chewing tobacco	23 (23.46)
	(c) None of the above	11 (11.22)
10. For minor illness to whom you consult?		
	(a) Govt. hospital	18 (18.36)
10	(b) Private clinic	21 (21.42)
	(c) Traditional medicine	37 (37.75)
	(d) Least bother for minor illness	22 (22.44)

Note: figures in the parenthesis indicate the percentage

Table 5.1. Complete summary of various health risk factors and its possible causes

S. No	Problems	Possible Causes
1	Water related problems	<ul style="list-style-type: none"> - the irregular water supply - the breakage of water pipes at several points - The containers used for storing water were not properly clean - Dumping of solid waste into nearby flowing Ranbir canal - Surface run off.
2	Air pollution mainly indoor air pollution	<ul style="list-style-type: none"> - Use of fuel such as wood, coal for cooking. - Inadequate provision of ventilation in the narrow congested single room accommodation. - Use of cow dung for permeating the floor. - Personal habits such as drinking, smoking etc.
3	Solid waste disposal	<ul style="list-style-type: none"> - Open dumping of solid waste. - Ill response of municipal authorities. - Lack of awareness about solid waste management among these poor.
4	Health problems	<ul style="list-style-type: none"> - Poor infrastructure - Unhygienic surrounding - Domiciliary deliveries - Smoking, chewing tobacco, drinking etc. - Contaminated water - Least care about personal hygiene such as bathing, clean clothes,
5	Sanitation and hygiene	<ul style="list-style-type: none"> - Open defecation system - Open and ill maintained sewage system - Due to low lying area pool formation is common during rainy seasons

Acknowledgements

This paper is based on my M.Phil research. I am highly thankful to my guide Dr. Piyush malaviya (sr. Asstt. Professor) for his valuable suggestions and untiring efforts to complete this work. Usually I often think about poor and deprived people who are both victims and unwillingly agents of environmental degradation, and I have taken this topic for my research. Data collected from both primary and the secondary sources.

References

- Afsar, R. (1999), "Rural-urban dichotomy and convergence: emerging realities in Bangladesh", *Environment and Urbanization* Vol. 2, pp. 235-243.
- Amuyunzu, M. and Taffa, N. (2004), "The triad of poverty, environmental and child health in Nairobi informal settlements", *Journal of Health and Population in Developing Countries*, Vol. 6, pp. 1-14.
- Babu, V.V., Swain, B.K. Mishra, S. and Kav, S.K. (2008), "Primary health care services among a migrant indigenous population living in an eastern Indian city", *Journal of Immigrant Minority Health*, Vol. 12, 17-21.
- Ballantyne, R. and Oelofse, C. (1999), "Informal settler's perception of environmental quality- A case study of the Mizamoyethu community, South Africa", *The Environmentalist*, Vol. 19, 203-215.
- Bhardwaj, A. (2002), "Lack of basic Environmental infrastructure in slum and the ecological footprints of the urban poor", in Nair, R.K., Roonwaal, S.K., Gupt, Y. (Ed.), *Environment and Sustainable Development*, Kaveri Books Publishers, New Delhi, pp. 146-161.
- Bhattacharya, S. (2006), "Slum dweller and community development", *Indian Journal of Psychology*, Vol. 32, pp. 213-219.
- Boadi, K.O. and Kuitunen, M. (2002), "Urban population in the Karle Lagoon, Accra, Ghana", *The Environmentalist*, Vol. 22, 301-309.
- Boadi, K.O., Kuitanen, M. Raheem, K. and Hanninen, K. (2005), "Urbanization without development: environment and health implication in African cities", *Environment, Development and Sustainability*, Vol. 7, 465-500.
- Census of India (2001), "Metadata and brief highlights on slum population, http://www.censusindia.gov.in/data_products/data_highlights_link/metadata_highlight.pdf
- Chatterji, R. (2005), "Plans, habitation and slum redevelopment: the production of community in Dharavi in Mumbai", *Contribution to Indian Sociology*, Vol. 39, 201-217.
- Compendium of Indian slums (1996), "town and country planning organization, Hyderabad.
- David, A.M., Mercado, S.P., Edmundo, K., Becker, D. and Mugisha, F. (2007), "The prevention and control of HIV/AIDS, TB, and vector borne diseases in informal settlements: challenge, opportunities and insights", *Journal of Urban Health*, Vol. 84, pp. 65-71.
- Dhara, V.R. and Dhara, R. (2002), "The Union Carbide disaster in Bhopal: A review of health effects", *Archives of Environmental Health*, Vol. 57, pp. 391-404.
- Dianer, R.B. (2001), "making the best of bad situation: satisfaction in the slums of Calcutta", *Social Indicators Research*, Vol. 55, 329-352.
- Durand, L. and Royston, L. (2002), " Holding their grounds, secure land tenure for the urban poor in developing countries", In: Banerjee, B. (Ed.), *Earthscan Publication Ltd., London*, pp. 1-32.
- ESCAP (Economic and Social Commission for Asia and the Pacific), <http://www.unescap.org/oes/statements>

- Fry, S., Cousins, B. and Olivola, K. (2002), "Health of children living in urban slums in Asia and the near east: Review of existing literature and data", Environmental Health Project, U.S. Agency for International Development, <http://www.bvsde.paho.org/bvsacd/ehp/xxi.pdf>
- Gladstone, B.P., Muliyl, J.P., Jaffar, S., Wheeler, J.G., Fevre, A.L., Gomara, M., Gray, J.J., Bose, A., Estes, M.K., Brown, D.W. and Kang, G. (2008), "Infant morbidity in an Indian slum birth cohort", *Archives of Disease in Childhood*, Vol. 93, pp. 479-484.
- Gowda, S. and Shivashankara, G.P. (2008), "Urbanization, Slums and Indoor Air Pollution in Developing Countries: A Major Environmental and Public Health", Social Sustainability Conference, 12-15 Sept. 2008, Narobi, Kenya.
- Goyle, A., Saraf, H., Jain, P., Shekhawat, N. and Vyas, S. (2004), "A profile of roadside squatter settlements and their families in Jaipur city", *Journal of Social Science*, Vol. 9, pp. 13-18.
- Gupta, N., Jain, S.K. Ratnesh, W., Horsain, S. and Venkatesh, S. (2007), "An evaluation of diarrhoeal diseases and acute respiratory infections control programme in a Delhi slum", *Indian Journal of Pediatrics*, Vol. 74, pp. 471-476.
- Gupta, M., Thakur, J.S. and Kumar, R. (2007), "Reproductive and child health inequities in Chandigarh (UT) of India", *Journal of Urban Health* Vol. 85, pp. 291-299.
- Gupta, R.K. and Pandey, A. (2007), "Status of children in eastern Delhi: care during delivery, immunization and occurrence of some acute diseases", *Indian Journal of Community Medicine*, Vol. 32, pp 88-89.
- Hayami, Y., Dikshit, A.K. and Mishra, S.N. (2006), "Waste pickers and collectors in Delhi: poverty and environment in an urban sector", *Journal of Development Studies*, Vol. 42, pp. 41-69.
- Jamwal, N. (2004), "Violent home coming", *Down to Earth* Vol. 13, pp. 50-51.
- Kalasagar, M., Sivapathasundharam, B., Bertin, T. and Einstein, A. (2006), "AIDS awareness in an Indian metropolitan slum dweller- KAP (knowledge, attitude and practice) study", *Indian Journal of Dental Research*, Vol. 17, pp. 66-99.
- Karswara, S. and Sangwan, V. (2005), "Popularization of water purifying technology at household level in slum areas", *Journal of Human Ecology*, Vol. 18, pp. 117-119.
- Kassas, M. (1997), "Environment and social transformation", *The Environmentalist*, Vol. 17, pp. 63-67.
- Kimani, E., Zulu, E. and Undie, C.C. (2007), "Health and livelihood implication of the Marginalization of slum dwellers in the provision of water and sanitation services in Nairobi city", in *Workshop On Urban Population, Development And Environment Dynamics in Developing Countries*, Nairobi 11-13 June.
- Kotwal, N., Gupta, N. and Manhas, H. (2008), "Impact of work and environment on women living in the urban slums of Jammu city", *Studies on Home and Community Sciences*, Vol. 2, pp. 93-97.
- Koushal, R. (2004), "Housing and socio-environmental pollution- case study of Sagar District Social", *Environment for Sustainable Development*, Vol. 18, pp. 217-225.

- Kumar, M.T. (2007), "Strengthening and sustaining vitality of urban areas-the case of New Delhi", *Sociological Bulletin*, Vol. 56, pp. 65-87.
- Madhiwalla, N. (2007), "Health care in urban slums in India", *The National Medical Journal of India*, Vol. 20, pp. 113-114.
- Malik, S., Biswas, B., Mitra, S.P. and Choudhary, R.K. (2002), "Some socio-determinants and working conditions of child laborers in a slum area of kolkatta", *Indian Journal of Community Medicine*, Vol. 17, pp.161-166.
- Mehta, S. (2004), "*Maximum city: Bombay lost and found*", *Journal of urban health*, Vol. 12, pp. 74-88.
- Mishra, S., Swain, B.K. and Babu, B.V. (2008), "Sexual risk behaviour, knowledge and attitude related to HIV transmission- a study among a tribal group living in the slum of Bhubneshwar city, Orrissa", *Indian Journal of Immigrant Minority Health*, Vol. 16, pp. 331-337.
- Misra, P., Gowswami, A. and Pandav, C.S. (2003), "Injection safety awareness and knowledge among slum population", *Indian Journal of Community Medicine*, Vol. 28, pp.47-53.
- Mony, P.K., Vergese, L., Bhattachrji, S., George, S., Thoppuram, P. and Mathai, M. (2006), "Demography, environmental status of maternal health care in slum of Vellore town, southern India", *Indian Journal of Community Medicine*, Vol. 31, pp.230-233.
- Oelofse, C. and Dodson, B. (1997). Community, place and transformation: A perceptual analysis of residents responses to an informal settlement in Hout Bay, South Africa, *Geoforum*, Vol. 28, 91-100.
- Osumanu, I.K. (2007), "Environmental concerns of poor households in low income cities: the case of Tmale metropolis, Ghana", *GeoJournal*, Vol. 68, pp.343-355.
- Pimental, D., Cooperstein, S. Randell, H., Piliberto, D., Sorentimo, S., Kaye, B., Nicklin, C., Yagi, J., Brain, J. and Weinstein, C. (2007), "Ecology of increasing diseases: population growth and environmental degradation", *Human Ecology*, Vol. 35, pp. 653-668.
- Preyer, A.J., Rogers, S., Normand, C. and Rahman, A. (2001), "Livelihoods, nutrition and health in Dhaka slums", *Public Health Nutrition*, Vol. 5, pp. 613-618.
- Puri, S., Bhatia, V., Sharma, M., Swami, H.M. and Magnat, C.(2008), "Comparison Of Prevalent Newborn Rearing Practices, In Urban And Slum Population Of Chandigarh, Ut, India", *The Internet Journal of Pediatrics and Neonatology*, Vol. 9 No. 1. DOI: 10.5580/8c9.
- Rahman, A. (2008), "Assessing income-wise household environmental conditions and disease profile in urban areas: study of an Indian city", *GeoJournal*, Vol. 65, pp.211-227.
- Rashid, H., Hunt, L.M. and Haider, W. (2007), "Urban flood problems in Dhaka, Bangladesh: slum resident's choice for relocation to flood free areas", *Environmental Management*, Vol. 40, pp. 95-104.
- Ray, S. (2002), "Living conditions and health of two social groups inhabiting a squatter settlement in Calcutta, India", *International Journal of Anthropology*, Vol. 17, pp. 209-224.

- Saksena, S., Singh, P.B., Prasad, R.K., Malhotra, P., Joshi, V. and Patil, R.S. (2003), "Exposure of infants to outdoor and indoor air pollution in low income urban areas- a case study of Delhi", *Journal of Exposure Analysis and Environmental Epidemiology*, Vol. 13, pp. 219-230.
- Sharma, G. (2009), "Rapid growth of slums in Jammu city polluting the environment", *Daily-Excelsior* 23rd June, pp 6.
- Sheuya, S., Champman, P.H. and Patel, S., (2007), "The design of housing and shelter programme: the social and environment determinants of inequalities", *Journal of Urban Health*, Vol. 84, pp. 98-108.
- Singh, D.P. (2006), "Slum population in Mumbai and Population Envis: population", *human settlement and environmental issues*, Vol. 3, pp. 6-8.
- Singh, J., Singh, J.V., Srivastva, A.K. and Suryakant (2006), "Health status of adolescent girls in slums of Lucknow", *Indian Journal of Community Medicine*, Vol. 31, pp. 102-103.
- Singh, R. and Rahman, A. (2002), "Malaria and related environmental issues in India: a case study of Aligarh city", *GeoJournal*, Vol. 89, pp. 89-99.
- Sinha, S. (2006), "Outcome of antenatal care in an urban slum of Delhi", *Indian Journal of Community Medicine*, Vol. 31, pp. 189-191.
- Sundari, S. (2003), "Quality of life of migrant households in urban slums", in *Proceeding of Third International Conference on Environment and Health*, Chennai, India, 15-17 Nov.
- Thapa, S. (1998), "slums of Jammu city: a focus on democratic characteristics", Ph.D Thesis University of Jammu, Jammu, pp. 322.
- UN-HABITAT (1996), "international forum on urban poverty", <http://www.unhabitat.org/programmes/ifup/fc.asp>.
- UN HABITAT (2001), "Urbanisation: Fact and Figure", <http://www.unhabitat.org>.
- UN-HABITAT (2002), "Defining slums: Towards an operational definition for measuring slums", *Background Paper 2, Expert Group Meeting on Slum Indicators*, October. Nairobi, United Nations
- UN-HABITAT (2003), " Global Urban Observatory. Estimations based on Total and Urban population", <http://www.unhabitat.org/istanbul+5/booklet4.pdf>.
- UN-HABITAT (2003), "*The challenge of the slums: Global report on human settlements*. Nairobi: United Nations", <http://www.unhabitat.org/content.asp?typeid=19&catid=555&cid=5373>.
- United Nations (UN) (2003), "Urban slum reports: The case of Kolkata, India", <http://www.plosmedicine.org/article/info>.
- Vaid, A., Mammen, A., Primrose, B. and Kang, G. (2005), " Infant mortality in an urban slum", *Indian Journal of Pediatrics*, Vol. 74, pp. 449-453.
- Vipul, P., Shrivastava, R.K. and Desai, V.K. (2008), " Domestic Environment and morbidity of under 5 children", *Indian Journal of Pediatrics*, Vol. 75, pp. 514-515.

WCED (1987), "Our common future: report of the world commission in environment and development", *Oxford University Press*. London.

WHO (2008), "Community-based strategies for breast feeding promotion and support in developing countries", Geneva.

World Bank (1993), "World Development Report, Oxford University Press, Oxford. UK.

Yusuf, S., Nabeshima, K. and Ha, W. (2007), " Income and health in cites: The messages from stylized facts", *Journal of Human Health*, Vol. 84, pp. 35-40.

Yazoume, Y., Kimani, E., Kebaso, J. and Mugisha, F. (2007), " Assessing the risk of self diagnosed malaria in urban informal settlements of Nairobi using self reported morbidity Survey", *Malaria Journal* , Vol.6, pp. 66-69.