

## **Chapter II**

### **REVIEW OF LITERATURE**

A Slum, for the purpose of Census, has been defined as residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health. (Census 2011). Rapid urbanisation, especially in the developing countries of Asia, Africa and Latin America has resulted in the development of vast urban slum. From 2000 to 2030, the world's urban population is projected to grow at an average annual rate of 1.8 percent, nearly double the rate expected for the total population. (United Nations, 2005). This rapid population growth has caused a host of problems, including crowding, degradation of the environment, development of slum, disparities in living conditions and access to services and increasing vulnerability to the urban population, particularly the urban poor, to diseases and poor health. (IIPS, 2009).

Health is a key factor for Human development. With a population of 1.21 billion (census 2011), 26.1 percent is below the poverty line, who faces many challenges like high income disparity, lack of basic infrastructure and subject to diseases. India being a vast country and ranking second in the population next to China, needs greater attention in the field of health Infrastructure development. The higher economic vitality of cities, and the possibilities of employment compared with the country side pull the people to come and stay resulting into mushrooming of slums in urban centers. An analysis of population growth trends between 1991 and 2001 shows that while India grew at an average annual growth rate of 2 per cent, urban India grew at 3 per cent, mega cities at 4 per cent and slum populations rose by 5 percent (Chatterjee, 2002). Several studies are attempted in Indian slums right from independence and even now after several decades, slum problems are being considered the need of the hour.

Gadgil (1959). Ling Ooi and Phua (2007), Srivastava and Singh (2007), Srivastava (2013) highlighted the fact that the slums are unavoidable in the process of development of the cities and towns.

Living conditions in slum are very poor. People have to live in adverse conditions in slum areas. Slums are generally dirty and unclean . Shortage of water supply and inadequate sanitation creates issues for households (Bandyopadhyay and Agrawal 2013). In the light of this ,the following chapter highlights the literature pertaining to the current topic, “**Health and Sanitation Scenario in Selected Urban Slums –A Micro Level Study**” which is discussed under the following heads:

- Theoretical Background of the Study
- Socio Economic condition of Urban Slum Dwellers
- Health Profile
- Status of women living in slums
- Government interventions to improve sanitation
- Related Studies

## **Theoretical Background of the Study**

### **Human Capital Theory**

Human Capital Theory refers to the aggregate stock of competencies, knowledge, social, and personal attributes embodied in the ability to create intrinsic and measurable economic value. Human Capital Theory views humans and individuals as economic units acting as their own economy. The role of human capital is widely discussed in economic development, productivity analysis, innovation, public policy, and education. The basic concept of Human Capital Theory is that investments in individuals can be mathematically measured based on the economic value they are able to contribute to society. Human capital is often subdivided into categories such as cultural capital, social capital, economic capital, and symbolic capital. Human capital is developed in many ways. Economic capital is typically measured by the ability to perform labour which

results in economic value. Education, job training, and marketable talents are all ways in which humans increase their ability to acquire knowledge and generate higher wages. Social capital and cultural capital refer to the relationships and influence individuals contribute to society. Although social, cultural, and symbolic capital are very difficult to measure, understanding their existence and value is still vital. Each type of human capital is important and the combinations of all types generate total human capital. The assumptions of human capital theory revolve around the immeasurable nature of its many forms. Economic capital can be measured by its ability to produce wages; however, an intrinsic value of human capital exists although it is not always measurable. Secondly, human capital may be stored but not fully utilized at all times therefore making it difficult to observe and study consistently.

Human capital theory(Gary Becker,1964) has practical implication for determining the value of training and education. It allows individuals to calculate the expected future returns of an investment in education. In addition, human capital theory's utility allows individuals to quantify the value of their intangible assets such as education and social status.

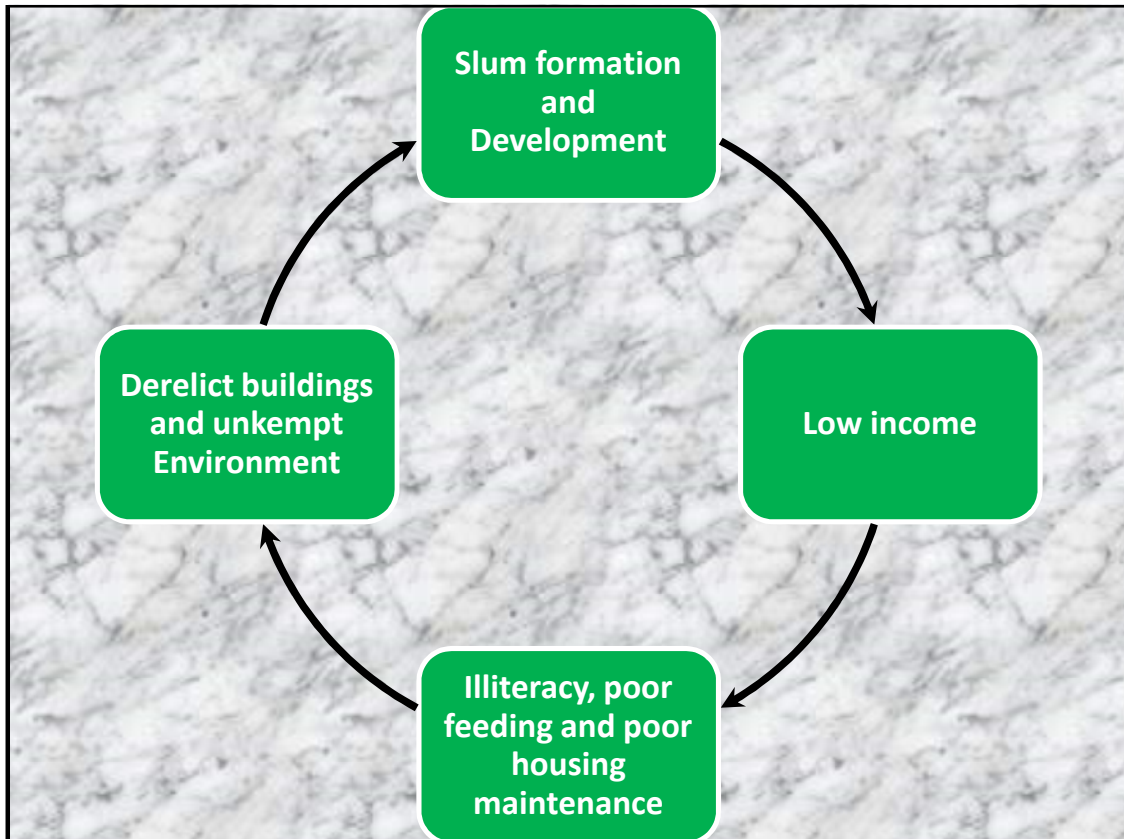
### **Vicious Circle of Poverty**

According to Prof. Nurkse, "It is the vicious circle of poverty (VCP) which is responsible for backwardness of UDCs". The researcher adopts the concepts of Vicious Cycle of Poverty and Sustainable Development to illustrate relevant subject matters in the study of slums. Owoeye (2012), like many other urban planners argued extensively on the contribution of poverty to urban decay. Poverty is conceptualized as a state of deprivation, where by individual is incapacitated to meet his needs due to financial incapability occasioned by low or poor level of income. Using this concept to illustrate causes of slum formation, Owoeye (2006, 2012) observed that low income breeds high level of illiteracy, poor feeding and inadequate housing maintenance; poor housing maintenance leads to derelict of buildings and deplorable condition of environment; while poor condition of environment and neglect of buildings enhance the formation of slums.

This is clearly illustrated in the figure below. Health is yet another indicator of Human Capital. Improvements in women's health do contribute towards development of mankind.

**Figure 2.1**

**Circular Effects of Poverty on Slum Formation**



**Source :** Owoeye (2012).

**1. Socio Economic condition of Urban Slum Dwellers**

Urbanisation accompanies the development process in any nation. When the rural agricultural sector fails to feed the increasing population, people move towards the urban area to earn their living. Mostly such people are ready to settle any where they find a place to reside and hence informal settlements and slums are formed which lack even the most basic amenities. Urbanization in many

places has resulted in the creation of vast urban slums, where thousands and sometimes millions of urban residents live in sub-standard housing conditions, without access to basic facilities. The growth of cities and towns throughout the world has created both opportunities and enormous difficulties. While urbanization in and of itself is not inherently problematic, the pace and sheer scale of urbanization has in many places, far exceeded local government capacity or willingness to provide basic amenities to city residents, including adequate housing, water, electricity, and sanitation. This problem has been particularly pronounced in developing countries. (COHRE, 2008). Scholars explored the "push" and "pull" factor as a major component of urbanization. To cite a few. Hare (1999), Kundu (2009), Haider (2010), Sarkar (2014). RS Sali and Astige (2015) highlighted this aspect in their studies.

Akter (2010), states that increased frequency and severity of natural disasters by climate change over the past years are not only displacing people physically but also exposing to enhanced poverty by threatening their livelihoods temporarily and permanently. Growing number of people rush to city's slums, creating urban crisis and urban slums located mostly in low lying environmentally hazardous area coupled with inadequate facilities like food, shelter, sanitation, healthcare making their life even worse.

The Habitat Report on Slums says that in 2001 a total of 920 million people constituting about 31.6 per cent of the world's total urban population were living in slums. Whereas nearly 43 percent of the urban population of all the developing regions combined lived in slums, it was found that 78.2 per cent of the urban population in the least developed countries lived in slums. If the present trend continues, 2.01 billion people will be living in slums by 2030. This is because of enormous migration from rural to urban areas and growth in population (United Nations Human Settlements Programme (2008) and Swain (2012)).

Begam (2011), investigated and found out that rapid urbanization leads to increase in the slum dwellers all over the world and he pointed out problems faced by the slum dwellers. She suggested proper environment management which acts

as a key to all preventable illness which is directly caused by environmental factors. She also recommends for an immediate environmental management to tackle environment health issues. She points out the need for a National action supported by other partners including NGOs, private sectors, and multilateral and bilateral institutions which is important to achieve outcomes that can directly contribute to the Millennium Development Goals. Hossain (2006), explores urban poverty and the adaptability of the urban poor in the slums of the megacity of Dhaka, in Bangladesh. This study seeks to make a contribution to understanding and analysing the phenomenon of rapid mass urbanisation in the Third world and its social consequences such as the formation of huge urban slums. Naveed and Anwar (2014), points out that people living in low socio-economic conditions due to which they had to face health issues

Massey (2011) in his research in Uganda demonstrated a firm link between lack of access to adequate sanitation and women's experiences of humiliation and violence. Women in the study area considered the level of cleanliness, cost and general adequacy of communal toilets to be grossly inadequate and also they expressed their fear of safety while moving out for toilet at night. Jorgenson and Rice (2010), assessed the extent of infant and child mortality rates in less developed countries which are affected by the percentage of domestic population living in urban slum conditions

Zanuzdana et al (2012), showed a complex relationship between housing satisfaction and the quality of basic facilities including the reachability of medical care. Poverty creates slums and slums breed hopelessness and crime, hence it needs to be tackled as an integral part of economic development. Poverty, slums and urban quarts are not going to disappear in the next 20 to 25 years. Reversal of this phenomenon will begin after sufficient economic progress has been made.

Migration is a major consequence of slum formation. The migrating labour force from rural sector is ready to occupy any space available in the cities for their survival. Many studies were conducted on migration and the problems faced by

the migrants. But apart from the problem of migration, they face many problems in settling down and surviving in the urban environment. Even after many years of settlement, they struggle to get proper drinking water, toilet facilities, drainage and transport facilities.

Center on Housing Rights and Eviction (COHRE , 2008 ), surveyed women and girls living in 20 different slum communities of Mumbai to highlight the experiences of their living conditions. Vast majority of women lived in poverty. Displacement and family disruption is a major contributing factor to settle in urban communities and end up living in slums. The reason behind migration of labourers towards urban settlements was scrutinized by Malaviya and Bhagat (2013), who brought out the push and pull factors behind settlement in neglected areas of open spaces and along sewage drains roadsides, railway track and unstable slopes. He is of the view that high costs of land in Metropolitan cities are unaffordable by the migrants which makes them to settle in informal settlements.

The major issues of the slum dwellers relate to poor condition of the roads, housing and drainage, toilets and open defecation and availability of water. Sinthia (2013) calls for the need of establishing planning and environmental management policy and sustainable urban development for the city and for the urban slum dwellers as not only poverty but also other constraints like pressure on urban land, shelter, open spaces creates environmental and ecological degradation. Quality of housing plays a key role in public health since inadequate housing has direct or indirect negative impact on health.

Edelman and Mitra (2006) examined the slum dwellers' access to basic amenities and the ways in which they gain access. The study found that the state's share of aggregate slum is positively related to per capita state domestic product (SDP), share of urban population, and urban Gini ratio for per capita consumption expenditure, and negatively related to government spending as a percentage of SDP on health and education. In addition, they indicated that the number of slum dwellers in India is very high and the slum conditions have just remained as earlier or deteriorated in the matter of most of the major amenities,

like quality of structures, access to tap water, latrines, sewage facilities, and garbage disposal. Finally, by analyzing slum survey data (2004–2005), the author commented that political contacts have helped slum dwellers to access basic amenities as well as to get relief in matters of land tenure, etc.

The major health challenges of the urban poor were analyzed by Prasad, (2013).The study revealed that respondents had no access to improved sanitation and they are obliged to defecate in the open, with serious risk of exposure to sanitation related diseases. Open defecation is a huge challenge for the promotion of sanitation as this is not only a social factor but also a cultural factor in many societies. Globally nearly one in five people (1.1 billion individuals) habitually defecate in the open.Conversely,61 percent of the world’s population has some form of improved sanitation at house. Between these two extremes many households rely on dirty, unsafe latrines or shared toilet facilities.(WHO and UNICEF, 2010) .A study by Evans (2007) points out that safe sanitation and the means to practice hygienic behavior are absent in urban slums.

Jouravlev (2004) conducted a study to analyse the status of drinking water supply and services in the countries of Latin America and the Caribbean at the beginning of the twenty first century and found that the access to drinking water supply among the countries is reasonable, even though the situation varies. He points out that there remains serious short comings in access to services, with low-income groups and rural areas being disproportionately affected. Mahasneh (2001),expresses that many people living in poor urban areas practice personal hygiene such as brushing , bathing although not as frequent as desired. Lack of resources, such as water, results in poor hygiene levels, toilets cannot be washed and there is not enough water . Poor people live in slums which are overcrowded, often polluted and lack basic civic amenities like clean drinking water, sanitation and health facilities (Urban Poverty Report, 2009). Slums are deprived in terms of access to water and sanitation, major source of drinking water for 93 percent of slums is either tap or tube well (People line up at neighbourhood standpipes, buy from vendors, or tap pipes illegally to obtain water (Fry et al.,2002).

Current definitions have commonly established that access to a latrine or a toilet does not automatically mean good hygiene. Access to a toilet is neither the same as its hygiene practices. Studies of health-related conditions have detected that the lack of latrines can be made less by adapting improved and hygiene behaviours. Due to poverty and poor living conditions in the slums, water availability is a huge problem. Poor women bear the burden of unpaid chore of fetching water and are excluded from many opportunities to create wealth from water. Kibera slum dwellers face the problem of inadequate water supplies to clean the home, prepare the food, wash the utensils, do the laundry and bathe. (Bapat et.al, 2003).

Akin wale et al (2013) studied the environmental problems in Lagos metropolis in south-western Nigeria. The majority of the slum dwellers in Lagos Nigeria migrate to cities for economic reasons and suffer unacceptable levels of hygiene and health, while they are deprived of essential basic social facilities. The communities are densely populated with more than five people living in a room and make use of poor and overstressed facilities, inadequate water and electricity supplies; they also lack proper garbage disposal facilities and good drainages. The need for comprehensive interventions to improve the health and quality of life of this vulnerable population was stressed in the study.

According to UN-ECOSOC (1997), the deprivation of water and sanitary facilities resulting in severe water-borne diseases is one main concern for slum dwellers. It is time consuming and the labourer's efforts to provide domestic household with water is imposed on women. The study further notes that water has never been a free good for poor women, however it notes that improved access to safe drinking water and poverty alleviation is well established in developing countries.. Comprehensive approach to water is needed to address the water concerns in slums because just having clean drinking water is not enough. The Lack of clean and safe water supplies has lead to unhygienic food, poor sanitation, increase in diseases; thus, poor nutrition and well-being in general (Sholkamy 1996).

Inadequate water lead to the prevalence of diseases and ailments. Insufficient health facilities and the deficiency of quality care, drawn out by cost and corruption, made slum dwellers susceptible to diseases and illness. The assessment of Dana (2011) regarding water, sanitation and hygiene in the slums of Dhaka exposed the fact that slums have inadequate services and the general environment scenario is hazardous. It is suggested that if conditions are to be improved then the problem of the poor living conditions and the health services needs to be addressed through the application of proper measures and planning by the government.

Another major factor is the presence of open garbage which has an adverse affect on the health and the living conditions of the residents. The disposal of garbage on a regular basis will improve the quality of life of people living in the slums. According to Mohanty (2005) the existence of slum is essentially a manifestation of poverty and the sprouting of slums in the urban areas is the direct outcome of greater economic opportunities available in the cities and towns. He points out that it has become urgent to raise the quality of life by creating conditions conducive to the achievement of crucial objectives in terms of shelter, health, sanitation and education and creates substantial additional employment opportunities and dispersed economic activities. Tripathi (2015) suggested reducing over population in cities and creation of job opportunities to decrease the slum incidence in cities. Thus there exists a strong correlation between the socio economic condition and the health status (Naveed and Anwar, 2014, Lukeman et al, 2014).

## **2. Health Profile of the Slum Dwellers**

Most of the slum dwellers are not aware of the interdependent relation between environment health and their personal health conditions. The water supply and sanitation situation of the household has an effect on the household's drinking water quality, reports Wieland (2008).He suggested the need to create awareness on the need to have better environment to improve sanitation. Black (1996), highlighted the ignorance about the connection between dirt, germ and childhood diarrhea, especially among women.

Banerjee, (2010), found that majority of the houses in Kaula Bander, a slum in Mumbai are tightly packed without proper ventilation and during the hottest seasons, children frequently swim in the surrounding contaminated water to cool off and consequently, skin infection, parasites and tetanus are common childhood causes of morbidity. Malaviya and Bhagat (2013) reported various health risk factors due to poor and sub-standard sewerage that clogged during rainy season as a result of which over spilling was common. The incidence of water borne diseases such as cholera, dysentery, diarrhea were common .The study suggested promoting awareness about the environment, location of slums, onsite up gradation and promotion of education and recommends that the slum dwellers should be provided with both healthy environment and economic incentives that will enable them to lead a healthy life.

Many studies have considered the health and environmental variables and the correlation between these two variables.To cite a few, (Owoeye and Adedeji (2013), Sufaira (2011)). Nandy et al (1947), Venuthurupalli (2013), Gulis et al (2004), Sundari (2003), highlighted the impact of environment on health. Shah and Dinesh (2014), suggested that micro savings has the potential to build health in informal settlement through five specific pathways of facilitating empowerment, building community, creating information and action networks, amplifying the voice of poor and building financial strength. The hypothesis that children of slum area with diarrheal illness differ in various characteristics from non-slum children was proved by Ferdous et.al (2014). Isunju et.al (2011) also opined on a similar line. Children's toileting behaviour mattered more than adults' toileting behaviour in creating a safe, hygienic environment and reducing diarrhoeal diseases, points out Bутtenheim (2008) in his evaluation of improved sanitation on child's nutritional status.

Agarwal (2011) highlighted the disparities in health, nutrition, access to health care services, housing, water and sanitation within urban areas of India and pointed out the need for better focused efforts to reach the large segment of urban poor who suffer sharp disparities. Self-rated health varies by different

environmental condition among the slum women in Nairobi, Kenya ,points out Corburn, (2015). Suha and Haque (2013) brings to light ,the reason behind poor health and its impact on adolescent girls living in slums.

A report by Utsan et.al (2008) correlates specific diseases and environmental risks. They were of view that unimproved hygiene, inadequate sanitation and insufficient and unsafe drinking water accounts for 75 of the total disease burden and 19 percent of child mortality worldwide. A report by WHO (2010), confirms that approximately one-quarter of the global disease burden among children is due to modifiable environmental factors. The report systematically analyses how different diseases are impacted by environmental risks. This environmentally –mediated disease burden is much higher in the developing world and the infant death rate from environmental causes 12 times higher in developing countries, reflecting the human health gain that could be achieved by supporting healthy environment.Lukeman.et.al(2014) proved that the environmental factors have direct effect on the health condition of slum dwellers, which implies that environment is a good determinant of health condition of slum dwellers.

Hutton and Haller, (2004) states that the disease burden weighs heavily on both households and health systems. They attempted to estimate the costs and the health benefits of increasing access to improved water supply and sanitation facilities and found out that almost all interventions were cost effective, especially in developing countries with high mortality rates.Carincross.et.al (2010) opined that interventions in hygiene, sanitation and water are highly cost-effective and capable of preventing a large part of the disease burden. The burden of disease associated with inadequate Hygiene, Sanitation, and Water (HSW) is overwhelmingly carried by the poor and disadvantaged in the developing world and is a major contributor to the cycle of poverty states Bartram and Carincross (2010). Slum dwellers are not only more exposed to social and environmental health risks like lack of sanitation facilities but also have less capacities to cope with them as the health status of slum dwellers is poor in comparison to other

residents and the burden of non-infectitious diseases among slum dwellers is more than non-slum dwellers.(Sakdapoira et.al (2011)and Gupta(2009)).Further Goswami (2014)andAlam et.al,(2012),recounts the slum situation and the living and health condition of women living in urban slums. Kiranmai (2012) explored the actual health status and health practices of women in the urban slums of Vishag, and indicated that the perceived health condition of women is good as a fact that they neither take medication nor visit a doctor in spite of many health effects. Urban areas are often densely populated and the consequences of the lack of water and sanitation services lead to environmental health problems, according to Kjellen (2006). Firdaus (2012) in his study brings to light the relationship between urbanisation, increasing number of slums and health challenges before the developing nations.

### **3. Health Risk of Poor Sanitation**

The major sanitation related diseases all around the world are Diarrhea, Cholera, Malaria and studies reveal many respiratory infections too. The overcrowding atmosphere makes the spread of diseases. Diarrhoea is the largest contributor, amounting to two-third of the total impact. Diarrhoeal diseases pose a major threat to the health of people living in Kibera slums, particularly because of the poor environment. (WHO, 2008).Lack of drinking water, clean sanitary environment, adequate housing and garbage disposal pose series of threats to the health of slum dwellers. Women and children spend their time in unhygienic environment. Most of the huts in slum area lack sanitary facilities like bathroom and toilet (Kumar, 2006). The crowded and dangerous condition of the slums, serious water supply problem and lack of proper sanitation, severe air pollution, and its effects has a bearing on the health status of slum dwellers. High association between improved latrines and reduction in diarrhea is observed in number of studies. (Von Schirnding et.al (1997), Moraes et al (1997) Meddings et.al (2004) .Access to drinking water is a fundamental right. Yet, the poor in most countries are denied access to safe drinking water. India has four per cent of world's water availability, and 15 per cent of the world population. India ranks 120th in the list of 122 countries regarding availability of safe drinking water. The

diseases, which are spread through the microbial contamination of water, are those caused by enteric bacteria and viruses like cholera, acute gastroenteritis, diarrhoea, dysentery, typhoid, viral hepatitis A, and E, and Polio, myelitis. The situation is really serious. Annually around 37 million people are affected by water-borne diseases; around 1.5 million children die of diarrhoea (Sundaram, 2012).

Poor sanitation leads to spread of diseases in slum settlements thus increasing diarrhoea incidences.

Chung (2011), in his study on three informal settlements in Kenya points out that the household that share their sanitation with many people become sick more often and greater the number of children in a household, the higher will be the number affected by diseases. Another interesting fact is that fetching water on a daily basis affects the school-attendance of children. The distance between source and latrine affects the vulnerability context in terms of a higher exposed risk to contaminated environments and unsafe water. During rainy seasons, the excretion is often washed away to people's houses. Children swim in the water which leads to diseases such as typhoid, skin disorders, diarrhea and malaria.(UNDP,2006).According to AMREF(2007),women and children are the most vulnerable to infections related to hygiene during the rainy season or when water systems become contaminate.

The risk factors for diseases in the slums are water, sanitation and hygiene. They act in competing and complementing transmission pathways for causing diseases. Faecal- oral diseases are a major burden. Human and animal excretion products can affect human health through various transmissions pathways which include transmission through ingestion of water for example, through drinking, transmission caused by lack of water linked to inadequate personal hygiene, transmission caused by poor personal and domestic hygiene, transmission through contact with water containing organisms and transmission through contaminated aerosols from poorly managed water and drainage systems. (Pruss et el, 2002). Haller et.al (2007) aimed at estimating the cost and the health benefits of the interventions such as increased access to improved water supply

and sanitation facilities, increased access to house piped water and sewerage connection, and providing household water treatment in ten WHO sub-regions. The analysis found out that almost all the interventions were cost effective. Increased access to piped water supply and sewage connection on plot was the intervention that had the largest health impact across all sub-regions and the household water treatment was found to be the most cost effective intervention. Gross et al (1989), strongly ascertained that improvement of water supplies and excreta disposal facilities may drastically reduce the prevalence of diarrhoea morbidity. Moreover, the study points out that lack of basic personal hygiene probably caused the longer duration of diarrhoea and higher incidence among people using pit latrine, infectious diseases associated with poor sanitation such as diarrhoea, continue to cause a large disease burden in low income settings and contribute substantially to child mortality and morbidity observes (Clasen et al (2012), Clasen (2015)). Facility of septic tank latrine or similar is available in 66 percent of notified slum and 35 percent in non notified slums in India. Residents of around 76 percent of rural and 18 percent of urban dwellings did not have access to any latrine facility (NSSO, 2004). Biplob et al, (2011), traces the nature habitation problem of water supply, sanitation and solid waste management systems in Korail slum of Dhaka. The study revealed that majority of slum dwellers open-defecate and few have pit latrines which are not fully hygienic. The study also reveals the fact that disposal of solid wastes and waste water in open space and open drainage causes severe hazardous condition.

The knowledge, attitude and practices of learners on issues related to water, sanitation and hygiene in selected schools in Vhembe of South Africa was assessed by Sibiya et al (2013) and exposed that the level of knowledge about waterborne diseases was relatively high and also the attitude and practice on hygiene was also found to be high. A study by UNICEF (2010), in Gaza, an interesting fact that the incidence of diarrhoea was much higher in Beit Hanun community of Gaza despite a prevalence of hand washing before eating and also in places where daily showering is most common. Moreover, one in five households of the study area reported that they had at least one child below five

years old who had been infected with diarrhoea in the four weeks prior to being surveyed. Communicable diseases are a major problem in urban populations in general and slum population in particular and most of the communicable diseases like diarrhoea are associated with inadequate water and sanitation provision declares Sclar et.al (2003). In the study it was observed that there was no hand washing after defecation. The intervention to educate the women on the importance of hand washing showed positive results.

Minh and Hung (2011), gathered evidences and demonstrated that investing in sanitation is socially and economically worthwhile. They point out that achieving the MDG sanitation target not only saves life but also provides a foundation for economic growth. The authors are of the view that poor sanitation causes economic losses associated with the direct cost of treating sanitation related illness and loss through reduction and lost productivity. Also, poor sanitation leads to time and effort losses due to distant or inadequate sanitation facilities, lower product quality resulting from poor water quality, and the reduced income from tourism. Bonu and Kim (2009), in their report for Asian Development Bank, used the data from NFHS (round-3) and 60<sup>th</sup> Round of the National Sample Survey (NSS) of India, for the information regarding access to toilet and drainage facilities. The report shows that the variation in sanitation coverage among the countries with similar per capita GDP is very high. India underperformed among the countries with similar per capita GDP. The TSC,(Total Sanitation Campaign),a targeted program for households below the poverty line provides an almost 80 percent subsidy for construction of individual household sanitary latrines, but the survey data do not validate the reported results with NFHS-2 and NFHS-3 data which reveals that certain areas and population groups have greater resistance for adopting household sanitation facilities than others. The report highlights that the cultural attitudes towards the entire concept of defecation within the house may affect progress and affordability. Many households in urban poor areas are headed by women who are the bread winners, indebted to spend long hours working away from home and when they fall ill, the cost of illness leads to debt, which leads to increased poverty, points out Fry.et.al (2002).

Water and Sanitation Program's (WSP's) global Economics of Sanitation Initiative (ESI), analyzed the evidence on the adverse economic impact of inadequate sanitation at the national level using the information on health. The major finding of the study is that the health related economic impacts of inadequate sanitation, at 1.75 trillion (US\$38.5 billion) accounts for the largest category of impacts. Access time and drinking water related impacts are the other two main losses, at 487 billion (US\$ 10.7 billion) and 191 billion (US\$42 billion) respectively. Progress in sanitation and improved hygiene has greatly improved health but many people still have no adequate means of disposing their waste. This is a growing misance for heavily populated areas, carrying the risk of infectious diseases, particularly to vulnerable group (WHO 2010). Semenza.et.al (2012) interviewed residents of 240 households in Nukas, of Uzbekisthan, out of which 120 had access to and 120 had no access to municipal piped water. Among those households without access to piped water, 62 households were trained to chlorinate their drinking water at home and all individuals were monitored biweekly for self reported diarrheal illness. This group had the lowest diarrheal rate despite lack to access to piped water. The study concluded that the dramatic reduction in diarrheal rates in the home-chlorination group had fewer diarrheas than the group with piped water. Diarrheal diseases are caused by poor sanitation inherent to the condition of poverty and still claim 1.8 million lives each year.

In an evaluation of a project by Garrett (2008) ,it was found that not only improved latrines, water supplies and hygiene promotion but also the water treatment accounts for prevention of diarrhoea. The interventions limited diarrhoea risk by reducing direct exposure to unfavourable sanitation condition (Genser. et al, 2008). Murage and Ngindu (2007) assessed the sanitary practices of residents in a Kenyan Urban slum and found that the main domestic water sources were highly contaminated with faecal matter and therefore they recommended treatment of water at community or household level and intensive behavioural change in sanitary practices.

Globally, around 2.4 million deaths (4.2 percent of all deaths) could be prevented annually if everyone practised appropriate hygiene and had good, reliable sanitation and drinking water. These deaths are mostly among children in developing countries due to diarrhoea and subsequent malnutrition, and from other diseases attributable to malnutrition declares Bartram and Cairncross (2010). The United Nation(2005) shows that among children under five, diarrhoea accounts for 17 percent of all deaths. Chronic diarrheal diseases from faecal contamination of water affect millions of urban kids per year (Davis, 2004). Although immunization services are widely available in urban countries, a knowledge gap “keeps immunization rates low and child mortality high in slum communities. The diseases spread faster in an environment with poor sanitation and hygiene. Among all the diseases that threaten the mankind in slums, diarrhoea is a major disease felt all over the world. Many studies have brought out the consequence of poor sanitation on the health of the slum dwellers and serious impacts of Malaria, cholera, Typhoid Dengue and viral infection. Kibera slums dwellers face the risk of Cholera infections because of the poverty levels which lead to inadequate sanitation and lack of clean drinking-water. (WHO, 2008). In Kibera, people rarely wash hands thoroughly with water and soap before handling food and after going to toilet. They are not keen if the food is well cooked or warm enough to be consumed. The common occurrence of malaria in Kibera slums is associated with stagnant water that provides ground for mosquito breeding (Nyamongo et.al 2004).

Women find malaria to be a big burden in their families because they spend a lot of money to buy medication and if a member of the family is sick they have to be absent from work to take care of the sick (Karanja et.al 2002). Lack of accessibility to affordable mosquito nets and treatment to those affected by malaria in Kibera slums is a challenge (Brundtland et al 2000). The density of people in slums makes for a fertile breeding ground for emerging and re-emerging infectious diseases. They spread fast tuberculosis, now even multi-drug resistant tuberculosis (KNUS, 2008). Stagnant and contaminated water in slums and lack of

sanitation can lead to water-borne and vector-borne diseases (KNUS,2008). Chhabra and Bharadwaj (2013) revealed that the lower health and nutritional status of women in the urban slum clusters is largely due to lack of awareness and knowledge regarding facilities available.

Many factors have intensified and brought about the development of squatter, slum and informal settlement characterized by poor housing conditions. The United Nations and The World Health Organization ,Joint monitoring programme for water supply and sanitation defines “improved sanitation as ,”the means that hygienically separate human excreta from human contact and hence reduces health risks to humans. Inadequate sanitation is thus the lack of improved facilities (toilets, conveyance, and treatment systems),and hygiene practices(hand washing, water handling, personal hygiene)that exposes people to human excreta and thus to disease causing fecal-oral pathogens through different transmission pathways (WSP Report 2012).Kwiringira (2014) from his study on Kampala city indicate that, failure to clean and maintain sanitation infrastructure can lead to a reversal of the potential benefits that come with various sanitation facilities.

#### **4. Government interventions to improve sanitation**

Sclar.et.al (2003) is of the view that while the physical forms vary by place and over time, slums are uniformly characterized by inadequate provision of basic infrastructure and public services necessary to sustain health, such as water, sanitation, and drainage. He is of the view that Slums are not “the problem.” Rather, they are the spatial manifestations of urban poverty, social exclusion, and inappropriate government policies. In his opinion, slum settlements represent an active, grassroots attempt by the desperately poor to take care of themselves. The key to lasting improvements in the lives of slum dwellers globally is to end the divided city in which the rich live in isolated splendour next to but worlds apart from the poverty that surrounds them. Slum dwellers need help in making the transition from inhabitants’ of precarious urban settlements to citizens with full human rights and civic responsibilities.

There are various ways of maintaining cleanliness and hygiene conditions that prevent diseases and infections; for example, garbage collections. Poor lead to low quality of health. One of the greater challenges for the sanitation sector is the need to change behaviour and people's attitude towards sanitation. The lack of proper sanitation is linked to significant negative impacts on environmental and public health, economy and human dignity.

A sizable number of research articles ,e.g. Gupta and Mitra (2002); Kumar and Aggarwal, (2003); Sengupta, ( 2010), Kit et al., (2012) Bhavsar et al (2012) have addressed the problem of urban slums by considering several case studies and also evaluated government programs and policies taken for making India slum free. Chaturvedi (2013), in his article analyses the various approaches for slum upgradation. Reasons of slums creation particularly in a country like India are obvious i.e. Adverse change in agricultural scenario, low prospects in rural areas as compare to bigger opportunities in cities and preference for labour market than agriculture (which anyway is on its downfall due to scanty rainfall and lowering of ground water level). As we approach the status of developed countries, we need to address the challenges of slums up-gradation by multiple means, because Slums are equal to Poverty. The results of slums are - poor living conditions, very less or no education, extremely poor hygiene conditions and awful health care services and the resultant extreme low status. He articulates that it is high time to think out of the box and need to introduce multi-dimensional, multi-focused and holistic approach (no piece meal approach will work). We have to work not only with the physical aspects i.e. houses, roads, sewerage, health clinics, school buildings, shops for business and playgrounds /parks etc. for the slums and slum dwellers but also address the functional aspects i.e. psychological, social, economical, domestic and community aspects. Innovative approach i.e. inviting private players with specific Terms of Reference, addressing both, physical and functional aspects carefully and efficiently, need to be introduced. This approach will have three main players – Municipality, Private Players, and Non Government Organisations (NGOs) and will have three major

components – (i) NGO intervention for addressing functional aspects; (ii) low cost houses for slum dwellers and (iii) modern high rise residential apartments and commercial mall for higher classes on sale. Besides this municipality and government will be in the monitoring and supporting role and at the end of the day will get taxes and other collections. Continued neglect of ever-expanding urban slum populations in the world could inevitably lead to greater expenditure and diversion of health care resources to the management of end-stage complications of diseases that are preventable. A new approach to health assessment and characterization of social-cluster determinants of health in urban slums is urgently needed as pointed out by Riley et.al (2007). There is strong need to educate slum dwellers towards the importance of good food habits, hygiene and sanitation as these are the core factors behind good health, says Dwivedi (2012).

## **5. Related Studies.**

The inter relationship among poverty, environmental sanitation and public health was scrutinized by Owoeye (2013), understanding the fact that health of individuals cannot be considered in isolation without considering the socio-economic base building, public enlightenment, environment and health education, enforcement of environmental sanitation and the environment in which they live.

Marx .et .al (2013) tried to establish the relationship amongst economic growth, urban growth, and slum growth in the developing world and suggested that not only is housing policy insufficient for any meaningful slum development program but also that there is need for a holistic approach that addresses health and sanitation issues, local governance, private savings and investments, and land market institutions. They also suggested that a research agenda on slums should necessarily consist of three distinct sets of methodological and policy areas: First, there is the need for efforts to enumerate slum populations and to track panel respondents over several generations of slum dwellers to understand the intergenerational correlation in incomes and other socioeconomic outcomes. Second, the possible returns from upgrading different types of public service need to be identified so that cost effective projects can be more consistently applied for

welfare gains of slum dwellers. Third, the “big push” policy can lift slum dwellers out of poverty.

The crucial role played by sanitation in poverty reduction, economic growth and enhancement of human security is exposed in a study by Mital, (2006). She assessed the state of water and sanitation in slums of Delhi and suggested low cost options to ameliorate the situation so that the overall health, wellbeing and productivity of the families could be improved and better quality of life can be given to the slum dwellers. Mony et al (2006) studied the status of demography, domestic environment and maternal health care services in Vellore town and brings to light the fact, access to safe water supply, sanitation facilities, and garbage disposal were very low in the slums.

Alamgir et.al (2009), attempted to determine the factors affecting the livelihood of the migrants and analyzed the cause of rural-urban migration in slum area. Analysis showed that taking part in micro credit was beneficial for the slum dwellers. The socio economic conditions of slum dwellers and their consumption pattern were examined by Akter (2010), and he brought forth that majority of the slum dwellers cannot afford nutritious food which is expensive to them and so a planned migration and secured life style to lessen their poverty and food insecurity.

International Institute for Population Science, Mumbai (2006), conducted a survey and found that poverty is more prevalent in slum areas. The occupation structure of both women and men were quite diversified in the Indian megacities. Generally, Women workers in slum were concentrated more in production and service activities whereas women workers in non slum areas concentrated more in production and professional activities. Also the survey revealed that slums have much poorer housing condition and sanitation facilities than non-slum areas. The survey also brings to light that large numbers of non-poor persons are forced to live in slum areas due to non-availability of formal housing. The Survey evaluated the health and living condition in eight large Indian cities. The study disclose the fact that poverty is more prevalent in slum areas than in non-slum areas in every

city except in Indore. The coincidence of acute human poverty, overcrowding, poor housing, lack of investment in civic infrastructure, job shortage and environmental stress in many fast changing settings are the ingredients of the sanitary crisis facing urban Asia and Africa, articulates, Black (1996) The study exposes the fact that in Dhaka, 37 percent of slum dwellers have no supply of drinking water and that some are even reduced to use ditches and pat holes. Gunther and Fink (2010) conducted the demography and health survey sets from 70 countries to estimate the effect of water and sanitation on child mortality. The result revealed that there exist a robust association between access to water and sanitation technologies which results in child morbidity and child mortality. The study revealed that depending on the technology level, the water and sanitation infrastructure lowers the odds of children suffering from diarrhea by 7-17 percent and reduces the mortality risk for children under the age of five by about 5-20 percent.

Mensch et al (2004), examined whether an experimental intervention for girls aged 14-19 provided with reproductive health information, vocational counseling and training and assistance with opening savings accounts in slum areas of Allahabad in Uttarpradesh ,has an effect on their attitudes and behaviours, and the greatest changes between the baseline and the end line surveys were found in those outcomes that most closely reflected the content of the intervention. Garg et al (2001), conducted a study with the objective of assessing the prevalence of various RTIs (Reproductive Tract Infections),among the married women in the urban slums of New Delhi , and majority of women were found to be infected . Similar studies were done by Das and Shah (2001), Hazaika (2009), Reddy (2014). However Sheuya (2008), stressed on the empowerment as it is a promising strategy to improve health in slums. The vulnerability of slum household of Kolkata to fall in a debt trap while financially managing the health problems was investigated by Pathak (2010), and the three most important sources of financing the household expenses on managing health problems in decreasing order of importance are listed as money earmarked for monthly spending, loan and savings. Dependence on Loan is maximum for the

hospitalization which results in increasing vulnerability of a slum household to fall in a debt trap.

A study by Nimbalkar et al (2012), shows that slum dwellers were 6 times less likely to seek Newborn care practices. Improvement in sanitation requires newer strategies and targeted interventions with follow- up evaluations suggest Kumar.et.al. (2011). An interesting finding of a survey conducted among the school children in rural Vietnam by Xuan.et.al (2012), reveals that though schools had toilet facility, the school children most commonly urinated and defecated in the open. Also, the main barrier for latrine use included inadequate number of latrine, limited accessibility to latrines, lack of constant water supply and poor maintenance.

Impact of Total Sanitation Campaign in Andhra Pradesh was done by Ramaraju (2013) A review of the literature on the issue of violence against women and inadequate sanitation reveals a commonly held assumption – that women are at risk of physical violence and humiliation when travelling to communal latrines or defecation sites. One notable exception is the Amnesty International report entitled Risking rape to reach a toilet: women’s experiences in the slums of Nairobi, Kenya. Documented in this report are women’s testimonies of their experiences of attack and rape when walking to use communal latrines after nightfall (Massey, 2011).