



The Impact of Growth and Development of Slums on the Health Status and Health Awareness of Slum Dwellers

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ABSTRACT

Aim: To understand and describe how the growth and development of slums in Guwahati, Assam influence the living conditions affect the health status of slum dwellers. **Methods:** A comprehensive literature review of 44 articles published during 1993 to 2016 in various databases computerized databases, hand searches, and authoritative texts was undertaken to reveal the inter-disciplinary character of the topic. The inclusion criteria for this study were to select items having scientific quality and were aligned with the objective of the study. Items were excluded if they were irrelevant to the slum areas, redundant and lacked scientific quality. **Results:** It is equally necessary to make sure that the health policies consider the importance of equity and social justice in slum areas. The nutritional condition of school going slum children and prevalence of diarrhea are issues to be taken care of. It was noted that the level of health awareness in Assam was less compared to the national level and the slum dwellers didn't know how to avail these healthcare facilities. This was a barrier in improving their health status. **Conclusion:** We should nurture the aim to create a slum free society by providing proper housing, sanitation, safe drinking water, and affordable healthcare services. Special focus on the nutritional condition of slum children; maternal and child health in the slum areas of Assam is urgently required. Health and education must go hand in hand to uplift the lives of these slum dwellers.

Keywords: Slums, Health status, Sanitation, Nutrition, Communicable diseases

INTRODUCTION

According to World Cities Report released in 2016, the population of slum dwellers in developing countries gradually increased from 689 million to a whopping 880 million in 2014. It also stated that a quarter of the world's total urban population reside in slums. Health is a subject of concern especially for people residing in the slum areas of any state or in any country. The limited healthcare resources at their disposal make their lives susceptible to risks in case of diseases and its management. Problems of shelter, housing, sanitation, water, social security, education, health, and livelihoods of weak groups like children, women, and elderly people in addition to their special needs are the most important areas where urban poverty poses a great risk. Public health problems and social issues have arisen that lower the quality of life. The poor sanitary conditions in the crowded urban neighborhoods and the inadequate waste disposal were favorable for the spread of infectious diseases like tuberculosis, pneumonia, and diarrhea [1].

The World Health Organization (WHO) had specifically recognized the need to develop the lives of not less than 100 million people living in the slums in the Target number 11 of the Millennium Development Goals. The Millennium Declaration released by the United Nations had been signed by India also. According to Slum Etymology Dictionary, the word "slum" is a slang which means room and had evolved to "back slum" in around 1845. According to Kevin Baker, slums were commonly found in the Europe and the US prior to early 20th century. It is said that New York City

was the ground for the foremost slum in the world and got the name “Five Points” in the year 1825, as it developed into one huge urban settlement.

Slum Definition

- I. Encyclopedia Britannica has defined slums to be those residential areas where there are physical as well as social disintegration and leading an acceptable family life becomes unfeasible. It includes poor condition of housing which is one of the major indexes of slum environment which means dwellings where there is insufficient air, light, bathing, and toilet facilities; that are not repaired, dumped and improperly heated as well as those that don't have any confidentiality for a family. They are prone to fire hazards and are overcrowded with practically no room for recreation [1].
- II. The section-3 of the Act on Improvement of Slums and its Clearance Act, Government of India, 1956, slums were defined as primarily those inhabited places or areas where human habitation is unfit due to dilapidation, congestion, wrong designs and provision of these buildings, restricted arrangement of sanitation, ventilation facilities, streets, no entry of light, or combination of any of these factors which are damaging to health, safety, and ethics [2].
- III According to UN-Habitat, a slum is an area identified by a lack of robust housing, unsatisfactory living areas, with no supply of clean water, improper sanitation accompanied by unsecured tenure. UN-Habitat defines slums as a place of contiguous settlement of people who have limited housing and fundamental services. A slum is often overlooked and left unattended by the public administration by not considering it to be a vital or equal part of the city.” [2].

Slums can therefore be defined as a condensed area of about 60 to 70 households of inadequately constructed and jam-packed tenements; wherein there is an insanitary environment typically with insufficient infrastructure coupled with deficiency in suitable sanitary as well as amenities for drinking water can be called a slum [2].

Slums around the World

Global urbanization is unmatched, and the highest urban growth occurs in the periphery of cities and creating large squatter illegal settlements. This has propelled large form of poverty induced migration from stagnated rural areas and villages to cities and towns. These settlements that are slum pockets need some minimum basic services like water supply, scientific drains, electricity, housing, hygienic sanitation, etc. to facilitate improvement in the environmental situation of the town/city as a whole [3].

Five of the world's largest slums according to World Economic Forum, Agenda 2016 are as follows:

- 1) Khayelitsha, Cape Town, South Africa (Population: 400,000)
- 2) Kibera, Nairobi, Kenya (Population: 700,000)
- 3) Dharavi, Mumbai, India (Population: 1 million)
- 4) Ciudad Neza, Mexico City, Mexico (Population: 1.2 million)
- 5) Orangi Town, Karachi, Pakistan (Population: 2.4 million)

The slums in Dharavi of Mumbai city in India is home to one million people. The economy of Dharavi slums is estimated informally to be worth \$1bn a year. Now coming to Northeast India, we find that the state of Guwahati known as the “Gateway to the Northeast India” is a fast and developing city of Assam having immense job opportunities, a pleasant climate and having a good road, rail, and air connectivity with other cities in India. But during the rainy season, floods always created havoc in different parts of Assam as well as in the slum areas. In some slum areas where makeshift toilets are used, people face a lot of difficulties as they are submerged in the flood water and are also a cause of great concern for the spread of communicable diseases. Very often there is a lack of awareness among the slum dwellers about proper ways of keeping healthy and maintaining hygiene. Some of them often lack basic knowledge regarding common health issues like boiling drinking water, use of soap before and after meals, washing hands after use of toilets etc.

Diarrhea was prevalent among fewer than five children residing in slums of Dibrugarh town in Assam. Some age-old

traditions, superstitions, social norms, and values also act as barriers against access to the modern healthcare facilities [4]. The health status of women and children in slums are not satisfactory as there are less antenatal health checkups as well as the prevalence of anemia during pregnancy and most of the children are non-immunized. The mortality rate amid children whose ages were under five years continued to rise at a surprisingly annual rate of 24 per cent in spite of efforts of various vertical programs. Seven out of every ten children die due to diarrhea, acute respiratory infections, malnutrition, and measles [5]. Some of the reasons like poor nutrition, improper health-seeking behavior, and bad environmental conditions result in the high prevalence rate of infectious diseases. All this contribute to very high child mortality and morbidity among the urban poor. The present study aims to explore the migration and growth of slums in Guwahati metropolitan city of Assam, the living conditions of slum dwellers and how it affects their health status.

Objective of the Study

To understand and describe how the growth and development of slums in Guwahati, Assam influence the living conditions affect the health status of slum dwellers.

Growth and Development of Slums in India

The urban areas have always shown proliferation of slums and this is a characteristic of India's migration in an urbanization system [6]. This has propelled large scale poverty induced migration from stagnated rural areas and villages to cities and towns. These settlements that are slum pockets need some minimum basic services like water supply, scientific drains, electricity, housing, hygienic sanitation, etc. to facilitate improvement in the environmental situation of the town/city as a whole [7]. Census, 2011 of India has stated the existence of three categories of slums namely Identified, Recognized and Notified slums respectively [8]. The Identified slums comprised 37.20%, Notified slums made up 34.30% and the Recognized slums comprised 28.50% of the total slum population of India. It also stated that 63% of the towns in India have slums whereas 37% of the slums are free from slums. During 2001-2011, there was an increase in the slum population in India [9]. The possible reasons for slums development can be attributed to the following:

- Some areas have become rapidly urbanized.
- There is a continued growth of industries in some of the areas.
- The secondary or tertiary sectors have higher productivity as compared to the primary sector. This puts towns and cities at the center of economic development and opportunities for job.
- Cities act as ray of hope for the rural inhabitants as they stand for a higher standard of income and put forward opportunities to the community not accessible in the rural areas. This propels exodus of people from rural areas to cities.
- Due to the movement of people towards the urban areas there is a negative effect because of which slums come up and it is characterized by shortage of housing facilities in addition to critical public utilities inadequacies, unhygienic conditions, over-crowding etc.

Table 1 shows the proportion of slum households to urban households in some Indian states.

Table 1 States reporting slum households (HHs)

State	Proportion of Slum Households to Urban Households (%)
Andhra Pradesh	35.7
Chhattisgarh	31.9
Madhya Pradesh	28.3
Odisha	23.1
West Bengal	21.9
Chandigarh	9.7
Gujarat	6.7
Jharkhand	5.3
Assam	4.8
Kerala	1.5

Source: Census, 2011, India

History and Development of Slum Areas in Guwahati, Assam

In Guwahati, the growth of slum pockets is the result of concentration of sweepers, cobblers, beggars, street vendors, rickshaw and cart-pullers and day-laborers in certain distinct areas of the city. It was reported that there was informal occupation (Dakhla) of private and public land [7]. Informal settlements were found on the Railway lands, the Government of Assam's Revenue lands (located on swampy lands, plains, and hills), Government Reserve Forest (RF) land (located mostly in the hills), and private lands identified for acquisition. Some informal commercial subdivisions of agricultural land of private nature were created because of alienation on the outskirts or periphery of the Guwahati city.

According to Census 2011 slum population details about Assam, we find that the slum population is the highest in Dibrugarh i.e., 13.73% of the total slum population in Assam. In Guwahati, Silchar, Dhubri and Nagaon the percentage of slum population of Assam are 13.05%, 11.53%, 9.38% and 9.18% respectively. Accordingly, the slum population in Guwahati is 25,739. Table 1 below depicts that there exist slums in 31 towns in Assam and the slum population of Guwahati is 25,739.

Decadal Growth Rate in Guwahati, Assam

In Figure 1 shown below, Guwahati has seen a drastic growth rate during the period ranging from 1971 to 1991; 8.1 per cent annually, which is likely because of Guwahati called the Assam's capital city in 1972. Since then, Guwahati Municipal Corporation area had a slow, registered population growth rate, from 3.3 per cent p.a. in 1991-2001 periods and 1.8 per cent per annum in the period from 2001-2011. In fact, in the last decade the GMC area has experienced a growth rate that is even lesser than annual growth rate of Assam's population of 2.5 per cent in the urban sector. The GMA areas have registered a population growth that is even lower than the GMC rate in 2001-2011.

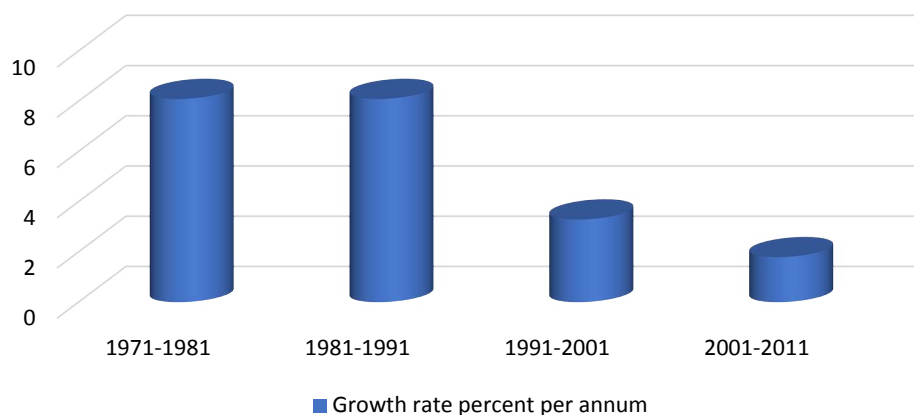


Figure 1 Population growth rate in Guwahati, Assam

Health Status of the Slum Dwellers

There is often a close relationship between the health status and the living conditions of the slum dwellers. Some studies that were conducted in the national and state level slum areas to assess the health status, health seeking behavior and the level of health awareness among the slum dwellers are as follows:

A study to analyze the socio-economic conditions of the slum dwellers of Assam was undertaken and it was found that these people lacked the basic amenities [8]. Most of the slum dwellers were living quite below the poverty line. As most of these slum dwellers are not educated and are devoid of any regular income source, they find it hard to improve their socio-economic conditions.

The notified slum dwellers under Guwahati Municipal Corporation were facing problems of sanitation among the households [9]. There were problems of unhygienic toilet facilities. These could lead to contamination of the ground water which depended on the soil distinctiveness and the distance between the sources of water and the toilets. Garbage management, disposal and drainage system were pathetic. Open and uncovered domestic wastes were hazardous to health. There was unplanned construction of shops, houses, roads and drains in certain slum pockets. All this affected the environment of the Guwahati city. A study was carried out to find out the prevalence of diarrhea among fewer than

five children residing in slums of Dibrugarh town. They tried to assess the health seeking behavior of their mothers for diarrhea of their children [10-21].

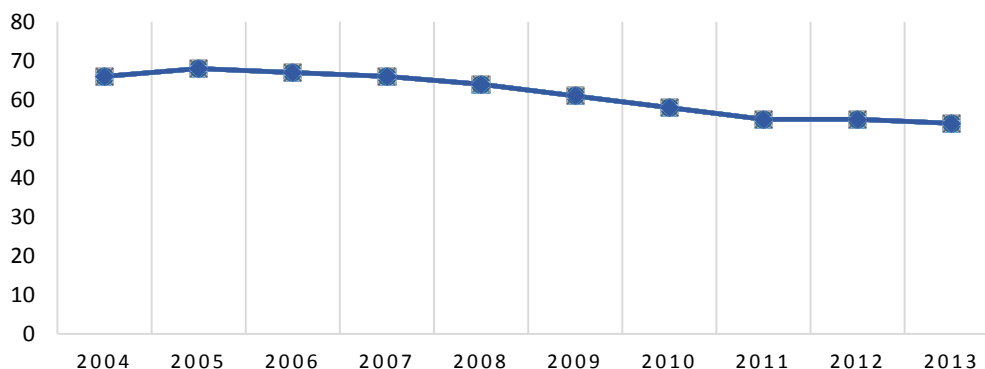


Figure 2 Infant Mortality Rate in Assam

Table 2 Socio-economic, demographic and Health summary of Assam (State) and compared with India

Indicators	Assam	India
Assam's total population according to Census 2011 (in Crores)	3.12	121.01
Percentage of Decadal Growth	16.93	17.64
Birth Rate	22.4	21.4
Death Rate	7.8	7
Growth Rate	14.5	14.4
Infant Mortality Rate	54	40
Maternal Mortality Rate	328	178
Total Fertility Rate	2.4	2.4
Sex Ratio	954	940

Source: RHS Bulletin, Ministry of Health & F.W., GOI, March 2012

From the above Table 2, we can see that maternal and infant mortality is far ahead of the national average. This mortality rate is alarming (Figure 2). The health status of women and children in slums was not satisfactory as there was less antenatal health check-up as well as prevalence of anemia during pregnancy and most of the children are non-immunized (around 80 per cent). The mortality rate amid children whose ages were under five years continued to rise at a surprisingly annual rate of 24 per cent despite efforts of various vertical programs [22-29]. Seven out of every ten children die due to diarrhea, acute respiratory infections, malnutrition, and measles [30,31]. Slums in India have nearly 100,000 babies dying every year before they reach their fifth birthday. Some of the reasons like poor nutrition, improper health-seeking behavior, and bad environmental conditions result in high prevalence rate of infectious diseases. All this contributed to very high child mortality and morbidity among the urban poor [11,32-34].

In India, there is an underutilization of accessible public health amenities and on comparison there are disparities with the slum free areas in the five main Indian metropolitan cities namely, Mumbai, Chennai, Delhi, Hyderabad, and Kolkata [12]. The data on slums that were classified by both NFHS-III and Census of India as household slums were analyzed only. It was found that about 90% of the households in Mumbai slums have piped to yard or public tap water sources, consequently by Hyderabad having better supply of water and slum dwellers in Chennai who have least access to good sources of water. Around 11.4% of the slum households are unaware of the whereabouts of their toilet drainage connection. The extent of open defecation was compared among the five metropolitan cities. It was found that Delhi and Hyderabad have the same proportions of 75% to 79% ($p>0.05$), Chennai and Kolkata have an extraordinary inflated proportion, of greater than 95% ($p>0.05$) and finally Mumbai stands in the middle with 89.6%. An estimated 40 per cent to 45 per cent of the population in the slums excluding Delhi complained about longer waiting time and poor service quality in the Government hospitals.

An analysis of the health services and state of health among the poor in the urban areas in India was conducted amongst 2000 households and covering around 10,929 individuals selected from four cities in India. The results depict a lack of government services and facilities along with inclination for private healthcare facilities, soaring expenses

particularly in private as well as in public facilities, and an important concern and opinion that private facilities only offer best quality services [13-16]. Corruption engulfs the public health delivery services to the people and embezzlement of funds. An analysis of the determinants causing acute illness indicated the scarcity of basic facilities like garbage disposal, sanitation, and potable water. It also hinted that insufficient health facilities provided by the Government. The results signal the need for vital government action for the urban poor.

The poor sanitary condition in the crowded urban neighborhoods and the inadequate waste disposal was favorable for the spread of infectious diseases like tuberculosis, pneumonia, and diarrhea [14]. It was also stated that due to this fact the death rate among households of poor children in Latin America, Africa and Asia was exponentially higher than in the Western Europe households or in the United States of America. He also suggested that policy making must bring into consideration the health factor to curb the grave effects on health caused by urbanization. In India, the health status among urban poor and their rural counterparts are the same. The mortality rate among infants and the childhood immunization rates are equal in both populations. The health of the urban poor is seen to be worse as compared to the rural population. According to the Indian Urban Health Centre, malnourishment is more prevalent among the slum children than their urban counterparts [21,31]. The outbreaks of respiratory diseases such as tuberculosis also occur due to overcrowding in the slums.

A descriptive cross-sectional study about the perception of maternal mortality among women in a South Indian slum situated in an urban area was undertaken among 378 women above 20 years of age [15]. It was found out that 35.98% (mainstream) of the subjects under study belonged to the 31-40 years age group which was followed by 28.31% in the 21-30 years age group. About 34.14% of the study subjects had intermediate education and 22.22% had secondary level education. A bulk of the subjects under study were aware that death can occur from pregnancy-related problems while other subjects stated that excessive vaginal bleeding was a possible cause of death followed by high BP as possible cause of death. It was found that health education programs on prevention of maternal deaths and morbidities directed towards women at risk need to be developed and improved to balance the high rate of maternal mortality. The participation by men is very important in these families as most of the decisions were taken by them.

The nutritional condition of school going slum children was not satisfactory and they suffer from malnutrition. Some had stunting, underweight and wasting among the children in the slums [16]. Some interventions, for example; skills-based education on nutrition, fortification of the food items, successful infection control and offering training to public healthcare workers were recommended. The need for health care reforms through a national effort to provide the basic amenities to the slum dwellers like food, shelter, sanitation, water, education etc. was necessary [27,30].

Longevity coupled with socioeconomic factors pointed out that longer life expectancy was found among high income households as compared to the persons who were deprived. The study pointed out the preference for healthcare in the private sector [17,35,36]. In the early 1990's, with a view to deal with the difficulty of child malnutrition, the State and Central governments with the support of the United Nations Children's Educational Fund (UNICEF) were dedicated to promoting an initiative in the hospitals called Baby Friendly Hospital Initiative which stressed on continued feeding during illness, breast feeding exclusively, timely balanced feeding as well as taking care of woman who are pregnant. Significant findings of the study involve highlighting of the fact that proper implementation of these simple measures have not occurred in the rural and slum areas. This is evident from the fact that most of the mothers discontinue baby breast feeding during any diarrhea episodes [18,37]. Same loopholes were found in the care taken for pregnant women.

A relationship has been established between the reproductive health services and the variable slum and selected 4,827 women as a sample who presented in 15-49 years age group. The data was expected to give a national illustration of the reproductive health women in the Indian slum population collected during the NFHS-3 [18,32]. The study aimed to find out how the involvement of the variable slum affected the services for reproductive health. They also tried to recognize the factors of socio-demographic origin which are accountable for providing the women in the slum communities with these services.

A meritorious study was carried out among adolescent girls falling between age groups of 10-19 years living in the urban slums of Guwahati [19,20]. It was found that the implications of malnutrition are far reaching and disappointing. The Body Mass Index in most of the adolescent girls selected for the study was less than 5th percentile. They belonged to category IV of the socio-economic status. There was a statistically association of the socio-economic status and

the BMI at 1% level of significance. Another important finding was the prevalence of stunting and thinness in the age groups of 10-14 years and 15-19 years respectively among adolescent these girls of the slum areas who belong to this lower socio-economic status. The prevalence of mild, moderate, and severe anemia was found among these adolescents [29]. These studies were supported by other studies conducted by other researchers [19-22]. A study undertaken in Guwahati to evaluate the nutritional status in children of 1-5 years old found out there is under nutrition among these children [23-25]. But the prevalence of underweight in Guwahati is markedly less than the National Family Health Survey-3 done throughout India. The predominance of stunting and wasting in this study were to some extent less than that of the NFHS-3 national scenario. It was also noted that amongst the socio-demographic factors, the boys were more undernourished as compared to girls and it was significant statistically. It was highlighted that maternal literacy can be one of the important factors to influence the children's nutritional status [30,33]. It was also seen that there was a high prevalence of under nutrition among illiterate mothers in this study. It was also stressed that breast feeding helps to keep a nutritional status in children [26]. They concluded that the study children suffered from under nutrition and there was genuine need to involve measures like nutrition education to mothers and caregivers of those children [33,34]. There is need to put emphasis on exclusively breast feed the children and appropriate providing of complementary feeds [35-39]. Female literacy had to be promoted through awareness as it was observed that mothers who had a higher educational level could take better care of their children.

METHODS

A literature review of 44 articles published during 1993 to 2016 in various databases computerized databases, hand searches, and authoritative texts were assessed. The inclusion criteria for this study were to select items having scientific quality and were aligned with the aim of the study which was growth and development of slums and the health status of the slum dwellers in Guwahati, Assam. Items were excluded if they were irrelevant to the slum areas, redundant, lacked scientific quality. The better the scientific quality (i.e. sound methodology), the minimum are the chances of bias and obviously, the better reflection of truth in the findings. We have not considered other features of scientific quality, for instance the significance of the question answered or the excellence of the presentation in this criterion.

A comprehensive exploration for both published articles as well as various government reports was performed from across an extensive choice of information sources for revealing the inter-disciplinary character of the present topic [40]. Varied articles published in English languages were selected with some observed limitations in the scientific quality. A preliminary literature search was undertaken between November 2015 and August 2016 which was followed with an update search during the period November 2016 and December 2016.

Electronically Searched Databases

A comprehensively undertaken search from the SCOPUS database was done by combing two different conception groups for searching the terms namely, the setting (slums) and status (health status). The studies were manually analyzed for the study designs with the outcomes after the search was completed. A strategy for SCOPUS was subsequently tailored for the additional databases mentioned below by means of database precise subject headings [39-41].

I. Biomedical and Health

- MEDLINE (1947 to December 2016)
- EMBASE (1947 to November 2016)
- Cochrane Public Health Group Specialized Register (1994 to November 2016)
- Cochrane Central Register of Controlled Trials (CENTRAL) (foundation in December 2016)
- Saudi Digital Library (inception to November 2016)
- UN data (inception to December 2016)
- CINAHL (1981 to November 2016)

II. Multidisciplinary

- Scopus

III. Social Science

- Abstracts with sociological background
- Social science citation index

IV. Architecture and Urban Planning

- Economic Survey, Assam (2014-2015)
- Economic Survey, Assam (2015-2016)
- Statistical Handbook of Assam, 2015
- Master Plan GMDA
- Census 2011
- Ray Module, 2012
- Report of Slum Committee, 2011
- Census Primary Abstract on slums, 2013
- Slums in India, A Statistical Compendium
- National Building Organization

V. Other Websites

The following websites were searched for grey literature:

- Asian Development Bank;
- Care International India;
- CDC;
- UN-HABITAT;
- United States Agency for International Development (USAID);
- World Bank;
- World Health Organization (WHO);
- Red Cross;
- Guwahati Municipal Development Authority (GMDA);
- National Family Health Survey, India

RESULTS AND DISCUSSION

The regulations, laws, rules which govern a country will be a mirror image of the Governments' prioritizations in providing good health services to the entire population. We must make sure that policy making bring into consideration the health factors in it with an intention to control the grave effects caused by urbanization on health. Most of the depressing effects are encountered by the poor as well as minorities so it is equally necessary to make sure that the health policies consider the importance of equity and social justice. The nutritional condition of school going slum children is not satisfactory [16,38]. There is also prevalence of diarrhea among fewer than five children residing in slums of Dibrugarh town [10]. They lack health seeking behavior due to their eating and drinking habits, lack of recreation, exercise etc. The poor sanitary conditions in the crowded urban neighborhoods and the inadequate waste disposal were favorable for the spread of infectious diseases like tuberculosis, pneumonia, and diarrhea. The maternal and infant mortality is far ahead of the national average which is very alarming. The health status of women and children in slums is not satisfactory as there is less antenatal health check-up as well as prevalence of anemia during pregnancy and most of the children are non-immunized (around 80 per cent). The mortality rate amid children

whose ages were under five years continued to rise at a surprisingly annual rate of 24 per cent despite efforts of various vertical programs [22,23]. They fail to avail the healthcare facilities offered by the Government and most of them approach the private healthcare facilities for health-related conditions. Also, it was noted that the level of health awareness in Assam was less compared to the national level and the slum dwellers didn't know how to avail these healthcare facilities. This was a barrier in improving their health status. Health awareness can be boosted by increasing the literacy rate, establishing affordable healthcare centers and by initiating some livelihood generation measures so that the slum dwellers can earn their livelihood [27-30]. This will help them to understand their health needs and take preventive and curative measures for their healthcare.

CONCLUSION

The health status of the slum dwellers in Assam needs attention as it is the "Gateway" to the seven northeastern states in India and one of the fastest growing and urbanizing cities. We should nurture the aim to create a slum free society by providing proper housing, sanitation, safe drinking water, and affordable healthcare services. Special focus on the nutritional condition of slum children, maternal and child health in the slum areas of Assam is urgently required. Health and education must go hand in hand to uplift the lives of these slum dwellers and to prevent any communicable or transmissible diseases.

DECLARATION

Conflict of Interest

The authors have disclosed no potential conflicts of interest, financial or otherwise.

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