Health Challenges of Cities in Developing Countries: A Study of Guwahati City in North-East India

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*Abstract---*The paper contains the health challenges of cities, particularly in less develop countries. In this paper, a comparison is made between slum and non-slum population of cities and tried to define how living condition of slum and non-slum people are related to their health condition. In the study data are analyzed by using some statistical tools to show the relation between the two. It is found that the relation is strong between the living condition and health condition for both slum and non-slum population but it is more significant in case of slum population that non-slum population. Though we find the relationship, it is also clear from the study that there are some other variables which with a negative effect on health condition of city dwellers in less develop countries.

*Keywords---*Slum, Non Slum, Health Challenges, living condition, less developed countries, city dwellers

I. INTRODUCTION

DEVELOPING countries have been peasant societies. The cities in traditional societies have been pilgrimage centers', seats of administration and educational centers'. These cities had homogeneous relationships with the villages. Industrialization has developed modern megacities whose way of life is heterogeneous with that in the villages. Rural poverty has pushed villagers to the cities, which were never planned to accommodate immigrants. Public health and social problems have arisen lowering the quality of life. Communicable diseases among the urban poor coexist with non-communicable diseases among the comparatively affluent. Problems of pollution, crime and chronic morbidity increase. The NGOs provide relief to the poor and needy but do nothing toward creating an infrastructure for balanced development. The election of women as a result of non-discriminatory legislation provides good ground for hope (Mark R.Montgomery,2009) In developing countries the level of urbanization is expected to increase to 39.5% by the end of this century and to 56.9% by 2025. The number of people living in slums and shanty towns represent about one-third of the people living in cities in developing countries. This project focuses upon these poor urban populations and comments upon their lifestyle and their exposure to hazardous environmental conditions which are associated with particular patterns of morbidity and mortality. The concept of marginality has been used to describe the lifestyle of the urban poor in developing countries. This concept is critically examined and it is argued that any concept of the urban poor in developing countries being socially, economically or politically marginal is a myth. However, it can certainly be claimed that in health terms the urban poor are marginal as demonstrated by some of the studies. Most studies of the health of the urban poor in developing countries concentrate on the environmental conditions in which they live. The environmental conditions of the urban poor are one of the main hazards of the lifestyle of poor urban residents. However, other aspects of their way of life, or lifestyle, have implications for their health. Issues such as smoking, diet, alcohol and drug abuse, and exposure to occupational hazards, have received much less attention in the literature and there is an urgent need for more research in these areas.

II. INTERNATIONAL STATUS

Urbanization is associated with many health challenges related to water, environment, violence and injury, non-communicable diseases (NCDs) and their risk factors like tobacco use, unhealthy diets, physical inactivity, harmful use of alcohol as well as the risks associated with disease outbreaks. The rapid increase of people living in cities will be among the most important global health issues of the 21st century. Over half of the world's population now lives in cities. By 2030, six out of every 10 people will be city dwellers, rising to seven out of every 10 people by 2050. In many cases, especially in the developing world, the speed of urbanization has outpaced the ability of governments to build essential infrastructure. Unplanned urbanization can intensify an existing humanitarian crisis and has consequences for the health security and safety of all citizens in cities. Health data is usually aggregated to provide an average of all urban residents - blurring differences between the rich and the poor. It thus masks the health conditions of the urban poor. More than one billion people – one third of the urban population – live in urban slums. (S.Mercado, K.Havemann, M.Smi, H.Ueda, 2007).

The crowded urban neighborhoods combined with poor sanitary conditions and inadequate waste removal creates conditions favorable to the spread of infectious diseases. The overcrowded housing in the slums expose the urban poor to high rates of infectious diseases such as pneumonia, tuberculosis and diarrhea. As a result, the proportion of children dying from infectious and parasitic diseases in poor households in Africa, Asia and Latin America is several hundred times higher than in households in Western Europe or

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in the United States. The environmental, social and economic situation at home is, in turn, influenced by the general social, economic and political situation. The rules, regulations, and laws governing a particular city or country will be a reflection of the priority that the government attaches to providing good services and a healthy environment to the population. Given the serious effects that urbanization can have on health, it is essential to include health considerations into policy making. Because many of the negative effects are suffered by the poor and minorities, it is equally essential to view the challenges incorporating considerations of social justice and equity. The economic situation is a key determinant in the decision, resolve and capacity of the authorities to tackle environmental problems more effectively. As Herbert Girardet, an expert on urban sustainability has stated, "If we are to continue to live in cities, indeed if we are to flourish on this planet, we will have to find a viable relationship between cities and the living world –a relationship not Since the early 1980's poverty has been viewed as having multiple dimensions or manifestations each of which bears importance and consideration. With growing poverty and slums , cities of some of the developing countries of the world have been grappling with the challenge of making the cities sustainable i.e inclusive, productive, efficient and manageable. The sustainability of urban development in india is seen in the context of shelter and slums, basic urban services, financing urban development and Governance and Planning. Global urbanisation is unprecedented. The fastest urban growth is occurring in the fringes of cities and creating mega agglomerations of mostly illegal squatter settlements. Rural poverty has pushed villagers to the cities, which were never planned to accommodate immigrants. Interesting to note that the ratio of urban poverty in some of the larger states of India is higher than that of rural poverty leading to the phenomenon of "urbanisation of poverty". Problems of housing and shelter, water, sanitation, health, education, social security and livelihoods along with special needs of vulnerable groups like women, children and aged people are the major areas where urban poverty poses great threat. Public health and social problems have arisen lowering the quality of life. Communicable diseases among the urban poor coexist with non-communicable diseases among the comparatively affluent. Problems of pollution, crime, chronic morbidity increases in a galloping manner.

Economic development and urbanisation are closely linked. Countries achieve economic development as a result of good governance and right policy formulation and outcome of these are rapid urbanisation. India has shared the growth pattern and rapid urbanisation with some of the fastest growing regions in Asia. The country has witnessed around 8% growth in GDP in the last couple of years and has planned to achieve a target of over 9% growth by the end of 13th plan period. Indias urban population is also increasing at a faster rate than its total population. But the level of urbanisation outpace space and resources for the poor. The urban poor rarely far better than their rural counterpart when it comes to health. Mortality rate of infant and childhood vaccination rates are about the same in both populations. If anything the health of the urban poor can be even worse than that of rural population. According to the Urban Health Resource Centre in India, slum children are even more likely to be malnourished than their urban counterparts. Overcrowding makes outbreaks of respiratory disease such as tuberculosis much more likely. For example tuberculosis prevalence is twice the national average in impoverished parts of Karachi city in Pakistan. The relationship between economic development and urban poverty is complex .In India slums are declared legally and are to be notified by a competent administrative authority. The objective of declaring an area as a slum is basically to be able to allocate funding to extend or improve upon civic services. The Central Government enacted legislation in 1956 to tackle the problem of rising slums, particularly in the Union Territories. In accordance with that legislation, 'Slums' have to be declared under Section 3 of the Slum Areas (Improvement and Clearance) Act 1956 (Act No.96, 1956). As per this act, if the competent authority report upon from any of its officers or other information in its possession is satisfied as respect to any area that the building in that area:a) are in any respect unfit for human habitation; or b) are by reason of dilapidation,overcrowding,faultyarrangement and design of such buildings, narrowness or faulty arrangement of streets,lack of ventilation,light,sanitation facilities or any combination of these factors which are detrimental to safety, health and morals, it may, by notification in the official Gazette, declare such area to be a slum area(K.Gupta, F.Arnold, H.Lhumgdin, 2009)

However, slums were in existence even before the special statute was enacted for their improvement in India in 1956.In 1954, the Madras Slum Improvement (Acquisition of Land) Act (XI of 1954) was enacted with the intention of acquiring the lands for the purpose of the execution of improvement works in the areas lacking in basic needs such as sewerage, water supply, roads and side drains. The preamble of the Act stated that "there are number of slum areas in the city of Madras which are likely to become a source of danger to the public health and sanitation of the city". Over the past few decades, different government agencies, such as the National Building Organisation (NBO), Town and Country Planning Organisation (TCPO), National Sample Survey Organisation (NSSO), and Register General of India, have provided estimates of the number of slum areas and the size of the slum population at different administrative levels, such as India as a whole states and some cities. In order to provide estimates of slum areas, these agencies collect information from urban local bodies, such as Municipal Corporation and state governments. From time to time these organizations undertake special surveys to provide estimates of slum areas and slum population, as well as socioeconomic characteristics and living conditions of -the slum population. In addition to the government recognized slums, these agencies include additional areas under the category of slums using some generic/basic characteristics such as dilapidated and infirm housing structures, poor ventilation, acute overcrowding, faulty alignment of streets, inadequate lighting, paucity of safe drinking water, water logging during rains, and absence of toilet facilities and non-availability of basic social and physical services. These may include unauthorized colonies, squatter settlement etc. (S.Fry, B.Cousins, K.Olivola, 2002) Hence all agencies take the legally recognized slums into consideration when providing estimates of slums or using

them for the census or as a sample frame for conducting slum surveys. The number of slums that are identified by different agencies on the basis of basic living conditions also differs. For example, the National Sample Survey Organization considers a cluster as a slum if there is a lack of basic services and at least 20 households live in that area, which is different from the above-mentioned definition used in the 2001 Census. Thus the objectives of the proposed study are framed as, firstly to define the health status of urban poor (slum people) and Non-Slum general people. Secondly, to make a comparison of health status of slum and non-slum urban population and thirdly, to find some recommendations to reduce the urban health inequalities.

III. COVERAGE AND METHODOLOGY

Guwahati is the state capital of Assam. Though it cannot compare with other metropolis like Delhi, Mumbai, still it has all the characteristics of a metropolis with 4 to 5 known slum areas. Therefore it is a natural choice for the proposed study. In this paper only primary data are used in the analysis to find the expected result. Primary data is collected by directly interviewing the slum people. Among the slum population, 400 households are covered and from non-slum city dwellers 400 households are covered in the field survey. The field survey is completed in two stages. In the first stage, information regarding various slum areas, their nature, number of inhabitant, available health infrastructures etc. are collected. In the second stage, direct house to house interview of the head of the households are taken to collect the information regarding their health and health care facilities by the field surveyor with the help of a schedule questionnaire. All the data collected from slum and non-slum households are processed with the help of SPSS and used Correlation analysis, ANOVA and T-Test to define the relationship between various living condition and health condition variable.

IV. FINDINGS OF THE STUDY

a) Slum House Holds Correlation Analysis:

In this chapter, the findings of the whole study are incorporated. In the field survey, altogether 800 households were covered where 400 households from Slum and 400 from Non-Slum .In Guwahati, there are three Municipality notified slum area out of which two are covered in the field study. They are Bhootnath (Dolkee) and Bamunimaidam All the Non-Slum households were taken from Shantipur, Uzanbazar andGandhibasti. The data were collected with the help of a Schedule questionnaire. Information regarding living status of both Slum and Non-Slum people were also collected along with the data of health condition for better analysis and comparison.

TABLE I
CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF SLUM HOUSE HOLD

	Mean	Std. Deviation	N	Pearson Correlation	Sig. (2-tailed)
Living Condition	31.65	7.367	400	.380(**)	.000
Health Condition	19.93	7.065	400		

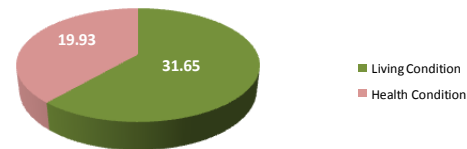** Correlation is significant at the 0.01 level (2-tailed).

Fig. 1 Correlations of Living condition and Health condition of Slum House Hold

In the Table-1, the co-relation between living and health condition for slum households is found significant at 0.01 levels. It shows a strong relationship between the two or we can say that health conditions of slum dwellers are very much dependent or related to their living condition. By improving the living condition, the health status can be improved. However the mean score of living condition is seen better than the health condition. It gives the idea of involvement of other factors or we can say that some other factors are also responsible for bad health condition apart from the living condition. The fig-1 , also shows the different level of mean score for the two variable. Let us try to discuss the correlation of health condition with other individual factors of living condition.

b) Community wise living and Health condition (Slum Households)

TABLE II
CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF SLUM HOUSE HOLD:
(For different Cast, ANOVA Test)

		N	Mean	Std. Deviation	F	Sig.	Remarks
Living Condition	General	322	31.60	7.676	1.671	.173	NS
	SC	62	31.02	4.710			
	ST	5	38.00	8.746			
	OBC	11	33.64	9.014			
	Total	400	31.65	7.367			
Health Condition	General	322	19.55	6.905	3.042	.029	S
	SC	62	22.13	7.363			
	ST	5	22.60	8.532			
	OBC	11	17.45	7.515			
	Total	400	19.93	7.065			

In the table II, we found the relationship of living condition and health condition with respect to different cast. The cast factor plays a significant role in the health condition of slum dwellers. But the living condition of all cast is not shown

varied or we can say that the living condition is more or less same for all cast. Thus we found that the living conditions of all slum dwellers are affected irrespective to their cast. But in case of health condition the cast factor has a role and we see some differences among the different class.

c) Religion wise living and Health condition (Slum Households)

In the Table III, the T-test for correlation of living condition and health condition of slum households with respect to different religion group are shown and it is found insignificant. The mean value of living condition for both Hindu and Islam are almost same and the relation is found insignificant. Similarly the mean value of health condition has little difference for both Hindu and Islam and the relationship is found insignificant. Therefore we found that the religion factors don't have any significant role in determining the health and living condition of slum dwellers.

TABLE III
T-TEST TO DEFINE THE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF SLUM HOUSE HOLD (FOR DIFFERENT RELIGION)

		N	Mean	Std. Deviation	t	Sig.	Remarks
Living Condition	Hindu	91	31.87	6.388	.328	.743	NS
	Islam	309	31.58	7.640			
	Total	400	31.65	7.367			
Health Condition	Hindu	91	20.67	7.674	1.134	.258	NS
	Islam	309	19.72	6.873			
	Total	400	19.93	7.065			

d) Living and Health condition of Migrated and non-migrated people (Slum Households):

TABLE IV
T- TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF SLUM HOUSE HOLD: (FOR MIGRATED/NOT MIGRATED)

		N	Mean	Std. Deviation	t	Sig.	Remarks
Living Condition	Yes	354	30.12	5.992	-14.077	.000	S
	No	46	43.41	6.298			
	Total	400	31.65	7.367			
Health Condition	Yes	354	19.33	6.985	-4.836	.000	S
	No	46	24.54	5.936			
	Total	400	19.93	7.065			

In the Table IV, the result of T-test are shown the impacts of migrated and non-migrated factors on the living and health condition of different slum dwellers. The Table 4 shows the relationship as significant for both living and heath condition with respect to both migrated and non-migrated households. In the table 4, the mean value of living condition has shown a vast difference for migrated and non-migrated households. The mean values of living condition for non-migrated people

are found far better than migrated households. Similarly the mean value of health condition has shown a big difference for non-migrated households to migrated households. In both the case the non-migrated households are found better than the migrated households.

e) Living and Health condition with respect to House status (Slum Households):

The health condition of slum households has a significant relationship with living condition with respect to different housing condition. In table 5, with the help of an ANOVA test, we found that, with different housing condition, living condition and health condition are also varies for all slum households. In case of pucca house, the mean value of living condition is far better than the kutcha house. In the same way the mean value of health condition is also better than kutcha house. But with average of three the living condition and health condition, the co-relation is significant as we found from the ANOVA test.

TABLE V
ANOVAS TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF SLUM HOUSE HOLD: (FOR DIFFERENT HOUSING CONDITION)

		N	Mean	Std. Deviation	F	Sig.	Remarks
Living Condition	Kutcha	357	30.49	6.232	74.264	.000	S
	Semi Pucca	15	33.33	7.037			
	Pucca	28	45.50	6.780			
	Total	400	31.65	7.367			
Health Condition	Kutcha	357	19.58	6.955	7.227	.001	S
	Semi Pucca	15	19.33	9.693			
	Pucca	28	24.75	5.016			
	Total	400	19.93	7.065			

f) Non-Slum House Holds Correlation Analysis

TABLE VI
CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION OF NON-SLUM HOUSE HOLD

		N	Mean	Std. Deviation	F	Sig.
Living Condition	General	294	51.25	6.923	4.218	.006
	SC	41	50.24	5.735		
	ST	4	61.00	1.155		
	OBC	61	52.87	5.923		
	Total	400	51.49	6.721		
Health Condition	General	294	26.37	6.332	5.041	.002
	SC	41	28.83	4.080		
	ST	4	33.00	3.464		
	OBC	61	28.54	5.455		
	Total	400	27.02	6.086		

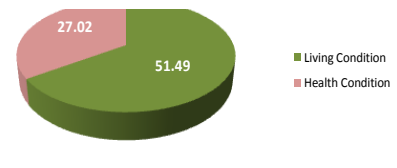** Correlation is significant at the 0.01 level (2-tailed).

Fig. 2 Correlations of Living condition and Health condition of Non-Slum House Hold

Data collected from non-slum households are also analyzed to find the correlation of living condition and health condition. In the Table-VI, the co-relation between living and health condition for non-slum households is found significant at 0.01 levels. It shows a strong relationship between the two or we can say that health conditions of non-slum dwellers are very much dependent or related to their living condition. By improving the living condition, the health status can be improved. However the mean score of living condition is seen better than the health condition. It gives the idea of involvement of other factors or we can say that some other factors are also responsible for bad health condition apart from the living condition. The fig-6, also shows the different level of mean score for the two variable. Let us try to discuss the correlation of health condition with other individual factors of living condition. The mean score for living condition is seen as 51.49 and the other hand the mean score for health condition is seen as 27.02 and it is far below than the living condition mean score. Thus it is very much clear from the table-6 and fig-6 that the correlation between living condition and health condition is significant but there are some other factors which are also responsible for health condition.

g) Community wise living and Health condition (Non-Slum Households):

TABLE VII
ANOVA TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION
(For Different Community of Non-Slum Area sample)

	Mean	Std. Deviation	N	Pearson Correlation	Sig(2 tail)
Living Condition	51.49	6.721	400	.377**	.000
Health Condition	27.02	6.086	400		

(Significant level is at 5 percent)

From the table VII, the result of ANOVA test, have done to find the correlation of living condition and health condition for different community of non-slum households are seen. For both living condition and health condition with respect to different community, ANOVA is found significant at 5 percent level. It reveals that both living condition and health condition is varies with respect to different cast or we can say that cast differences is significant among the non-slum households with respect to living and health condition. That is, the cast difference makes a significant difference for non-slum households in their living and health condition.

h) Religion wise living and Health condition (Non-Slum Households):

TABLE VIII
T- TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION
(For Different Religion of Non-Slum Area sample)

	Religion	N	Mean	Std. Deviation	t	Sig.	Remarks
Living Condition	Hindu	188	52.45	6.369	2.710	.007	S
	Islam	212	50.64	6.923			
	Total	400	51.49	6.721			
Health Condition	Hindu	188	27.63	6.179	1.894	.059	NS
	Islam	212	26.48	5.965			
	Total	400	27.02	6.086			

In the table VIII, the living and health condition of non-slum households are analyzed with respect to religion factor. From the table 8, we see that living condition have a strong correlation with religion but health condition is not varies with respect to religion. We found that the mean value of living condition for Hindu and Muslim are different and relation is found significant. In case of health condition, the mean values are more or less same for both Hindu and Muslim and the relation is not significant.

i)   Living and Health condition of Migrated and non-migrated people (Non-Slum Households):

In the study, the living and health condition for non-slum households are found varies for migrated and non-migrated person. In the table 9, it is found that the mean value of both living condition and health condition for non-migrated people is higher than the migrated people. That means, the living and health condition of migrated people are worse off than the non-migrated people. But the correlation is found significant for both living and health condition. Thus we see the living condition and health condition of both migrated and non-migrated people have a significant relation and from the mean value it is also clear that non-migrated people are in a better position than the migrated people with respect to both living and health condition.

TABLE 9
T- TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION
(For Migrated or not migrated people of Non-Slum Area sample)

	Migrated	N	Mean	Std. Deviation	T	Sig.	Remarks
Living Condition	Yes	210	47.07	5.060	-19.146	.000	S
	No	190	56.38	4.618			
	Total	400	51.49	6.721			
Health Condition	Yes	210	25.60	6.176	-5.027	.000	S
	No	190	28.58	5.599			
	Total	400	27.02	6.086			

j) Living and Health condition with respect to House status (Non-Slum Households):

TABLE X
ANOVA TEST TO DEFINE CORRELATIONS OF LIVING CONDITION AND HEALTH CONDITION
(For people with different housing status of Non-Slum Area sample)

		N	Mean	Std. Deviation	F	Sig.	Remarks
Living Condition	Kutcha	8	39.38	9.680	14.369	.000	S
	Semi Pucca	51	52.29	7.519			
	Pucca	341	51.66	6.260			
	Total	400	51.49	6.721			
Health Condition	Kutcha	8	24.25	8.294	7.125	.001	S
	Semi Pucca	51	29.84	2.901			
	Pucca	341	26.66	6.270			
	Total	400	27.02	6.086			

The health condition of non-slum households has a significant relationship with living condition with respect to different housing condition. In table 10, with the help of an ANOVA test, we found that, with different housing condition, living condition and health condition are also varies for all non-slum households. In case of pucca house, the mean value of living condition is far better than the kutcha house. In the same way the mean value of health condition is also better than kutcha house. But with average of three the living condition and health condition, the co-relation is significant as we found from the ANOVA test.

k) Comparison of Health Status of Slum and Non-Slum Residents in Guwahati:

TABLE-XI
COMPARISON OF CORRELATION OF SLUM AND NON-SLUM HOUSEHOLDS

	Mean	Std. Deviation	N	Pearson Correlation	Sig(2-tailed)
Correlation of non-slum households					
Living condition	51.49	6.721	400	.377	.000
Health Condition	27.02	6.086	400		
Correlation of slum households					
Living condition	31.65	7.367	400	.380	.000(2-tailed)
Health Condition	19.93	7.065	400		

In the table-XI, we found the comparison of correlation of slum and non-slum households in surveyed area. The table-11 shows the clear differences of living condition of two different areas which leads also to different health condition.

Thus we see the mean score of health and living condition of slum and non-slum households. In both figure, the mean score of living condition is higher than health condition. It can be argued that health condition is not totally dependent on living condition only, some other factors are also working for bad health condition.

V. CONCLUSIONS AND RECOMMENDATIONS

From the whole study it can be concluded that health status of urban dwellers in less developed countries are dependent on their living condition but not totally. Some other factors are also responsible for bad health condition. But to develop the health condition, living condition must have to improve or we can say that by developing the living standard, we can improve the health status. An independent health policy does not work in the society if sufficient level of living condition is not available. Policy maker should go for a health policy along with some policy to improve the necessary living condition.

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