

Slum Population in Chennai City

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Abstract: The study of slums has been made on sociological, economic, cultural, political, ethnic, demographic and economic basis. Slums are a building, a group of building or area characterized by over-crowding. Deterioration, in sanitary condition or absences of facilities or amenities, which because of these condition or any of them endangered the health, safety or morals of the inhabitants of the community. This is most comprehensive definition touching upon all the aspects of life of people living in slum. It is an area of substandard housing condition with in a city. Slum a highly populated area in which housing and other living condition are extremely poor. The phenomenon of slum is regarded as a challenge for the Chennai city of Tamil Nadu, Chennai is the fourth largest metropolis. It has a population of 46.81 lakh by 2011 census; it is expected to grow more by 50.08 lakh. This study was a special for given to drinking water supply system of slums of Chennai city with correlation analysis.

Keywords: Amenities, Challenge, Building, Inhabitants, Extremely, Deterioration.

I. INTRODUCTION

Slums have become on alarming problems in all the cities worldwide. The eastern and western cities studies that slums emerges to emphasize their impact in the modern societies. Slums are manifestations of the two challenges facing human settlement development at the beginning of the new millennium are rapid urbanization and the urbanization of poverty.

A slum, as defined by the United Nations agency name it as UN-HABITAT. The percentage of united nation urban slum dwellers is 47 percent to 37 percent in the developing world. The raise is exceptionally only in urban population. One billion people worldwide live in slums.

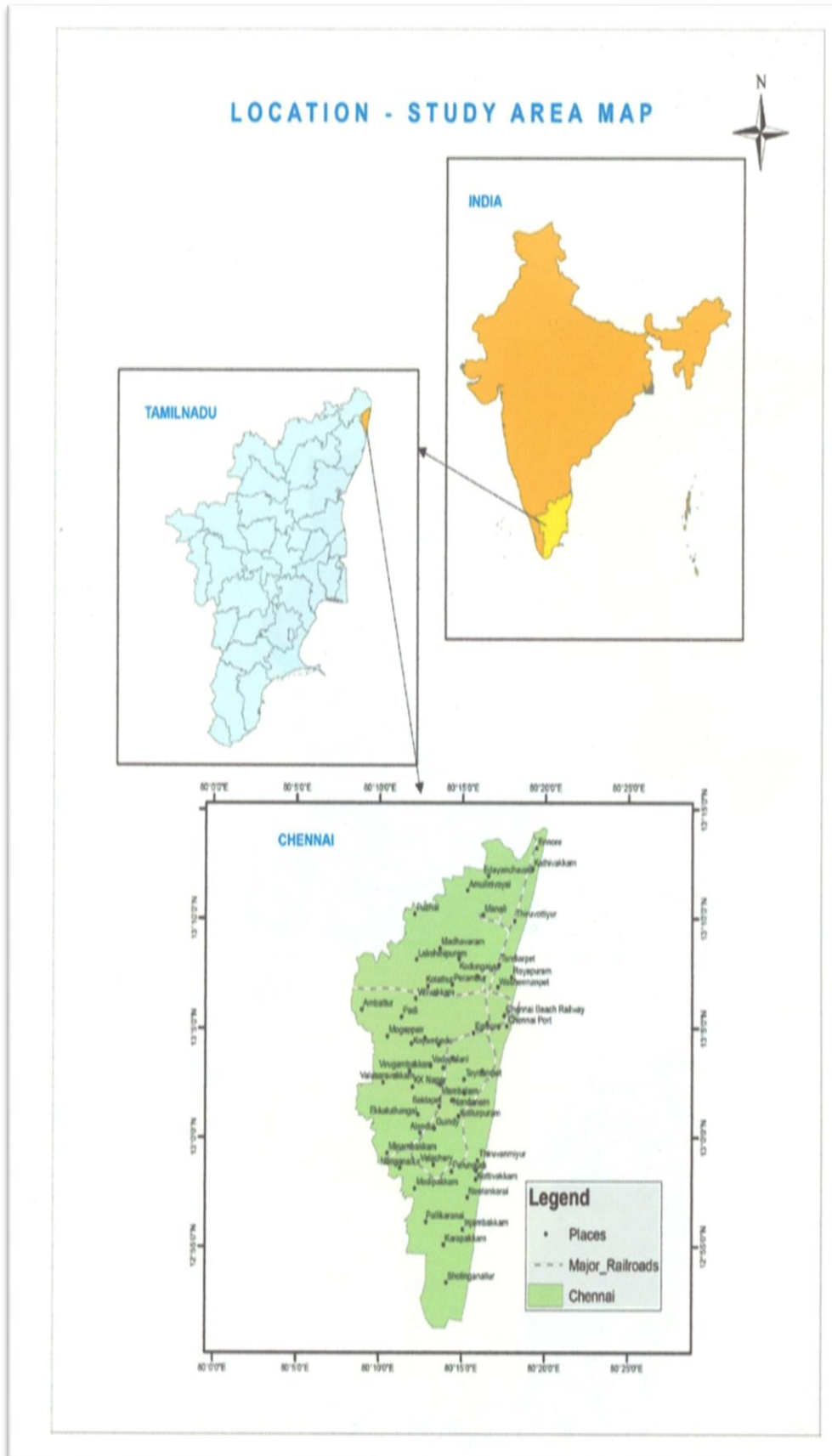
Slums vary from country to country. A slum is a compact area of at least 300 in population or about 60-70 households of poorly built, congested tenements in an unhygienic environment with inadequate infrastructure and lacking of sanitary and drinking water etc., slum people living in slum areas below the poverty line. Many attempts have been made to analyze the slum dwellers, their characteristics and behaviouralisms. Long time back philosophers like Karlmarx and Engeles and sociologists like Durkheim discovered the like between crimes and slums. Slums dwellers are normal, non-professional criminals who are used as tools by professionals and high society criminals.

C.S Yadav (1987) have analyzed about the urban dweller in lieu with the slums. A.R. Desai, and S.Devadaspillai (1990) described about the slums along with urbanization. Anupriya (1994) gave an explanatory notes by distinguishing the employment sector and the poverty of slum population. DR. Manju Bhatta (2000) gave a descriptive model of sociological studies in slums and metropolitan area. A.K. Jain (2009) examined the slum population and urban housing. The main objective of this paper is to study the infrastructural facilities in slum of Chennai city.

STUDY AREA:

Chennai is the capital city of the state of TamilNadu. It is one of the metropolitan cities. And it serves as a gateway of south India. Chennai is located on the northeast and Tamilnadu on the eastern coast of Bay of Bengal. It lies between 12°9' and 13°9' of the northern latitude and 80°12' and 80°90' of the southern longitude it stretches nearly 25.66kms, along the bay coast from Thiruvanmiyur in the south to Thiruvottiyur in the north and inland in a rugged semi-circular fashion. It is bounded on the east by the Bay of Bengal and on the remaining sides by Kancheepuram & Thiruvallur district Fig (1). The present Chennai is divided into 200 wards, for an effective administration. The total area of Chennai

city is 429 sq km as per (2011) census. The total population of Chennai city is about 4,681, 087 million according to 2011 census. Study area shown Map 1.



AIM AND OBJECTIVES:

The main aim of the present study is to analyze the available basic infrastructural facilities in the slums of Chennai city, to fulfill the above aim, the following objectives are framed.

1. To identify the existing problems in the slums of Chennai city.
2. To examine the pattern of available basic infrastructural (water) facilities in slums of Chennai city.
3. To suggest remedial measures for improving the existing situation.

SCOPE OF THE STUDY AREA:

Each zone in the city of Chennai has slum dwellers. And they are socially and economically back. The studies help to analyze the present status of infrastructure available in the slums of Chennai city. The secondary data source is collected by survey report of Chennai corporation area and Tamil Nadu slum Clearance Board. This analyses help to aid in present infrastructure in the amenities available. It also improves the quality of the infrastructure in the future. This study is useful in understanding the existing slum population; sex ratio, dwelling units, and water service level etc. in the overall the slums of Chennai city.

LIMITATION:

Due to the data constraint, the present study deals with in the city limits. The slum population is taken into consideration based on the availability of data. (A final survey report of Slum Clearance Board -2004)

HYPOTHESIS:

There is a relationship between number of persons using the public water sources like tank, pipe line, and etc. They are negatively correlated.

DATABASE AND METHODOLOGY:

The fulfill objectives, the secondary data were collected. The data pertaining to the basic infrastructural facilities like availability of water supply system etc., are all taken from a survey report of Chennai Corporation Area and Tamil Nadu Slum Clearance Board Chennai -4.

The methodology adopted in analyzing in the data is using statistical methods. The available infrastructural water facilities has been evaluated and classified using data concerned from secondary data source by analyzing the study area are can get the idea of existing amenities is sufficient or not and how it has to be improved in future.

II. DEMOGRAPHY OF CHENNAI CITY**GROWTH OF POPULATION IN CHENNAI CITY:**

The tremendous growth of population after 1941 is attributed two major factors, firstly a large number of emigration passed into the city from various places during the Second World War. Secondly the mortality rate declined consequently in the post-independence area, and the population generally increased. As per (2011) census, the city has a population of about 4,681,087 and it extended over all area about 429 sq.km.

The average density of population is 1901 about 552899. At present the population 4343645. There is an abrupt change in the growth of population from 1901 table (1) and fig (2) indicates the growth of population in Chennai city from 1901-2011.

Table 1. GROWTH OF POPULATION IN CHENNAI CITY 1901-2011

YEARS	TOTAL POPULATION
1901	552899
1911	575377
1921	591536
1931	733552
1941	881485

1951	1416056
1961	1729141
1971	2469449
1981	3276622
1991	3841396
2001	4343645
2011	4681087

Source: Census of India; 1901-2011

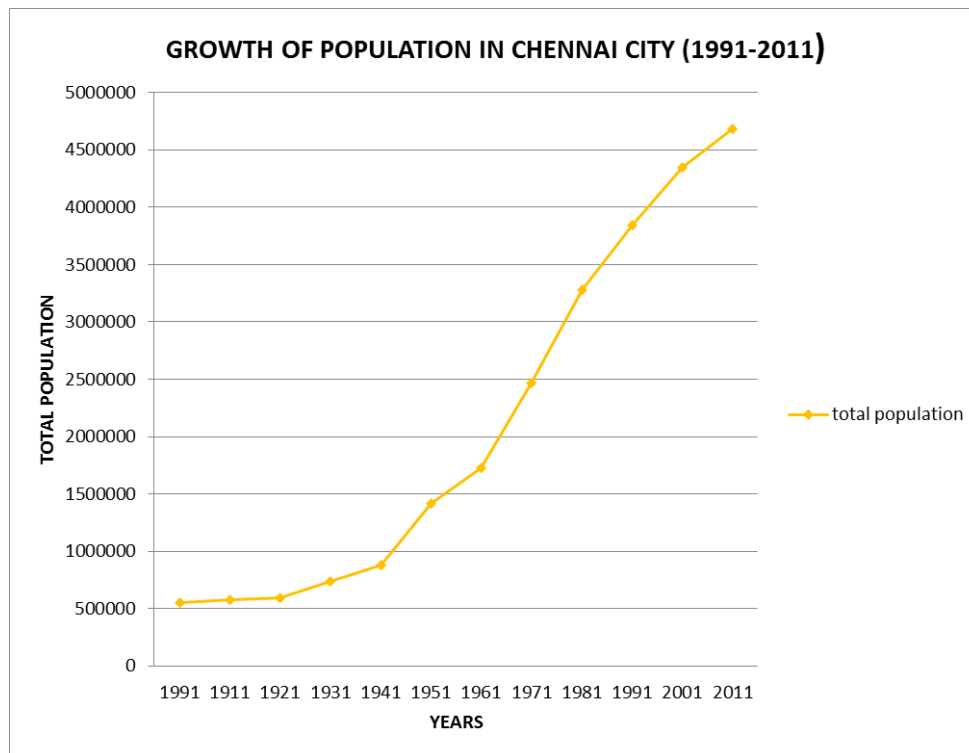


Fig 1. Growth of population in Chennai city (1991-2011)

DENSITY OF POPULATION IN CHENNAI CITY -2001:

The term density of population refers to the number of persons per sq.km. In other words, the density of population indicates the man-land ratio. Density depends on many natural and human factors such as soil, climate, rainfall, economic resources, the stage of economic growth and so on. Different density measures the degree of population concentration in a particular area. Table 2

Table 2. DENSITY OF POPULATION IN CHENNAI CITY-2001

ZONES	CORPORATION ZONE	DENSITY OF POPULATION	POPULATION IN LAKHS
I	TONDIARPET	410336	23718.843
II	BASIN BRIDGE	375687	32668.434
III	PULIYANTHOPE	459563	34016.506
IV	AYANAVARAM	496777	25140.536
V	KILPAUK	542132	20550.871
VI	ICE HOUSE	341805	33675.369
VII	NUNGAMBAKKAM	347898	26968.837
VIII	KODAMBAKKAM	466384	35875.692
IX	SAIDAPET	415335	17628.82
X	MYLAPORE	487728	17468.767

Source: CMDA volume-III

SLUMS IN CHENNAI CITY:

The urban slums are typical centers of irregular and unsafe housing, unhygienic and insanitary surrounding even without the basic civic amenities. The slums in cities are also associated with higher level of poverty. The slum population requires a wide range of urban services including water supply, sewerage, and soiled waste management as well as social infrastructure like schools, hospitals, market and so on.

DEFINITION OF SLUMS:

Slums a highly populated area in which housing and other living conditions are extremely poor. The main physical attributes of a slum are such as substandard houses, in sanitary conditions, in sufficient total lack of water supply, no proper drainage and lack of facilities for garbage clearance.

CHARACTERISTICS OF SLUMS:

The characteristics of the slum according to countries, climate, culture and economic development and hence there is no perfect definition of slum. A slum can be characteristics as follow.

1. High rates of poverty
2. Un educated and unemployment
3. Poor structural quality of housing and infirm housing structure
4. Poor ventilation
5. Overcrowding and insecure residential status.
6. Low social – economic status of its residents
7. Faulty alignment of streets
8. Inadequate lighting
9. Density of safe drinking water
10. Water logging during rains
11. Absence of toilet
12. Facilities and non- availability of basic physical and social services.

SLUM POPULATION IN CHENNAI CITY:

Chennai city has a slum population of 16.41 lakhs spread over 1279 slums. The percentage of slums population to total population in 1981 was 22.13 percent, which increased to 40.39 percent in 1996 most of the slums in the city are of linear type located along water front (i.e. banks of the Adyar river, Buckingham canal, cooum river, and otterinullah) and along the roadside. The zone wise slum populations of Chennai are listed in the table (3)

Table 3. ZONE WISE SLUM POPULATION IN CHENNAI CITY-2004

ZONES	SLUM POPULATION	PERCENTAGE
I	72514	4.42
II	233101	14.2
III	265209	16.16
IV	124563	7.59
V	185762	11.32
VI	77843	4.73
VII	57124	3.48
VII	223320	13.6
IX	10746	6.52
X	295103	17.98

SOURCE: Final report of Chennai Corporation

From as table (3) it clearly status that in Chennai, the highest no. of slums and slum population are registered in II zones, Zones –V and zones X especially in (New Washermenpet, Velachery and ShenoyNagar areas. These three places accounts for nearly 34% of the total population in the city.

SEX-RATIO OF SLUMS POPULATION IN CHENNAI CITY:

Chennai city retained a slum population of 1,079,414 persons table (4) the number of males (548,517) out numbers the numbers of females (530,897) in the slums of Chennai. The population is 26%. The ratio is higher than for the city as a whole. This indicates that in general more males are migrating to the city in search of employment and other wise.

Table 4. SEX-RATIO IN SLUMS OF POPULATION

LOCATION			TOTAL NO.OF SEX-RATIO	MALE	FEMALE	SEX-RATIO
CHENNAI			4216268	2161605	2054663	951
SLUM	548517	548517	530517	968		

SOURCE: Final report of Chennai Corporation

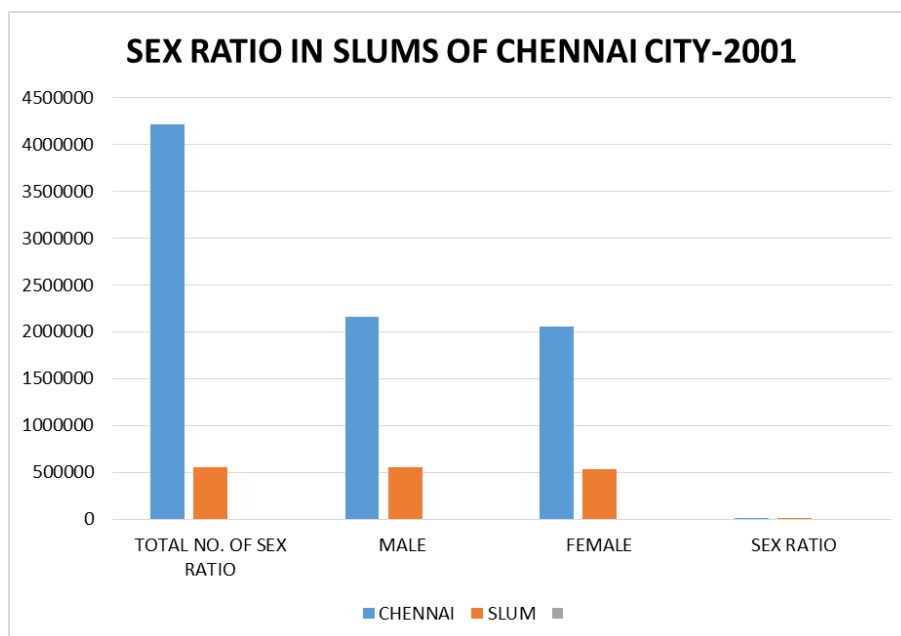


Fig 2. Sex ratio in slums of Chennai city -2001

Table 5. THE NUMBER OF SLUMS IN CHENNAI CITY

ZONES	NUMBER OF SLUMS	PERCENTAGE
I	48	4.42
II	173	14.2
III	169	16.16
IV	114	7.59
V	150	11.32
VI	91	4.73
VII	55	3.48
VIII	170	13.6
IX	106	6.52
X	923	17.98

SOURCE: Final report of Chennai Corporation

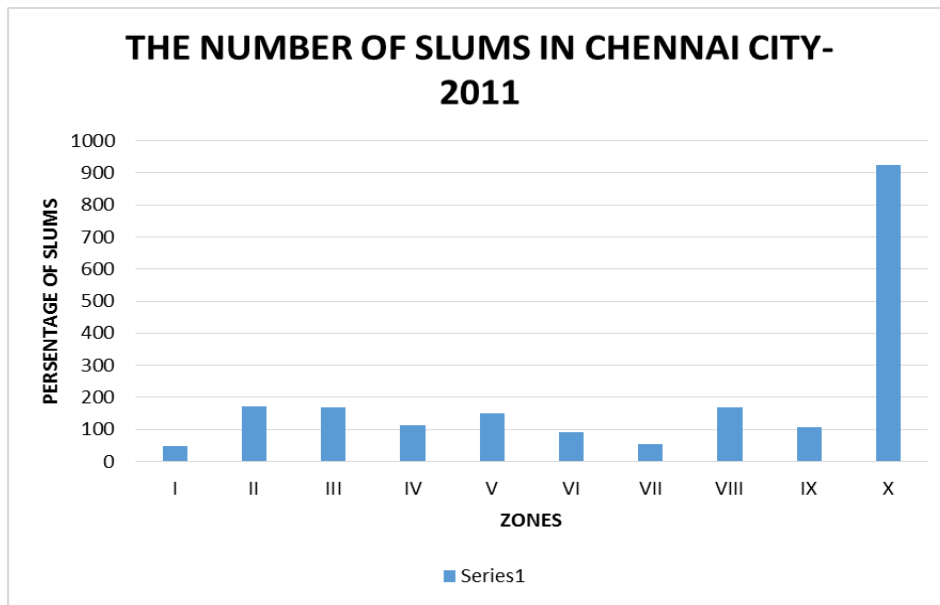


Fig 3. The number of slums in Chennai city -2011

LITERACY RATE OF SLUMS POPULATION IN CHENNAI:

The literacy rate of for the slum population is 80.09% male (85.77%) have a higher literacy rate than females (74.21%), it is noteworthy that the slums in literacy rate of 2001 in Chennai male literacy rate in slums in higher table(6), fig (4)

Table 6. LITERACY RATE IN 2001

LITERACY	TOTAL CHENNAI LITERACY	PERCENTAGE OF CHENNAI LITERACY	TOTAL SLUM LITERACY	PERCENTAGE SLUM LITERACY
TOTAL POPULATION	3079004	50	779116	66.2
MALE LITERACY	1670094	27	42236	3.5
FEMALE LITERACY	424236	22	354880	30.2

SOURCE: Final report of Chennai Corporation

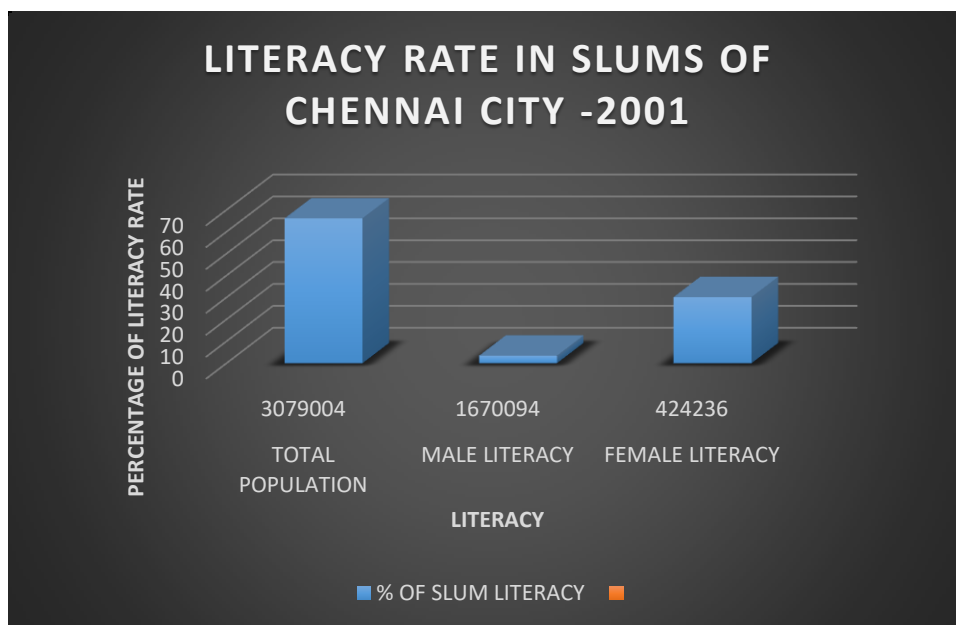


Fig 4. Literacy rate in slums of Chennai city -2001

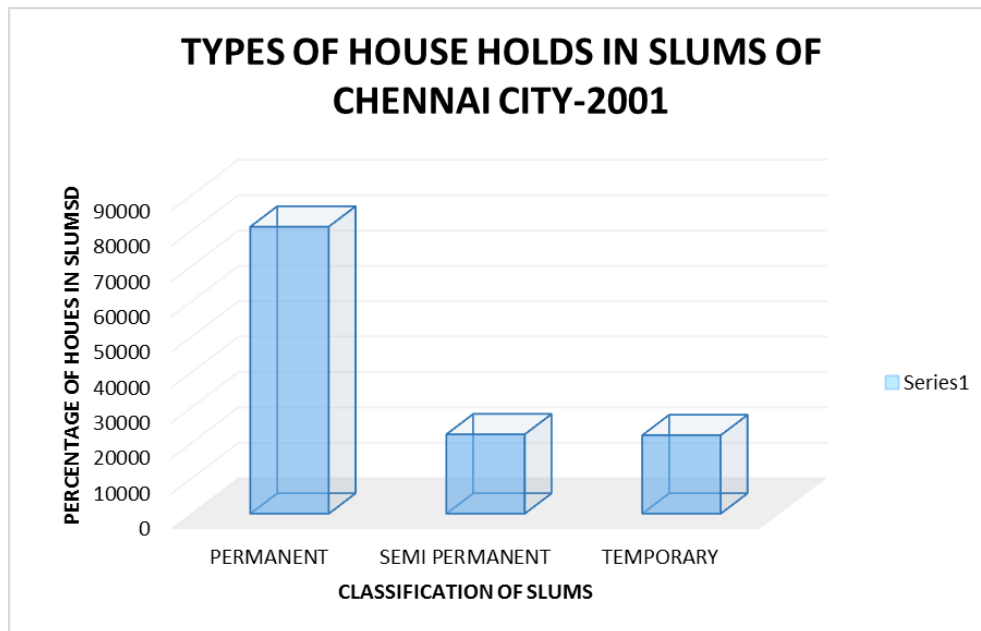
HOUSES IN SLUMS OF CHENNAI CITY:

The houses in slums areas are classified as permanent and semi-permanent and temporary only 64.1 of the houses are of a permanent not end in slum areas. Semi-permanent and temporary houses found to be equal in proportion table (7) almost 65% of the houses are of permanent nature. Semi- permanent houses from 18% and the rest of a temporary kind fig (5).

Table 7. TYPES OF HOUSE HOLDS

CLASSIFICATION AREA	TOTAL HOUSEHOLDS	PERSENTAGE OF HOUSEHOLDS
TOTAL NO.OF HOUSES	125725	-
PERMANENT	81128	64.33
SEMI-PERMANENT	22415	17.83
TEMPORARY	22182	17.64

SOURCE: Final report of Chennai Corporation

**Fig 5. Types of households in Chennai city-2001**

The availability of living space that is the no. of dwelling rooms within the houses is also an essential criteria. Slums in Chennai show up adverse effect for as this is concerned 67% of the households in slums have more than 3rooms. The cramped accommodation has its natural impact on health and hygiene. The spread of diseases is caused by such living conditions 40% of the houses in slums are rated and 3% are neither rented nor owned. This clearly indicates the presence of slums lords, who own more than one house and are in a position to rent our houses to other table and fig (6).

Table 8. DWELLING ROOMS IN SLUMS OF CHENNAI CITY

ROOMS	TOTAL NO.OF ROOMS	PERCENTAGE OF ROOMS	PERCENTAGE SLUM DWELLING
1	84193	67.5	66.96
2	30419	24.39	24.19
3	7359	5.9	6.05
4	2723	2.18	2.17

SOURCE: Final report of Chennai Corporation

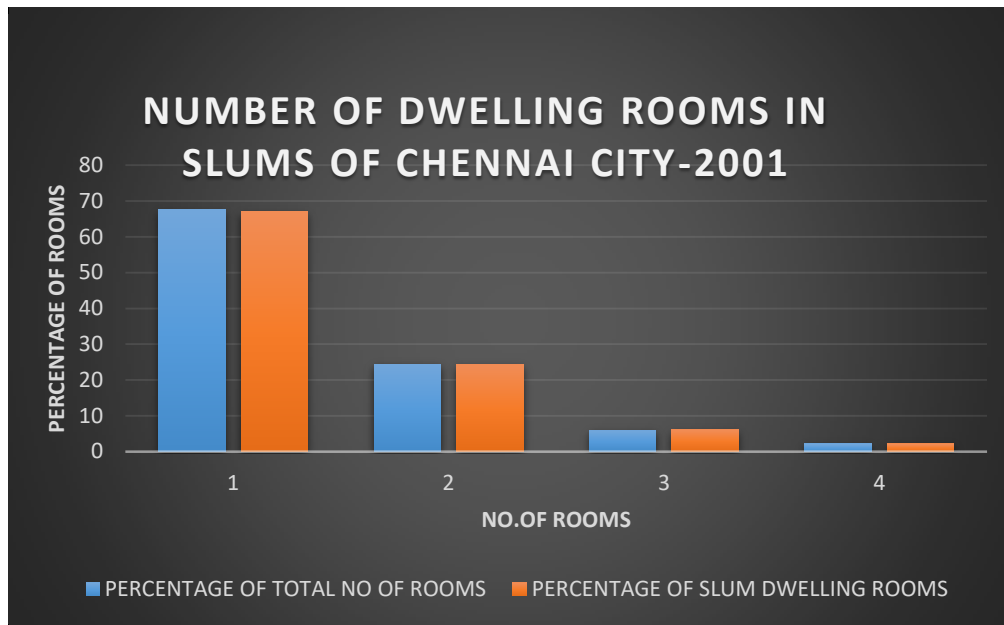


Fig 6. Number of dwelling rooms in slums of Chennai city -2001

Table 9 OWNERSHIP PATTERN IN SLUMS OF CHENNAI CITY

OWNERSHIP PATTERN	TOTAL PATTERN	PERCENTAGE OF PATTERN	TOTAL PATTEN	SLUM	PERCENTAGE OF SLUM PATTERN
OWNED	38911	47.1	70689		56.23
RANTED	426053	51.47	50764		40.38
OTHERS	11847	1.43	4272		3.39

SOURCE: Final report of Chennai Corporation

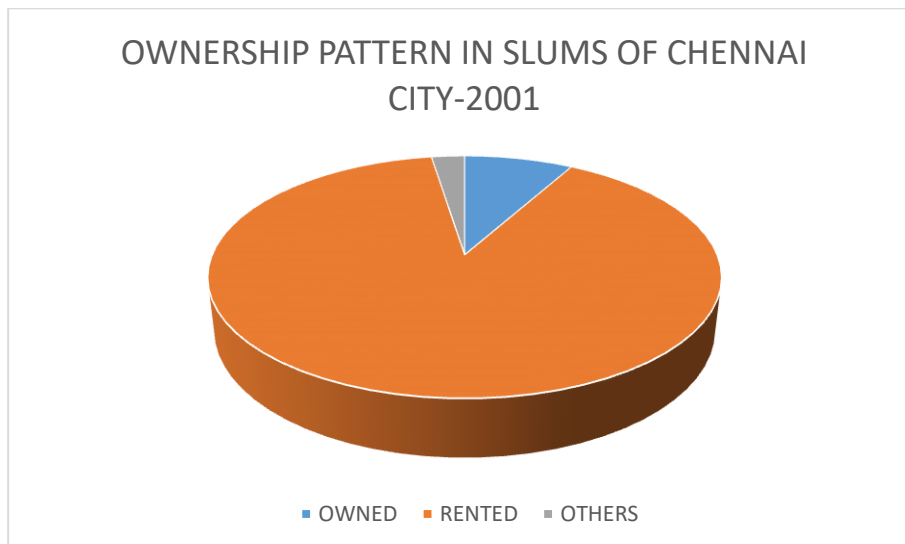


Fig 7. Ownership pattern in slums of Chennai city -2001

III. WATER FACILITIES IN SLUMS OF CHENNAI CITY

SOURCE OF WATER IN SLUMS OF CHENNAI CITY:

The slums in all the zones of the Chennai city predominantly depend supplies municipal water tankers. The different sources of water to the slums of Chennai city are public tap, water tank, hand hump, community well etc., about 90 percent depends primarily on the water tanks. The table (10), that the municipal water tank plays a vital role in overall

zonal study of slums in the city. The zone I has only two sources of water supply the water tank and the public taps. The other sources of water are not found in zone-I. The other zones namely Zone-II, zone-IV, Z-zone v and VI the water tank public taps. This rule second in the sources of water to the particular area all zones, the water tanks range from 83.3 percent to 96.8 percent. Less than one percent of the own municipal connection and 3.7 percent revealed that they access public taps. The table (10) presents the fact base on the survey outcome. Present the rating with respect to the households consuming water from the public water tank.

Table 10 SOURCE OF WATER IN SLUMS OF CHENNAI CITY

ZONES	PUBLIC TAP	%	WATER TANK	%	OC	%	HUND PUMP	%	COMMUNITY WELL	%
I	16.1	579.0	84.0	302.4	-	-	-	-	-	-
II	3.0	10.8	94.0	338.4	-	-	3.0	10.8	-	-
III	9.0	32.4	80.0	288.0	7.0	25.2	4.0	14.4	-	-
IV	3.1	11.2	94.3	339.4	0.7	3.6	1.9	6.8	-	-
V	2.9	10.4	96.6	347.7	-	-	-	-	0.5	1.8
VI	1.8	6.4	96.1	345.9	-	-	2.1	7.5	-	-
VII	3.5	12.6	89.8	323.2	0.9	3.2	4.4	15.8	1.3	4.6
VIII	1.1	3.9	84.2	3.3.1	-	-	14.7	52.9	-	-
IX	2.4	8.6	96.8	348.4	0.3	1.0	-	-	0.5	1.8
X	12.9	46.4	83.3	299.8	-	-	3.7	13.3	0.1	0.3

SOURCE: Final report of Chennai Corporation

WATER SUPPLY SLUMS OF CHENNAI CITY:

Water supply is one of the care environment infrastructure service delivered by the local body. It was observed that the slums in Chennai city were not several with piped water supply. The sources of water included open well, bore wells and public water tanks. The water tanks are generally large PVC water tanks to which the water is filled through a water tanker lorry. Following table provides the number of public water tabs/ public water tanks available in slums table - (11)

Table 11 NO.OF PUBLIC WATER TANK & TAP AND NO.OF PERSONS PER PUBLIC WATER TANK & TAP IN SLUMS OF CHENNAI CITY

ZONES	NO.OF PUBLIC WATER/TAP (X- VARIABLE)	RANK VALUE(R1)	NO.OF PERSONS PER PUBLIC WATER TANK&TAP (Y-VARIABLE)	RANK VALUE(R2)
I	40	6	297	-4
II	36	7	438	-2
III	51	5	689	1
IV	54	4	540	-4
V	19	10	774	7
VI	70	3	868	2
VII	23	9	813	7
VIII	28	8	631	3
IX	75	2	587	-4
X	194	1	561	-6

SOURCE: Final report of Chennai Corporation

CORRELATION ANALYSIS:

The table spearman's rank correlation is applied. The gives rank value for the corresponding variable.

The co-efficient of correlation of rank is given by

$$R=1-6 \frac{\sum D_i^2}{N(n^2-1)}$$

Where D_i is the different of correlation ranks & the No. of pairs of observation No. of public water tanks/ tap and No. of persons during the public water tank and tap the value of rank correlation is -0.757 . The ranked analyzed are regularly correlated between the no. of public water tank/ tap, with the no. of persons per public water tank & tap. This indicates that the no. of persons that the number of persons sharing the public water tank/ tap is very high with an average of about 620 persons per water tank/tap. The situation is worse in zone VI and zone VII, where number of persons sharing each public water tank/tap is 868 and 813 respectively.

FREQUENCY OF WATER SUPPLY IN SLUMS OF CHENNAI CITY:

Table 12, Percent of households do not have regularly frequency in water supply like twice a week, weekly, for nightly or monthly as given in the table below indicates the zone wise position of households, which do not have regular frequency of water supply. **Table (12)** & fig (8)

Table (12)

ZONES	DAIL ONCE	ALTERNATE DAYS	TWICE A WEEK	<TWICEA WEEK	WEEKLY	IRREGULAR
I	71.4	23.5	1.8	1.8	-	3.2
II	56.0	41.8	0.9	2.2	1.3	-
III	56.8	42.0	-	1.0	1.0	0.2
IV	44.7	54.6	0.5	0.5	-	0.2
V	91.8	5.8	-	1.9	1.4	0.1
VI	61.9	34.2	2.3	3.9	0.2	1.4
VII	74.3	16.8	-	7.5	1.3	7.5
VIII	49.5	50.0	-	0.5	0.5	-
IX	78.6	20.0	0.2	0.2	-	1.1
X	56.7	38.8	-	4.0	4.0	0.5
Average	64.2	32.8	0.6	2.3	1.0	1.5

SOURCE: Final report of Chennai Corporation

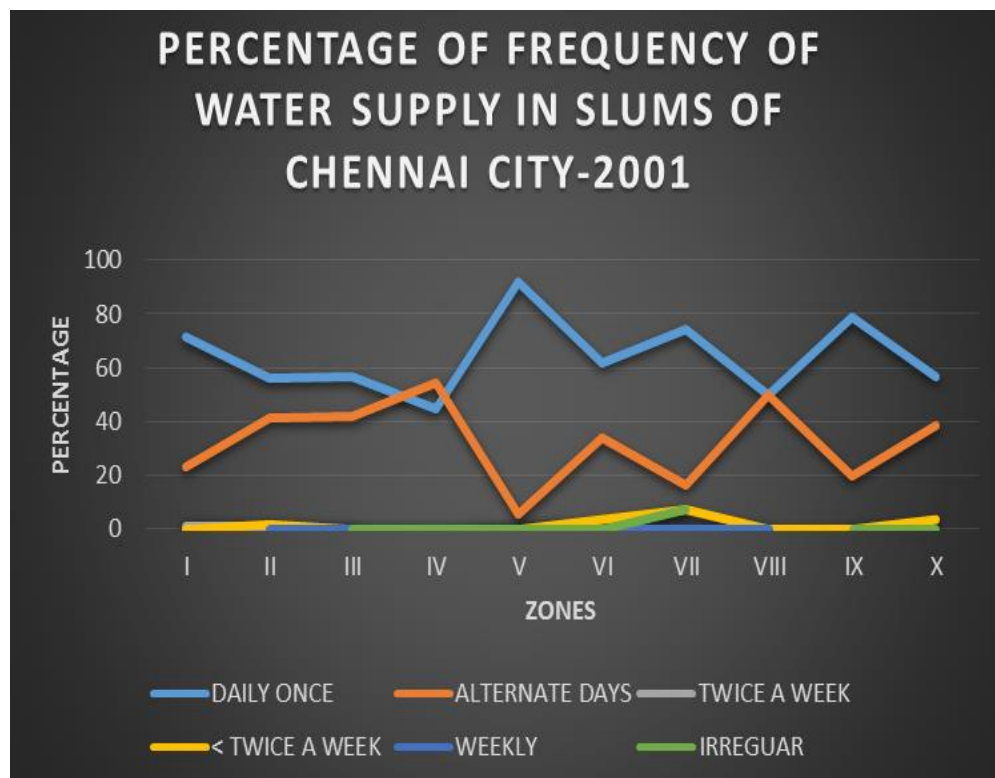


Fig 8. Percentage of frequency of water supply in slums of Chennai city -2001

Table 13 QUALITY OF WATER AVAILABILITY IN SLUMS OF CHENNAI CITY

ZONES	GOOD QUALITY OF WATER	AVERAGE QUALITY OF WATER	BADQUALITY OF WATER
I	38.7	61.3	-
II	4.8	95.3	-
III	47.3	5.7	-
IV	19.2	79.2	1.7
V	32.7	66.8	0.5
VI	97.5	75.1	2.5
VII	92.0	62.8	8.0
VIII	100	87.9	-
IX	99.9	92.4	0.2
X	100.0	80.1	-

SOURCE: Final report of Chennai Corporation

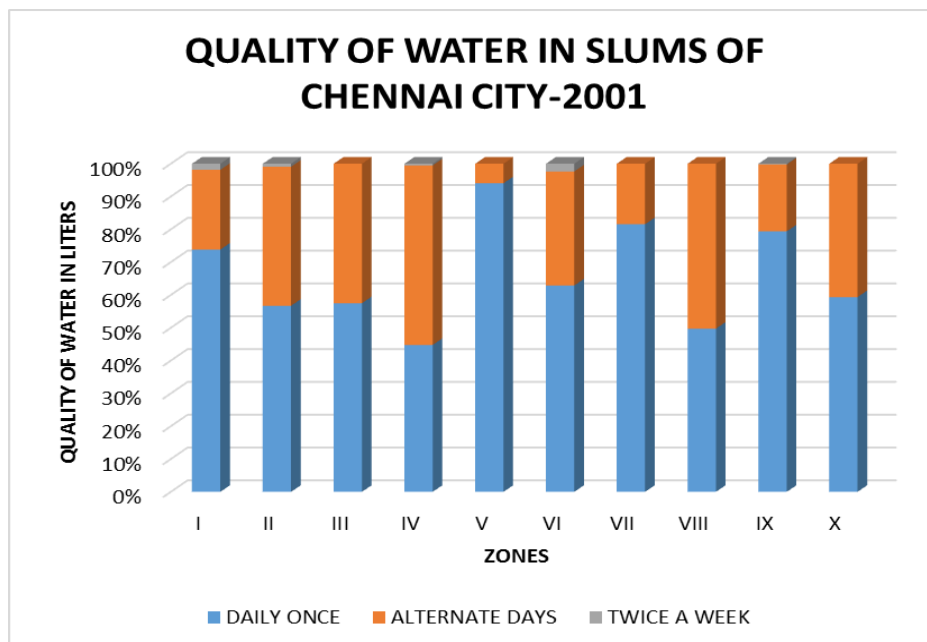


Fig 9. Quality of water in slums of Chennai city-2001

IV. SUMMARY AND CONCLUSION

India being one of the fast urbanizing country, accounts for 10 percent of the global slum population. Growth of slum in urban India has all along been a critical issue in process of urbanization. The slum population in india is estimated at about 22.8 percent of the total urban population i.e. 40.6 million spread over towns/ cities. It is difficult to target the poverty alleviation programmers to all the urban poor as not all live in slum. There appears to be no change in the basic level of improvement in the features of slum settlement and there is no clear accepted definition of slums and proper listing of slum settlement in the urban offices concerned with slum improvement.

Tamil Nadu, begin the sixth most populous state in the country has about 44 percent of population living in urban area. The slum population has been a substantial growth both in Chennai as well as in other major cities in Tamil Nadu, on account of growth urbanization, industrialization and mobility of population. As per the (2001 census) report, the slum population in Chennai city alone was about 1.08 million whereas that of other districts of Tamil Nadu was about 5.76 million. The government of Tamil Nadu has taken up various measures to improve the living conditions of the urban poor living in the slums and also has rehabilitated urban poor living in the river margins and objectionable places. Some of such measures included formation of slum policy for the state of Tamil Nadu, formation of Tamil Nadu slum clearance board (TNSCB), to act as a nodal agency to implement various housing, slum improvement and rehabilitation and

resettlement programmers to improve the living condition of the urban slum families, and various development programs to improve the living conditions of the urban slum families, and various development programs to improve the living condition of the urban poor living in the slums. A little more than are fourth of the Chennai population lives in slums. Slums in Chennai are greatly disadvantaged as for a quality at housing and availability of basic drinking water, etc, any improvement in the standard of public health will have to focus in slums.

This paper reveals about the basic available infrastructural facility in slums in Chennai city water is human life of the human life. The water should be pure enough for drinking purposes. This is very basic amenity. The studies give a conclusion about the future requirement of infrastructure of slums dwellers of Chennai city. And the number of requirements should be increased in the amenities already available.

Hundreds of millions of urban poor in the developing and transitional world have few options but to live in squalid, unsafe environments where they face multiple threats to their health and security. Slums and squatter settlement lack the most basic infrastructure and service. They are exposed to diseases, crime and vulnerable to natural disasters. Slum and squatter settlement are growing at alarming results, projected to double in another 25 years.

Slums are neglected parts of cities where housing and living conditions are appallingly poor. Slums range from highly density, squalid central city tenements to spontaneous squatter settlement without legal recognition or rights, sprawling at the edge of cities. Some are more than fifty years old; some are land invasions just under way. Slums have various names, Favelas, Kampongs, Boonville's Tugurios,

THIS SLUM UPGRADING ACTION PLAN INCLUDE:

1. In stalling or improving basic infrastructure, e.g., water reticulation, sanitation/ waste collection, Rehabilitation of circulation, storm drainage and flood prevention, electricity, security lighting, and public Telephones
2. Removal or mitigation of environmental hazards
3. Providing incentives for community management and maintenance
4. Constructing or rehabilitating community facilities such as nurseries, health posts, community open Space
5. Regularizing security of tenure
6. Home improvement
7. Relocation/ compensation for small number of residents
8. Improving access to health care and education as well as social; support program to address issues of Security, violence, subs substance abuse, etc.
9. Enhancement of income-earning opportunities through training and micro-credit
10. Building social capital and the institutional framework to sustain improvement.

SLUM UPGRADING ACTIVITIES:

Identify and prepare city wide and nationwide slum upgrading program help selected cities and countries strengthen their framework as a necessary foundation for scaling up community-based upgrading program establish consensus with local stakeholders, create alliances, and mobilize resources to implement program and promote activities that raise awareness, disseminate information and create a global base of knowledge on best practices" in scaling up slum upgrading programs.

Upgrading programs are most effective when led by the municipal authority and implemented at the community level through a broad set of intermediaries including community based organization, go's government organization. Urban slums become a social challenges there is pressure on the government to improve infrastructure and remove these slums from the cities like Delhi or Mumbai. So what could they possibly do one option is that they improve the infrastructure in the urban area, create more jobs to absorb this labor force in urban areas etc.

By improving the urban infrastructure and creating more jobs, the government would be increasing the incentive for more rural to urban migration. The urban attractiveness tends to increase and people who may earlier have been on the fence and undecided now start to migrate. Additionally given the spate of suicides in the rural areas many a landless laborer would get attracted by the promise of an urban job consequently if the urban absorption rate increase and therefore urban

slums would not only continue to survive but also grow rather rapidly this in its turn leads to urban decay. The only way to stem the flow of migrants from rural areas into the urban ones and to do this one must increase the incentive for people to urban areas.

And to do this one must increase the incentive for people to remain within the rural areas. Policies with a rural focus must be implemented. The government agenda has to create a better standard of living in the rural area but also improve the image associated with the word "rural". Therefore, the real panacea to prevent urban decay and avoid creation of slums is to carry out rural improvement plans. The need is to usher in a second green revolution, improve rural infrastructure, bring in electricity to the as yet unreached areas, and make education available to the rural folk as well as other civil amenities like drinking water and proper sanitation. If the attractiveness of the rural villages improves there might very well be a reverse migration of the urban have-nots to the rural areas to become the rural-haves.

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