

Chapter IV

RESULTS AND DISCUSSION

Sanitation is not only a contemporary issue but also an empowerment tool for the progress of society and it has now turned into a multidisciplinary subject in the global development sector. Over two and a half billion people still lack access to improved sanitation (UN MDG Report, 2011). Women's participation is essential and they contribute significantly to the success of sanitation programmes. Health in slums is a function of complex and interrelated social, economic, physical and political factors. Poverty, malnutrition, water and sanitation, economic development and health are the multidimensional contexts that are connected and dependent on each other. The improvements in the physical factors lead to better health. The specific challenges faced by the slum dwellers particularly women in accessing clean and safe water, adequate sanitation facilities and basic-hygiene behaviours are highlighted in the present study.

The results of the study on” **HEALTH AND SANITATION SCENARIO IN SELECTED URBAN SLUMS - A MICRO LEVEL STUDY**” are presented under the following heads:

- 4.1 Socio - Economic Profile of the Respondents.
- 4.2 Water and Sanitation Hygiene.(WASH)
- 4.3 Dietary Pattern and health
- 4.4 Willingness to pay
- 4.5 Impact of educational intervention in improving better hygiene and sanitation
- 4.6 Government programmes for Urban Slum Welfare

4.1 Socio-Economic Profile of the Respondents

Socio economic profile of slum dwellers presents a staggering picture of factors such as caste, religion, education, health status and living environment of

the family, type of the house, occupation and income of the family. This socio-economic review provides an overview of the sanitation crisis in slum areas, and re-emphasizes the importance of sanitation. It highlights a lack of recognition of actual drivers for sanitation improvements, and the complexities in the provision of sanitation services in the context of urban slums with a mix of tenants and landlords. It elaborates how the drivers of demand for sanitation outlined in contemporary research are not universal but are rather context specific (Isunju, 2011). It thus highlights emergent analytical strategies, utilizing theoretical categories that exceed the familiar metonyms of underdevelopment such as the megacity, the slum, mass politics and the habitus of the dispossessed. Overall socioeconomic and health conditions tend to be better in urban areas than in rural areas. The urban population also has increased access to a wider range of health infrastructure and open many possibilities for women to meet, work and form social support networks than in rural province.

The socio economic profile clearly depicts the vivid picture of the life of the slum dwellers, which is given in the table 4.1 below.

Table 4.1
Socio-Economic Profile of the Women

Characteristics		Frequency	Percentage
Religion	Hindu	319	44.1
	Muslim	221	30.6
	Christian	183	25.3
Caste	ST	69	9.5
	SC	287	39.7
	MBC	133	18.4
	BC	234	32.5
Age (in years)	Below 30	121	16.7
	30-45	345	47.7
	Above 45	257	35.5
Marital Status	Unmarried	173	23.9
	Married	487	67.4
	Widowed	24	3.3

Characteristics		Frequency	Percentage
	Separated	39	5.4
Education	Illiterate	136	18.8
	Primary school	194	26.8
	Middle school	143	19.8
	Secondary school	47	6.5
	Higher secondary	146	20.2
	Degree	57	7.9
Family type	Nuclear family	185	25.6
	Joint family	538	74.4
Household size (in numbers)	Less than 4 members	294	40.7
	5 or more members	429	59.3
Occupation	Self employed	182	25.2
	Corporation workers	85	11.7
	Vendors	22	3.0
	Domestic servants	198	27.4
	Shop keepers	55	7.6
	Unemployed	181	25.0
Monthly Income (in ₹)	Below 10000	183	25.3
	10000-15000	242	33.5
	Above 15000	117	16.2
	No Income	181	25.0
Total		723	100.0

Source: Field survey, 2015

Religion and Caste:

Religion play an important role in patterning and the growth of slums. Religion wise and segregation finding reveal that in all the slums selected for the study, majority of the population are Hindus (44.1percent). It is a striking feature of the society that Muslim (30.6 percent) constitutes next major community followed by the Christians 25.3percent. The data related to caste coincides with the data of Slum Clearance Board (2013), where population belonging to schedule caste/schedule tribe is more in slum areas than in other areas (45.14 percent).

Age and Marital Status

Age is one of the factor determining the productivity .Around 47.7 percent of them are in the age group of 30 to 45 years representing the productive group. Prasad (2013) in his study found out that majority of the respondents (both male as well as female) were in the most productive age group . Nearly 17 percent of women are under the age group of 30 and 35.5 percent of the women are above 45 years of age. Information relating to marital status highlights that, majority (67.4percent) of the respondents were married and about 3.3 percent were widows. Only 23.9 percent were unmarried and 5.4 percent of the respondents were separated due to their own personal problems in the family.

Education

Education has significant influence on knowledge about food habits, nutrition contents and hygiene. Mother's educational attainment has important implications for children's diet, sanitation and health status .The general level of education of women is not very low in the study area. Only 18.8 percent of the women are illiterates ,whereas 26.8 percent have completed primary education ,19.8 percent have completed middle school,6.5percent have done their secondary education .Around 20 percent of women have attended higher secondary level and only 7.9 percent of women were fortunate to complete a degree. Even though Coimbatore has more number of higher educational institutions, it is observed that the graduates in the slum areas were very nominal. Therefore, there is a need for initiating efforts to promote awareness among the residents in slums regarding the importance of higher education. Also, another socio economic factor hindering the development of women in education is the early marriage which leads to the dropout of girl students from schools.

The education status of women in the urban slums of Coimbatore is better than that of women in under developed countries like Nigeria, where over 50.0 percent of the respondents have no formal education while only 20.4 percent go beyond primary level (Owoeye and Adededeji 2013). Mohammadpur slum which is oldest and one of the largest slum in Dhaka city, have 36 percent female

parents who have had some sort of primary education (Akter, 2011), while in the present study, only 26.8 percent have completed primary education.

Family Type and Household Size

A whopping size(74.4) , of the respondents are living as joint family and therefore more number of family members resides in limited space. It is observed that there are only maximum two rooms in majority of the slum residence. Majority of the respondents have more than five members in their family (59.3 percent), and only 40.7 percent of the respondents have less than five members in their family. Several empirical studies of urban families pointed out that urban joint family is being gradually replaced by nuclear family, the size of the family is shrinking, and kinship relationship is confined to two or three generations only. (Khan and Rizvi, 2015, Aileen Ross(1961)). However in the present study most of them preferred to live as joint families. When more members live in a limited area there is possibility contagious diseases spreading faster .On the contrary , some studies shows that there is no significant relationship between the occupant per room and major disease suffered.(Lukeman.et.al,2014).Few studies confirms that the family structure does not affect parents and children social value in the family (Bahadur and Dhawan,2008)

Occupation and Monthly Income

The employment status is a basic indicator of economic soundness of households. Economic opportunity is not the same for women as men because of gender discrimination, which results in women typically working in low-wage and low-skilled jobs which pays them even less than their male counterparts in the same area. This finding is similar to that of COHRE, (2008).The rate of unemployment among the urban poor communities is low due to the high rate of female participation in the urban workforce .Among the selected sample, 27.4 are working as domestic servants and 25.2 percent are self employed. Most of the corporation workers are residing this area, (11.7 percent) and 3 percent of the population are vendors and 7.6 percent are shop-keepers and only 25 percent of the respondents do not have a proper job or business and unemployed. Around

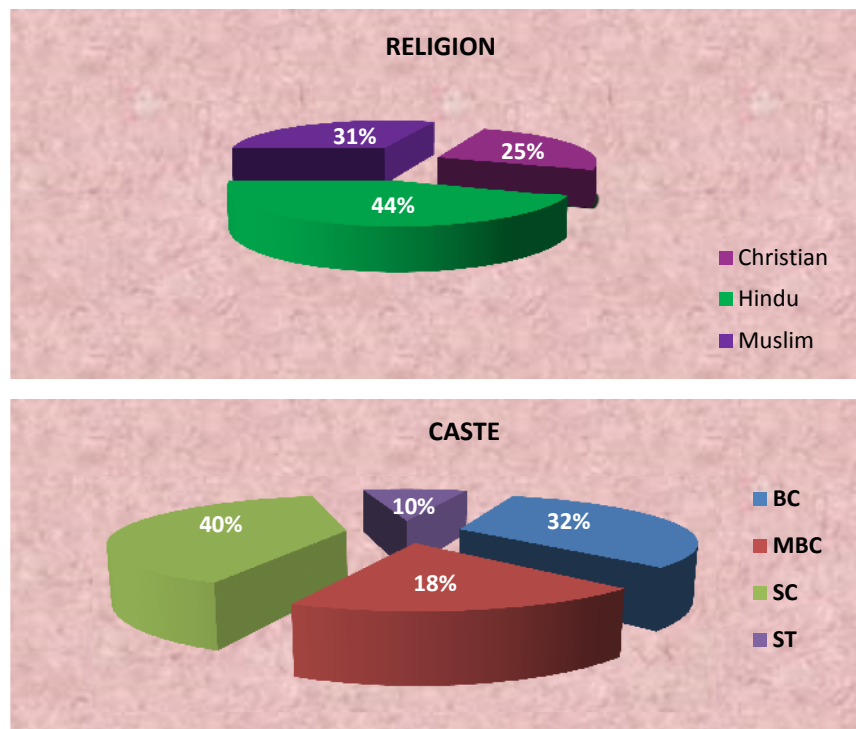
25percent of household reported an income less than ₹ 10000 a month. The implication of this is high rate of poverty level and deprivation, as large number of the populace may be rundown of good quality housing and adequate feeding. The cumulative effect of this is the poor standard of living which leads to poor health.

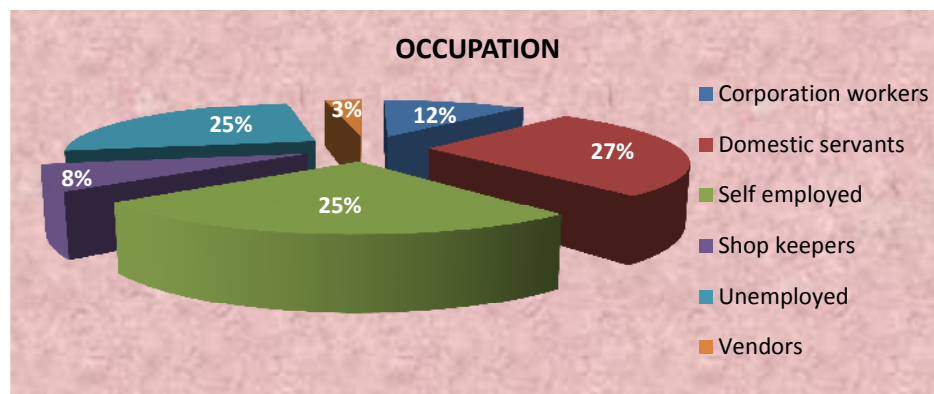
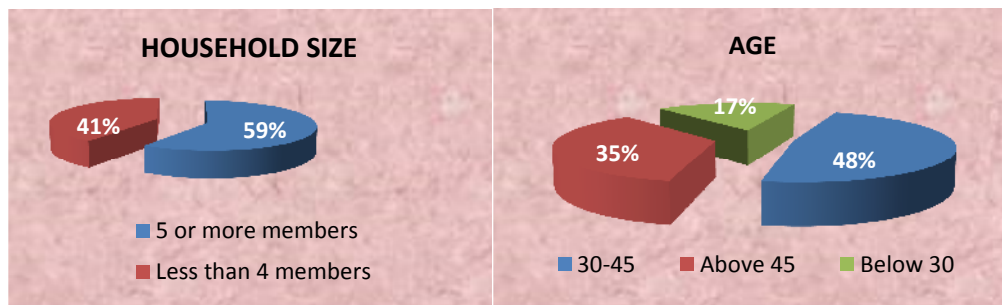
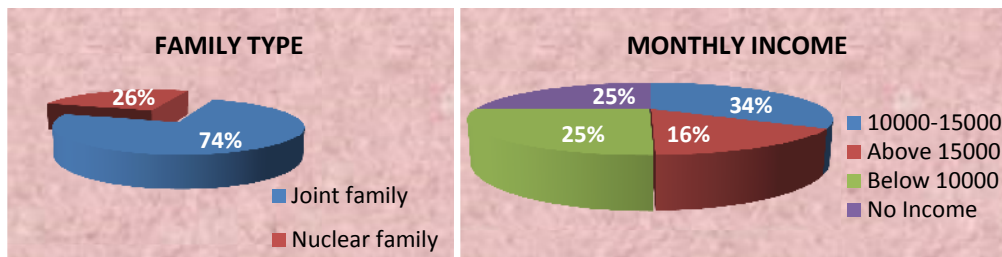
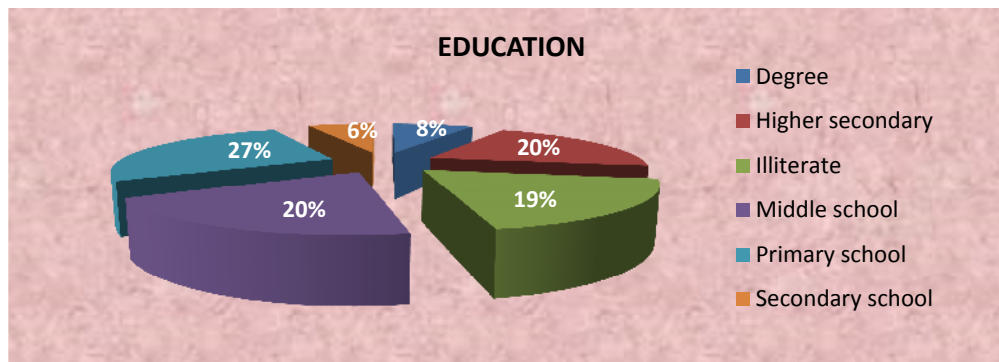
The slums are the manifestation of urban poverty and the slum dwellers are considered as the poorest section of the urban society. However Mitra *et al.* (2006) states that slums do not accommodate all of the urban poor nor are all slum dwellers always poor. As most of the slum dwellers are uneducated and unskilled, they are earning low income. As per the data from Slum Clearance Board (2013), 40 percent of households in slum area of Coimbatore city are getting income less than ₹.5000 per month which is inadequate to fulfil even their day to day requirements. Therefore, to meet the other expenditures apart from day to day expenses, like expense towards medical, marriage, education, child birth, housing, etc., they are to avail loan from the local financiers even at very high interest rate. This situation pushes them in to the vicious circle of poverty and more over they are unable to break this cycle and come out of poverty. Sending as many household members as possible into the workforce is the main survival strategy of the urban poor.

Pre-condition to improve slum dwellers' living conditions is to ensure a stable income. Slum residents' financial capital is limited because of lack of appropriate skills and education, poor health and insecure housing. Mostly they serve as low skilled or un-skilled workers. Slum dwellers serve as low-paid public servants to clean streets and collect garbage, also small or middle enterprises located in the vicinity of a slum such as textile industries, motor industries, service sectors like hospitals and educational institutions and IT industries provide lower cadre of job opportunities for the slum dwellers in and around the city as they are mostly unskilled labour force. The major income earning activities of the inhabitants of Coimbatore slum are drivers, dhobis, corporation workers, as well as housekeeping or construction-workers. Unlike the variety of options to ensure an income, slum dwellers face always financial difficulties because of instability and irregularity of earnings as most earnings are less predictable and come from

one way or other. Also some jobs are insecure because of their informal character or increasing workers' competition. Many of the female respondents indicated that they had lost a job as a housekeeper being easily replaced by another woman, when they could not come for work due to health or family problems. The financial instability is the biggest threat for the poorest slumdweller without access to savings, and are heavily in debt. It is to be borne in mind that urban India contributes over 50 percent of the country's gross domestic product (GDP). The Mid-Term Appraisal of the Eleventh Five-Year Plan estimated the urban share of GDP at about 63 percent for 2009–2010, and this share is projected to increase to 75 percent by 2030. It is a travesty that when Indian cities and towns act as engines of national economic growth by contributing significantly to its GDP, such a large proportion of urban dwellers still live in such poor conditions (Tripathi, 2015). All the above facts such as religion, education, family size etc. are depicted in the following figure 4.2

FIGURE 4.1
SOCIO ECONOMIC PROFILE





Source : Field Survey (2015)

4.1.2 CONSUMPTION EXPENDITURE AND DIETARY PATTERN

In the process of development, consumption pattern shows remarkable changes and shifts. The analysis of food consumption in Urban India is of greater interest. It permits not only to understand the food consumption pattern of an important and growing population but also reveals the future of consumption habits in India. It is considered that the changes in consumption are more likely to happen in urban than in rural India. Even more, it is among the urban population that the most important concentration of wealthy people on one side and poor people lacking even the essential services exist on another side. An understanding of the changing consumption pattern according to the extent of value addition would have implications not only for food grains demand projection but also for development policies. The consumption pattern observed in urban areas are entirely different from that of rural areas. Most of the essential food needs like vegetables, fruits, grains and pulses are considered as luxury items by the rural folks which reflects their ignorance on the importance of protein requirements. The slums which are near by the seashore have fish as their essential food, but those areas away from the sea is provided the supply of fish at high cost and preserved fishes are mostly available. Vegetables are given preference only to meat and fish. Even though meat, egg and fish are expensive than vegetables, they prefer to have non-vegetarian food. They prefer to have atleast egg on week days and meat and fish on the weekends. The western influence has its impact in the urban slums where it is commonly observed children having instant noodles and many other instant food. The urban life style results in allotting nearly nine percent of their consumption expenditure towards refreshments. One of the interesting fact observed in the study area is that as women are engaged in various kinds of work, most women prefer to buy tea and coffee rather than preparing at home. They do not purchase milk on a regular basis and hence prefer to get coffee or tea from the nearby shops. In most places, there is a small shop selling food at a very affordable price, which makes them think that it is better to get their food from shop which is much easier and

affordable too. Though the practice of buying food from outside has crept into the set up, many household purchase provisions and do cook at home. The food consumption expenditure of the selected samples are indicated in the table below.

Table 4.2
Monthly Food Consumption Expenditure

Items	Percentage of expenditure
Cereals and Cereal Substitutes	37.8
Pulses and Their Products*	11.7
Milk and Milk Products	12.4
Edible Oil	8.2
Egg, Fish and Meat	9.8
Vegetables	4.6
Fruits	3.7
Sugar, Salt and Spices	2.5
Beverages, Refreshments, Processed Food	9.3
Total	100.0

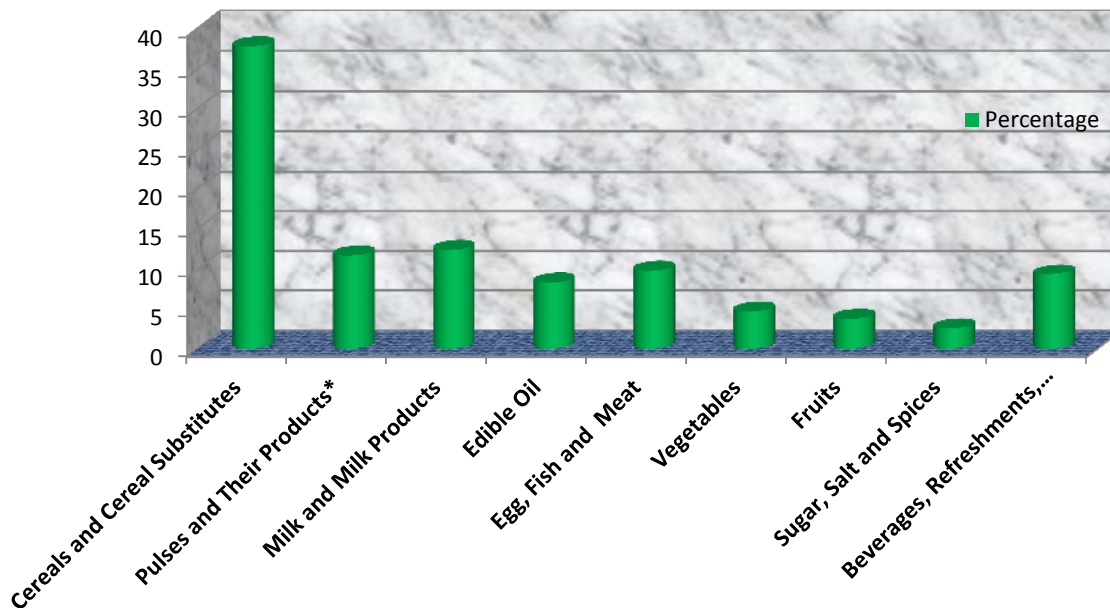
Source: Field Survey, 2015

Item-wise expenditure of food items was revealed in the above table. Among the various food items, the women spend 38 percent of their income for consuming cereals and cereal substitutes. The trend seems to be different in NSS survey which reveals only 6.7 percent on the consumption of cereals and pulse. Kumar and Aggarwal (2003) , also points out a shift in consumption away from cereals to high calorie commodities such as meat, milk, fish etc, in other words from low value to high value commodities. Only 12 percent of the expenses is towards milk and milk products and most of women do not buy milk regularly. The amount spent on the purchase of edible oil is only 8 percent .Most of them get oil from ration shop and this helps them to avert their expenses from this item. On the

other hand ,spending on beverages, refreshments and processed foods is high compared to fruits and vegetable. Fruits and vegetables are necessary body building agents and scientist and doctors insist on increasing the intake of fruits and vegetables. These goods provide all the needed requirements. The expenditure on beverages, refreshment and entertainment coincide with the 68th round of NSS survey of Urban Indian spending. Beverages include soft drinks like 7up,soda,maza,etc.The slum dwellers are in the habit of consuming beverages of cheap quality which are locally prepared.

The vendors add some colouring agents in water and add sugar and this is given at a very low cost to the slum dwellers. This has serious health impact. Children also consume this, especially during summer resulting in health hazards. This is also one of the reason for high prevalence of diarrhoea and viral fever, vomiting and other related water borne diseases in the study area. This can be awerted by proper education to slum dwellers. Tastes and preferences of the consumer is one factor which makes them to demand these goods. Though the price of non-vegetarian items is high ,people do prefer this items. However, it is good for the improvement of their health. Realising this fact, the government of Tamil nadu has taken efforts to provide two eggs per week to each student in their mid-day meal at the schools. The expenditure on vegetables and fruits are very low which may be accounted for high vitamin deficiency prevailing among women and children. Though egg , fish and meat are costly people devote 9.8 percent towards this. The personal habits such as alcohol consumption, smoking and chewing of tobacco were highly prevalent among these slum dwellers. Mostly the income earned by men are given for house hold expenses only after spending on personal expenses like alcohol consumption and some women in the area reported that majority of the daily wages earned by them are spend on alcohol consumption and the most pitiable side is the addicted victims even get money from their wife too .Since the respondents were women, it was unable to get the data on the expenses made by men on alcohol, pan masala and such other items. The consumption expenditure of the households are given in the table 4.4.

Figure 4.2
Consumption Expenditure



Source : Field Survey(2015)

4.1.3 Dietary pattern

Balanced diet is the combination of essential nutrients like carbohydrate, protein, fat, vitamin and mineral, which are essential for every human being. But as the economic condition of the slum dwellers is generally poor and sometimes they live from hand to mouth, most of them cannot even think of having balanced diet. According to the NFHS-3, in which dietary data was collected from over 90,000 women in 26 states using a 7-item food frequency questionnaire (FFQ), diet habits varied widely between states and almost half of women in some states consumed micronutrient-rich foods such as green leafy vegetables, milk and fruit less than once a week. The preparation of vegetables is usually extremely spicy and as a result small children consume very little vegetable. Meat/fish and egg are prepared only once a week. Fruits are rarely purchased. In recent years, the global health community has been focusing more of its efforts and resources on

fighting malnutrition - a complex problem that contributes to 45 percent of deaths among children under the age of five worldwide. Chronically malnourished children are, on average, nearly 20 percent less literate than those who have a nutritious diet.(MSH,2017).The dietary pattern of the selected sample is given in the table below:

Table: 4.3
Dietary Pattern

Pattern		Average
Break fast	Idly	23.8
	Dosai	19.5
	Uppumav	14.9
	Chappathi	11.8
	Poori	9.3
	Tea/coffee	20.7
Lunch	Variety rice	42.1
	Meals	57.9
Dinner	Tiffin	46.7
	Meals	53.3

Source : Field survey, 2015

The dietary pattern is observed to be unique in their day to day life. Even though women prepare different kind of food items for breakfast for their family, those who start early from their home for job, just prefer tea or coffee and later they have light snacks with tea or coffee again, at their work place. Idly and dosa are the major breakfast items. (around 24 percent and 20 percent) respectively and uppumav is preferred by nearly 15 percent of the women. They prefer to have chapatti and puri for breakfast rarely during their holidays and weekends. Even though this is the common diet pattern observed, some women skip their

breakfast to be on time for their job and some even reported that they never have the habit of preparing and having breakfast, some of them reported that when there is no money at hand, they do not make their breakfast. The condition is so pitiable that they are unaware of the importance of breakfast for healthy diet. Though they give least importance for breakfast, they expect to have full meals for lunch which is a must to meet their energy requirement after the day's work.

In the present day life style, most of the women do not have enough time to relish their meal and hence 42 percent women prefer variety meals ,which is less time consuming as well as easy to prepare .Dinner time seems to be the time for the whole family together and nearly 47 percent of the women prefer to have tiffin or light items and around 53 percent prefer to have meals for dinner ,because they could make use of the left over rice of the noon for dinner .After a day long strenuous work, women feel difficult to prepare a full course at night and many buy from outside.

Clean water, nutritious food, and a hygienic environment— these are the building blocks of health for any community. Yet, these necessities are out of reach for many families in low-resource environments. As a result, malnutrition results in 45 percent of childhood deaths worldwide (MSH,2017). A child suffering from poor health lacks attendance in the school. Workers who suffer from childhood malnutrition are less productive than healthy workers. India has one of the youngest populations in the world still it is unable to reap the economic benefits because there are always many more mouths to feed than hands working..

4.1.4 Savings detail

The importance of household assets, savings and possessions, as a common statement, should not surprise us. This is a common definition of poverty, and the importance of assets has long been acknowledged in the literature. (Wratten and Ellen 1995, Amis, 1997). With increased earnings the incidence of saving is also likely to be higher. Along with income, savings are also an important indicator of economic status of household and it is great asset to the

family. It not only enhances their financial position but improves their economic status too. It builds confidence in them and once it is started it helps them to come up in life .Even though slum women possess knowledge on savings and realise their importance, many felt it as a burden to continue their savings regularly because of irregular income and increasing cost of living, which makes them very hard to survive with the present level of income. The details of savings by these women are reported in table.

Table 4.4
Savings facet

Particulars		Frequency	Percentage
Place of savings	Bank	182	33.3
	Post office	127	23.2
	Chit fund	135	24.7
	LIC	103	18.8
Amount of savings in ₹/month	Less than 1500	197	36.0
	1500-3000	216	39.5
	Above 3000	134	24.5
Period of savings	Daily	138	25.2
	Weekly	229	41.9
	Monthly	180	32.9
Purpose of Saving	Education	143	26.1
	Marriage	219	40.0
	Medical purpose	88	16.1
	Future needs	97	17.7
Total		547	100.0

Source : Field survey, 2015

In spite, of their income being low, the women are more aware on the need of savings. The analysis of the savings behaviour of the surveyed women revealed that about 76 percent of the women had saving and 24 percent of them had no savings. Nearly 33 percent of the surveyed women reported that the bank was preferred as source of saving meanwhile other source of savings are chit funds (25 percent), post office (23 percent) and LIC (19 percent). The amount of savings also varied .Among the selected women (40 percent) of them saved between ₹ 1500-3000; 36 percent saved below ₹.1500 and 25 percent of them saved above ₹ 3000 per month. Most of the women (42 percent) saved weekly; 33 percent of them saved on a monthly mode and 25 percent of the women saved a little amount daily .Around 35 percent of the women stated that the major motivation for savings was for their children's marriage and for 26 percent it was for children's education and 17 percent saved for their medical purpose and 17 percent of them saved for their future needs. The savings has the potential to build health in informal settlements through five specific pathways: facilitating empowerment, building community, creating information and action networks, amplifying the voice of the poor, and building financial strength. The micro savings and self help groups add up the savings of the women and support them for being more independent and empowered. The slum women in the study area have very little knowledge on micro savings and still the importance of women self help group is to be reached to the larger portion of slum population. In the study area only 43 percent of women are aware of micro savings and about self-help group. There is need of educating more number of urban slum women on the scope and importance of joining in a self help group.

Debt Position

Poverty and indebtedness generally go together. Low income coupled with lack of proper employment also induces these households to borrow to meet both current expenditure and also unforeseen expenditure. The urban poor are unable to live on their limited earnings and are often forced to take loans from various sources. The details of the debt are shown in table 4.5

Table 4.5**Debt facet**

Particulars		Frequency	Percentage
Source	Money lenders	22.9	35.8
	Banks	293	45.6
	Friends/relatives	117	18.3
Amount (in ₹)	Less than 25000	182	28.5
	25000-50000	283	44.3
	Above 50000	174	27.2
Period of repayment	Daily	131	20.5
	Weekly	293	46.6
	Monthly	210	32.9
Interest of payment	Less than 5 percent	251	39.2
	5-10%	210	32.9
	Above 10%	178	27.9
Purpose of borrowings	Education	217	34.0
	Marriage	179	28.0
	Medical purpose	243	38.0
Total		639	100.0

Source : Field survey, 2015

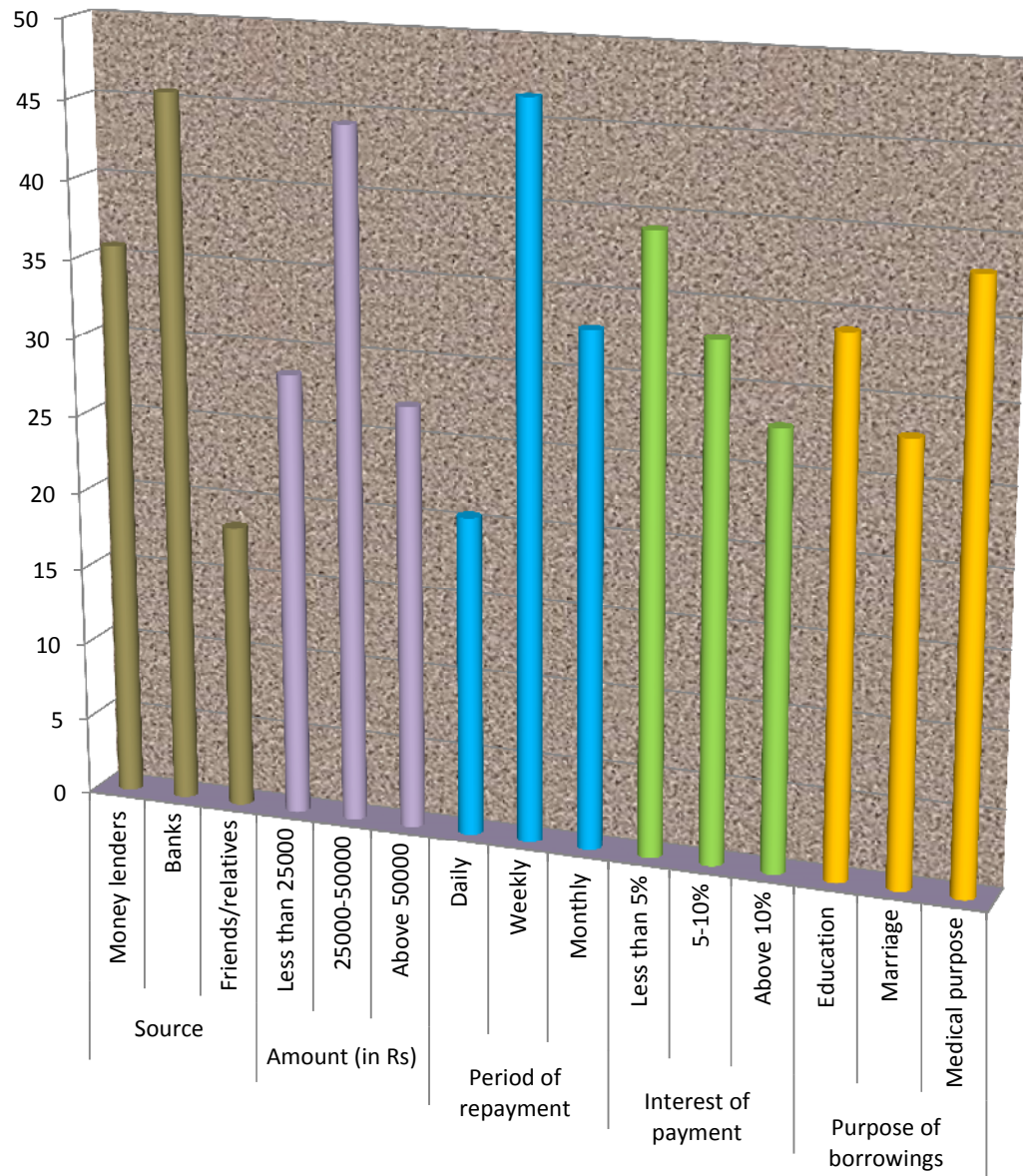
Out of the total sample of 723 women, 639 of them had debt. Inadequacy of income coupled with indiscriminate spending may have made the women to borrow. The main source of borrowings of women are from bank (46 percent) followed by money lenders (36 percent) and from their friends/relatives (18 percent). The amount they borrowed lies in the range of ₹.25000-50000 (44 percent), less than 25000 (29 percent), greater than 25000 (nearly 47 percent). Repayment is done on daily basis (21 percent), weekly basis (47 percent), and on monthly basis (33 percent). The interest of borrowings ranges at the rate of above 10 percent, from 5-10 percent and a nominal rate of less than 5 percent. The various reasons for borrowing as stated by the households are, medical

purpose (38 percent), education purpose (34 Percent), marriage (28 percent). The incidence of borrowing was high among the women than their savings.

Unexpected medical expenses is a major reason for large part of their debt, which highlights the prevalence of diseases and sickness. People incur some sort of medical expenses every year, but they don't spare money because their daily earnings is inadequate meet their expenses. Even, though free education, free bus pass, free text books and note books for school children are provided by the government, the children demand for extra notebooks, stationery items, and guidebooks which the parents have to provide. This shows the fact that the free compliments do not cater to the complete needs of school children. Many women said that they don't get bus pass for their children as the buses at the peak hours are impossible to accommodate their children and hence they spend for a private transportation. Mostly, the primary schools are at reachable distance and they only feel the difficulty of transportation when going for high schools. When their children reach higher education, still their education expenses increases, in spite of scholarships they receive from various sources as the cost of education is higher in urban areas. All these reasons make them borrow for education purposes.

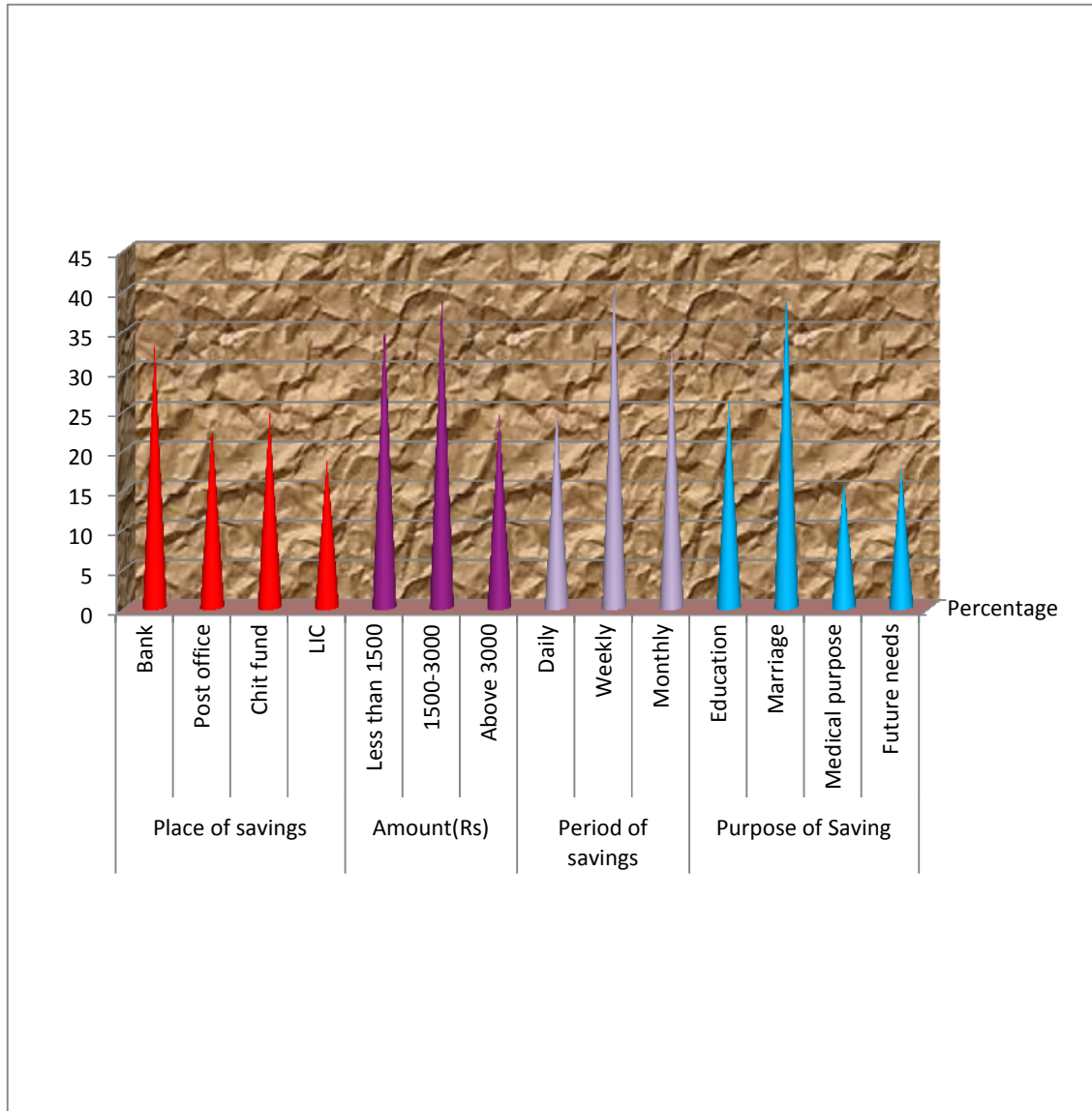
Figure 4.3

Debt facet



Source : Field Survey 2015

Figure 4.4
Savings facet



Source : Field survey, 2015

4.1.6 Asset possession

Assets shows the economic status of the individuals. When the earning is not enough to meet the daily expenses, it is not possible to buy any assets. But inspite of their low income, many people accumulated assets like mixie, Television, bicycle, grinder, LPG stove because of the free compliments from the political parties.

Table 4.6
Asset Possession

Asset	Percentage
Land	12.8
Building	35.7
Gold	57.3
Tv	98.7
Fridge	14.8
Washing machine	9.7
Bicycle	43.8
Two wheeler	31.3
Mixie	79.7
Grinder	86.4
LPG	82.1

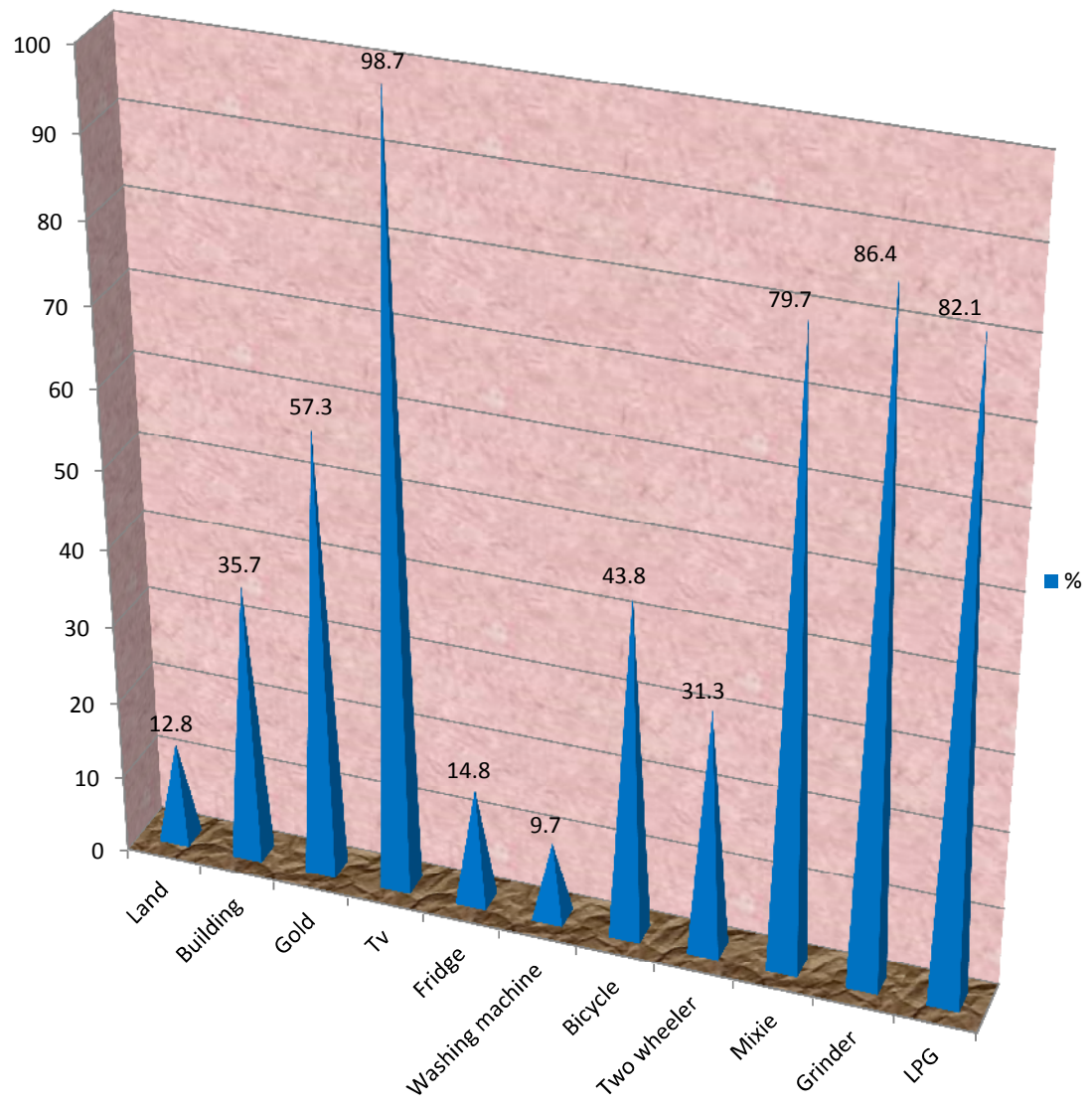
Source: Field survey 2015

Increase in the well-being of the individuals enables them to acquire more assets which enhance the quality of their life. In spite of living in small houses, women are interested in adding up the assets of the house .Most of the urban slums are depiction of the paradox of poverty. Even though they are daily labourers employed in insecure jobs, they show interest in accumulating their assets rather than saving for future. The clear picture of households owning various households assets is shown in Table 4.6.4. It is very difficult to discriminate the urban slum dwellers because the urban life style makes them to

acquire some life style assets like Television, refrigerator, two wheelers etc. There is very high influence of urban life style in the life of slum dwellers too.

There is a significant increase in the possession of assets like land, house, gold, television, mixie, grinder, moped, scooter, etc. among the selected women. The above table revealed that women spend more on acquiring consumer durable items which enhances their life style rather than on productive assets like land, gold and building. A major proportion of women owning house was high because the government sponsored many dwelling for the slum people under the slum development board, meanwhile there was more than two-fold increase in the proportion of women owning VCP/VCR, T.V, Wet grinder, mixer grinder, cycle, moped, fridge and scooters. This implies that conspicuous consumption was on the rise among the women with improvement in their levels of income. This is also due to the free compliments like Television, cycle, mixer grinder, table fan and grinder provided by various political parties on their success in the election. Though the ruling parties were able to capture the minds of the people through their promises of free assets like television, gas stove, fan, mixer grinder, and even lap tops and cycle to school children, there is a strong criticism that those facilities make people idle and easy availability of these assets without hard work and trouble makes them to under estimate the value of those assets. Even some people in the study area reported that they have sold some items which they received free of cost at a good price and hence encashed them. Many women reported that they are unable to pay for the subsidised LPG cylinders and hence they do not use the free LPG stoves. However, these free election promises have added up the assets of these slum dwellers and whether it reduces the burden of urban living or not is hardly questioned. Even very houses are enriched with luxuries like LED Televisions ,Air coolers and the investigator reached the peak of gust on observing a car owned by a slum dweller. This high lights their mental attitude of not switching to any other area rather than living in their place. But very few slum dwellers possess some comforts to enjoy their life and a majority of them are living in poverty.

Figure 4.5
Assets



Source: Field Survey 2015

4.1.7 Living Condition

Slums are uncomfortable and upsetting, teetering on voyeuristic. Across a filthy, rubbish-filled creek we enter the slum's heaving residential area, treading carefully to ensure we do not step in human sewage. Rather than pity, I am inspired by man's alchemic ability to thrive when the chips are down. (Crerar, 2010). Living Condition plays a major role in determining the health status of the residents as it has direct impact on health. The unhygienic living condition existing in slum is a crucial accelerating factor that transmits various water borne diseases. In the present study, the quality of a house is assessed in terms of type of house, number of rooms, availability of electricity, kitchen space, and fuel used for cooking. Table 4.1.5 present details on the living condition of the selected sample respondents.

Table – 4.7
Living Conditions

Particulars		Frequency	Percentage
Type of house	Kutcha	65	9.0
	Pucca	168	23.2
	Semi- Pucca	490	67.8
Number of rooms	One room	170	23.5
	Two room	377	52.1
	Above 2 room	176	24.3
Type of flooring	Mud	431	59.6
	Cement	184	25.4
	Tile	108	14.9
Separate kitchen	Yes	341	47.2
	No	382	52.8
Separate bathroom	Yes	94	13.0
	No	629	87.0
Electricity supply	Yes	611	84.51
	No	112	15.49
Fuel used for cooking	Kerosene	291	40.2
	LPG	275	38.0
	Wood	157	21.7
Total		723	100.0

Sources: Field survey, 2015

Figures within parentheses indicate percentage

Shelter is the third basic need of human beings next to food and clothing. The poor housing condition and toilet facilities reveal the miserable living conditions of the slum dwellers. A proper housing is required to protect oneself from heat and cold, rain and storm and also to protect their belongings in a secured place. On the basis of material used in walls and roofs, we classified all houses in to three categories, Pucca, Semi pucca and Kutcha. A pucca house is one, which is constructed with cement and concrete roofing. Semi pucca house is constructed with stone and cement and concrete roofing. A kutcha house is made of mud with thatched and or tin sheet roofing. In the study area, only 23 percent were pucca houses. The large number of samples (67.8 percent) were living in semi pucca house and only nine percent were living in kutcha house . Data reveals that around 23 percent of households had only single room for cooking, eating, sleeping and reading without any toilet and bathrooms. Majority of the houses had two rooms and a small separation as bathroom .Very few household had more than three rooms. Around 24 percent of houses made an extension on the drainage lane and sometimes the drainage lane is not closed properly which emits the foul smell even inside the houses. The single room packed with lots of material showed lack of good housekeeping among these dwellers .There is no separate kitchen in majority of the houses (72 percent) and very few (27 percent) had separate kitchen. Availability of limited area does not permit them to have a separate bathroom and so only 13 percent of the households had separate bathroom, which is a small partition in the available space made of cardboard or sheet of iron with no proper water and drainage facilities. Upgrading the slums is not merely shifting the slum dwellers into multi-storeyed houses, it needs much more concerted efforts to be worked upon both with body and the soul. (Chaturvedi,2013) .

Good flooring protects and prevents cracks and crevices which serve as breeding place for large number of pathogens. In the present study, the condition of the floor was found to be miserable as more than fifty percent dwellers had rough and damp type of floor where cracks and crevices were common. The houses of these slum dwellers were made up of sub-standard type of material and

without the provision of adequate ventilation. Majority of the houses in the study area,(59.6 percent) has the mud flooring, whereas around 25 percent has cement flooring and very few houses (14 percent) have tiles flooring.

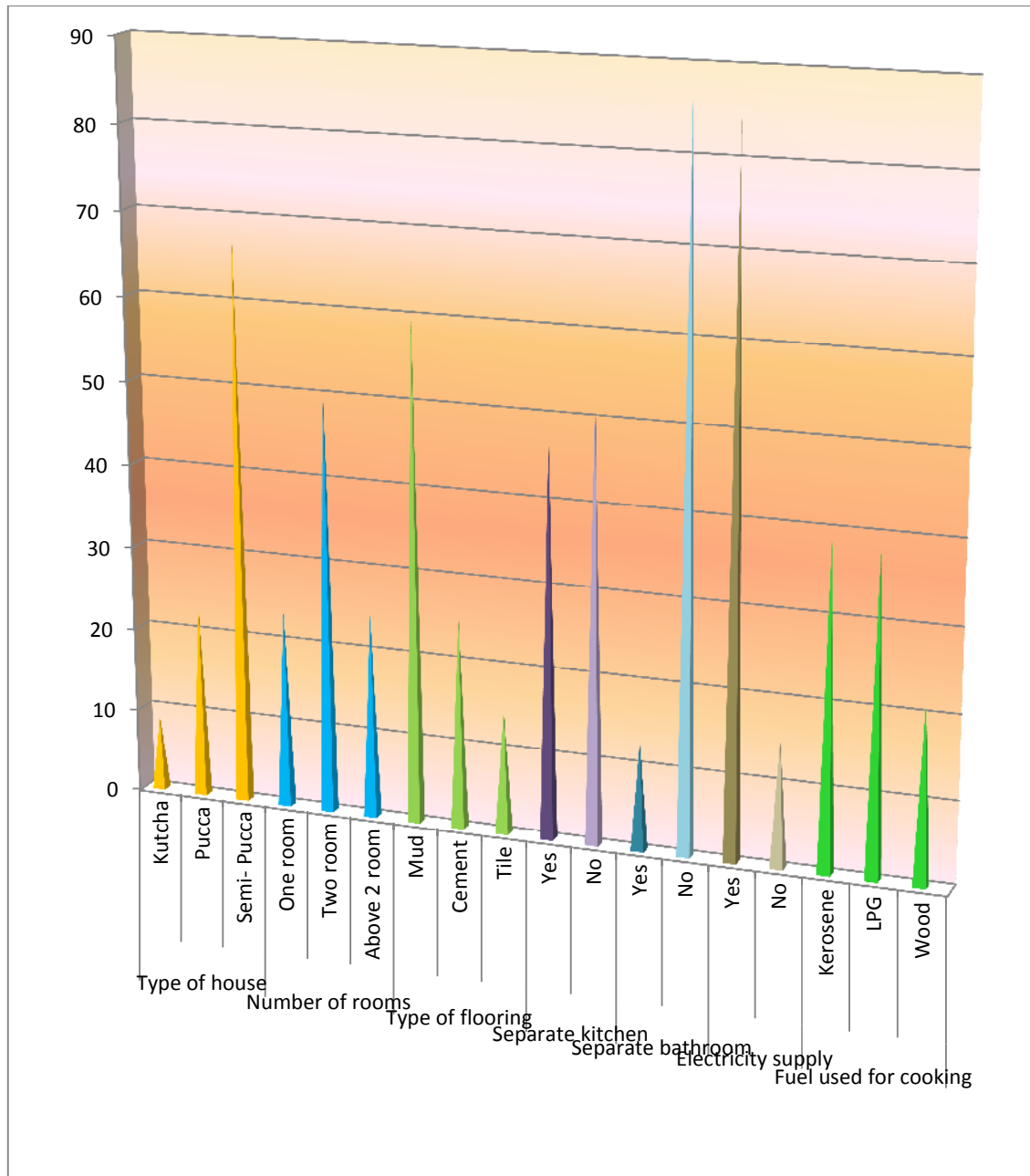
There is easy access of electricity in the study area and 85 percent of the respondents have electricity supply, and only 15.49 percent of the respondents do not have electricity supply. Electrification is easily accessed in the notified slums whereas the unnotified slums still struggle for electrification or they opt for illegal electrical connections. The residents lacking land documents for their houses are denied electricity connection. Among all the five slums selected for study, majority of the houses in Pillayarapuram slum lack electrification and people face all struggle in un electrified houses at night and reported their fear for safety due to lack of electricity. This is the major problem faced by the dwellers in the slums that are relocated .People in Pillaiarpuram slums are relocated from Aathupaalam road side slums during the widening bridge construction at Aathuppalam. Such relocated slums are least concerned by the authorities and they lack their attention. Pillaiarpuram slum focuses this fact because it lack proper road facility, water facility, toilet facilities and many other basic amenities.

The type of fuel has considerable effects on the health of individual. The fuels commonly used by these slum dwellers include wood, charcoal, kerosene oil etc. which not only adversely affect their health but are also cause of environmental pollution .Fuel used for cooking is kerosene, where around 40 percent of the respondents use kerosene, meanwhile 38 percent of them were consuming LPG in the present study, which they buy from ration shops and around 21 percent still use wood for fuel purpose. On the contrary, use of clean fuel such as LPG in the slums of Vellore town was common, with few households (2.05 percent) using fuel wood and other pollution generating fuels (Mony et al., 2006). This may be attributed to better economic status of the slum dwellers of Vellore slums. Women stated that they hardly make use of the LPG stoves provided freely by the state Government, as it is difficult to buy LPG cylinders even at the subsidised rate with their low level of income. More over the people

without ration card are not provided the free LPG stoves. Even the subsidised LPG cylinders is unaffordable..

The problems of indoor pollution were found to be very common owing to lack of separate kitchen. Many studies have pin pointed the consequences of indoor air pollution due to the use of wood and kerosene for fuel. Type of fuel also has considerable effect on the health of individual. In the urban slums of Surat, two third of girl child were found to have history of persistent cough whereas 52.8 percent of girl child of Middle Income Group (MIG) area suffered from same problem. The difference in these two groups was attributed to variation in the type of fuel they used, as kerosene and wood were the main cooking fuel used by the poor slum dwellers while LPG was common in the later case (Vipul, 2008). Similarly, daily-integrated exposure of infants and women to Respirable Suspended Particulates (RSP) in two slums of Delhi during cooking were low in kerosene using houses than those of wood-using houses (Saksena et al., 2003). Therefore, creation of awareness on indoor air pollution as the means to avoid pollution for leading healthy life style is advisable.

Figure 4.6
Living Condition



Source : Field Survey 2015

4.1.8 Toilet Facilities

Good sanitation and hygiene practices can make major differences in people's health, education and socioeconomic development. The challenge of rapid and unplanned urbanization that India is facing and will continue to face over the coming decades needs no introduction. Of the 93 million slum residents in India, 81 per cent have inadequate access to sanitation (NSSO, 2008)). Lacking the facility of an individual toilet or a shared toilet, forces them to depend on badly maintained and overcrowded toilet blocks or, for 15 percent, have no form of toilet at all. Open spaces are thus the only option. (Sinroja, 2013). India stands for 90 per cent of the 692 million people in South Asia who practice open defecation, even though many of these countries have lower, per capita gross domestic product (Menon 2003, Colopy 2012, Saluja 2012). Without the necessary number of toilets, slum dwellers are left with very few options. Without factoring in affordability, their options are: a private toilet for the family, a private toilet shared between families, community toilets, and public toilets. However, "Almost all the urban poor communities rely on either municipal toilets or practicing open defecation" because they cannot afford private toilets. (Karn and Haradha, 2011).

Cleanliness and hygiene are important not only from the public health point of view, but also socio and economic development of the family. There is no doubt to say in this era that sanitation dictates the human life. (UN Water Factsheet, 2008). Good sanitation decreases the chance of one of the household members to get sick. People who share their toilet rooms with a lot of people do this with increased risk of being exposed to contaminated environments. Households that share their toilet rooms with many people become sick more often. Many studies pointed out the need of individual toilet for each family because the hygiene and cleanliness is very low when more people use the toilet and hence there are chances for the people to select open defecation rather than using dirty toilets with more risk for health (Gunther et al, 2010)

With respect to the toilet facility and its usage, the investigator probed in to various aspects like type of toilet, its usage, facilities, payment, cleanliness, open defecation etc. The findings are summarized in the table below.

Table 4.8
Toilet Facility

Particulars		Frequency	Percentage
Separate toilet facility	Yes	173	23.9
	No	550	76.1
Type of toilet facility	Septic tank	76	43.9
	Pit latrine	53	30.6
	Permanent pit	42	24.3
	Temporary pit	2	1.2
Using Common Toilet	Yes	374	51.73
	No	176	24.34
If not using Common toilet, where do you defecate	Nearby places	70	39.7
	Far off places	106	60.3
Reason for not using common toilet	No proper structure	23	13
	Not clean	34	19.3
	Insufficient water	41	23.3
	Malfunctioning of latrine	17	9.7
	Personal preference	13	7.4
	Cannot afford charges for paid latrines	38	21.6
	Other reasons	10	5.7
Amount per month paid for common toilet(₹/month)	Less than ₹. 50	80	31.5
	₹.50-100	170	66.9
	Above ₹.100	4	1.6
Distance to common toilet	Less than 1km	92	24.6
	1-2km	161	43.0
	More than 2km	121	32.4
Time to reach common toilet	Less than 10 minutes	107	28.6
	10-20minutes	176	47.1
	Above 20 minutes	91	24.3

Particulars			Frequency	Percentage
Cleaning of Common Toilet	Self		73	19.5
	Private		184	49.2
	Community arrangements		117	31.3
Frequency of Cleaning	Daily		99	26.4
	2-3 weeks		72	19.3
	Weekly once		96	25.7
	Very rarely		107	28.6
Facilities inside the common toilet	Running water	Yes	216	57.8
		No	158	42.2
	Soap	Yes	50	13.4
		No	324	86.6
	Towel	Yes	23	6.1
		No	351	93.9
Wash your hands	Yes		488	67.5
	No		235	32.5
Use soap for hand wash	Yes		293	60.0
	No		195	40.0
Usage by Children	Yes		594	82.2
	No		129	17.8
Washing hands by children	Yes		287	39.7
	No		436	60.3
Agents used to clean the hand	Water		133	46.3
	Soap		84	29.3
	Mud		39	13.6
	Hand wash, Dettol etc...		31	10.8
After cleaning the bottom will you wash hands	Yes		391	54.1
	No		332	45.9
Agents used to clean hand after washing the bottom of children	Water		168	43.0
	Saop		197	50.4
	Mud		6	1.5
	Hand wash, Dettol etc...		20	5.1

Source: Field survey, 2015

Due to space constraints, most of the slum dwellers are not giving importance for the toilet in the slums of Coimbatore which leads to the unhygienic environment,(Slum Clearance Board,2013).Among the women surveyed, nearly 24 percent of women stated that they have separate toilet facility in their house and 76 percent of them do not have separate toilet facility and therefore they use the common toilet which are shared by their neighbours. They are also in the habit of relieving themselves in bush or field far away from their houses. Women and girls feel shame and a loss of personal dignity and safety risk if there is no toilet at home. They have to wait for the night to relieve themselves to avoid being seen by others. Among the women having separate toilet facility, 43 percent of women have toilet facility connect with septic tank and 30 percent have pit latrine, 24 percent have permanent pit and only 1 percent have temporary pit type of toilet facility in their houses. The census data (2011) reveals the fact that in India only 46.9 percent of the 246.6 million households have lavatories while 49.8 percent defecate in the open. The remaining 3.2 percent use public toilets.

Open defecation continues to be a big concern for the country as almost half of the populations do it. (Chandramouli, 2011).Among the women not using common toilet, insufficient water was the reason for nearly 23 percent of the respondents, while 22 percent of them cannot afford charges for using common toilet and 19 percent of them did not use it as it was grimy ,13 percent stated no proper structure for not using common toilet and nearly 10 percent did not use because of malfunctioning of latrine. Only very few (6 percent), reported some other reasons like distance, feeling difficult to walk and time taken to reach as the reason for not using common toilet. Money paid for maintaining the common toilet is also an important factor determining its usage. Slums in cities of most developing countries are characterized by poor infrastructure facilities such as solid waste disposal, sewage disposal, and drainage which lead to environmental degradation and in absence of sufficient number of community toilets, these people are forced to excrete in the open (Bhardwaj, 2002).

It has been a practice in many urban areas to pay and use toilets. The toilets are being built by the authorities and are funded by various schemes of state and central governments. In order to maintain the toilet clean, the users are charged a nominal amount of ₹.1 or slightly higher than that. Nearly 68 percent of them pay for using the common toilet and 32 percent stated they do not pay for common toilet. Similarly 32 percent of the women using common toilet are paying less than ₹.50 per month to clean the toilet and for its maintenance and 66 percent are paying ₹. 50 -100 and 4 percent are paying above ₹. 100 for toilet cleaning and maintenance. Costs associated with shared sanitation are likely to be higher than shown if time taken to reach and queue at a public latrine as well as user-fees were added. As it is not possible to estimate the proportion of public latrine users in the shared latrine category these costs are not included. Health costs cannot easily be assigned across latrine categories. Sanitation or lack thereof is a public health issue – people are affected by their neighbours and communities sanitation status as well as their own, and the costs of open defecation are felt throughout the community. Open defecation also has considerable social costs. Loss of dignity and privacy or risk of physical attack and sexual violence may not be easily valued in monetary units, but these issues are the reality when sanitation facilities are not available.(WSP,2012). As stated by some of the respondents, they prefer to defecate in bushes or unused lands nearby their dwellings rather than endure the smell and flies in and around the non-hygienic toilets. More over they are of the opinion that the number of toilets available is currently inadequate and are over –used and ill-maintained. With the recognition of sanitation as a basic human rights there is growing awareness that the impacts of inadequate sanitation reach far beyond the realm of diarrhoeal disease. When an individual is deprived of their right to sanitation, they can also be deprived of the right to dignity, privacy and safety (Massey,2011). Women considered the level of cleanliness, cost and general adequacy (i.e. provision of rubbish bins or water for washing) of communal toilets to be grossly inadequate

Nearly half of the women , (51 percent) reported that they pay to municipal councils for using common toilet whereas nearly 16 percent of them pay to Government authorities and 33 percent of women said that they pay for NGO's and other private agency for cleaning and maintenance of the common toilet .Among women using Common toilet,26 percent stated that it is cleaned daily, but 19 percent reported that it is cleaned only once in 2 or 3 weeks, 25 percent reported that it was cleaned weekly once ,and nearly 29 percent reported that it was cleaned very rarely. The distance and time taken to reach the toilet is also yet another factor deciding its usage. Longer the distance, lesser is the preference for using the common toilet. Women and children faces security problem while reaching the toilet as well as it is a very difficult task for the old people. At night, women feel so insecure for reaching common toilet when it is of longer distance and they prefer open defecation in the bushes or some places near their residence. The women felt that toilets in their communities posed a risk to their safety. Women feared that they would contract an illness due to the lack of cleanliness in the community toilets. Captivatingly women rarely mentioned illnesses usually associated with poor sanitation such as diarrhoeal diseases. Instead, they feared what they perceived to be the risk of catching a sexually transmitted infection (STI) from a dirty latrine.

Many studies demonstrate a firm link between lack of access to adequate sanitation and humiliation and violence experienced. Massey, 2011). Insecurity and indignity related to inadequate sanitation are key concerns for women and girls. Women in the study area expressed their feeling as vulnerable when using public toilets that are far from their homes and that do not have locks on doors or proper lighting at night. Fear of rape, especially at night, can lead to women not drinking fluids leading to chronic constipation. Among the women using common toilets, nearly 25 percent walk less than 1km to reach common toilet and majority of them (43percent) travelled 1 to 2 km and nearly 32 percent of women walked more than 2 km daily to reach the common toilet. Nearly 29 percent of women, using common toilet reached in less than 10 minutes and 47 percent of them took

10-20 minutes and 24 percent of them took more than 20 minutes to reach the common toilet. One key finding identified by study participants was that there were simply not enough toilets to meet the needs of the population. Women in the study areas felt overwhelmingly powerless to improve sanitation in their communities or to reduce its negative impact on their lives. Among the areas studied, Kamarajapuram, which is in the heart of the city has better toilet facilities where the common toilet is accessed by all the slum dwellers and they take more care on maintaining the toilet clean and neat. Pillayarapuram is located far from the city and it has people who are relocated while building Aathupalam bridge. Their condition depicts the pitiable condition of relocated slums. Water supply, toilet facility and basic facilities are very poor and pitiable living condition needs the concern of the Government for their upliftment.

The women also felt that they were at risk of physical violence when travelling to the common toilet after dark. Women reported a fear of being outside of their homes after nightfall due to which they perceived to be a high probability of attack and rape. There are two main difficulties expressed by women concerning common toilets usage at night. The first one is money, and the second is that at night men can easily rape and murder them. Violence can cause psychological issues and changes in behaviour, from substance abuse, to suicidal tendencies, fear disorders and depression (WHO, 2002). Psychological effects appear independent of severity of injuries if the attack was perceived as life threatening by the survivor. It potentially leads to Post Traumatic Stress Disorder (PTSD), a condition manifesting itself amongst others through nightmares, flashbacks and phobias (Gilbert, 1995).

Children are the most vulnerable for infectious disease and diarrhoea, because of their lower immunity and vulnerability to dehydration. In addition, they play near the house in an environment where contact with excreta is common. Hand washing prevents diarrhoea effectively when done properly and at critical times. Hygiene practices have been proven to reduce diarrhoea rates by 30-40 percent.(Curtis,2003 and Fewtrell,2005).This level of reduction can be achieved

through a comprehensive approach –promoting improvements in key hygiene practices(hand washing, treatment and safe storage of drinking water, safe disposal of feces,and food hygiene) Hygiene practices continue to be a big problem in India. Hand washing with soap, particularly after contact with excreta, can reduce diarrheal diseases to a greater extent. UNICEF estimates that more than 90 percent of deaths from diarrheal illness in young children can be attributed to unsafe or inadequate water ,sanitation and hygiene. Around 58 percent of the women using common toilet reported that there is running water supply inside and only 13 percent reported that there is soap inside the common toilet for hand washing. Very few (6 percent) reported that there is even towel inside the common toilet and also reported that now a day no such facility exists.

Poor sanitation and inadequate washing habit more generally, expose growing children to germs that cause disease and prevent children from best possible use. Nearly 67 percent of women wash their hands after using toilets and 33 percent do not wash their hand after using toilets. Majority of the women (60 percent) wash their hands with soap after using the toilet and 40 percent of them wash their hands with help of running water. There is improvement among the women on awareness about hand washing after defecation in slums. (Dana, 2011). The hand washing with soap can reduce the incidence of diarrhoea and have impacts on pneumonia, respiratory diseases, trachoma, scabies and skin and eye infections. Many studies on sanitation have pointed out that people are unaware of using soaps for hand washing.(Tearfund,2007). Also hand washing practice reduces the incidence of diarrhoea by 25 percent. (Fewtrell.et.al,2005). Recent studies have shown the importance of washing one's hands with soap as it reduces diarrhoeal disease by 43 percent Respiratory problems, such as sniffles and coughs cases were brought down by 45 per cent when hands were washed five times a day.(Tenth Five Year Plan ,2002-2007).Nowadays all the households preferred to use the toilet because using the common toilet or in bush leads to lots of environmental and diseases problem and government also is taking efforts to construct constructing new toilets for them..The WASH baseline survey (2009) ,suggested that awareness on hand washing practices should focus not so much

on the importance of hand washing itself, but on how hand washing be done. The focus is to be made on teaching how to wash properly using soap and water.

With 594 million people defecating in the open and 44 per cent mothers disposing their children's faeces in the open, there is a very high risk of microbial contamination (bacteria, viruses, amoeba) of water which causes diarrhoea in children. One gram of faeces can contain 100,000,000 viruses, 1,000,000 bacteria, 1,000 parasite cysts and 100 parasite eggs. The open space /bush/field nearby their houses is preferred by nearly 18 percent of the children and toilets are preferred by nearly 82 percent for defecation. Most of the women (nearly 60 percent) stated that their children do not wash their hands after defecation and nearly 40 percent clean their hands. Among the children washing hands after defecation, 133 children wash hand using only water, 84 children used soap, 39 children use mud and 31 children use dettol, hand wash etc...to clean their hand after defecation.

Taps located in toilets enable people to maintain personal hygiene. Nearly 54 percent of women clean their hands after cleaning their children bottom and 46 percent of them do not clean their hands after cleaning bottom of their children. After washing the bottom of children, 50 percent of women use soap to clean their hands and 43 percent used only water. Only 5 percent of women used dettol and hand wash etc and 2 percent make use of mud for cleaning the hands after defecation or cleaning of children bottom. WHO has recently identified three key water-related behaviours for promotion: cleansing of hands - especially after defecation, after cleaning babies and young children's bottoms, and before eating and before preparing food.

The menstrual hygiene is a very big issue for slum women as they have to often visit the toilet to change their napkins and dispose the used ones. Majority of the selected sample possessed knowledge on using hygienic sanitary napkins and its safe disposal. The respondents felt the burden of not maintaining their privacy in common toilets, and so they suggested provision of sanitary napkins inside the common toilets which will be helpful to maintain their privacy. More over

very few, nearly 10 percent of the respondents reported that they use worn out clothes and other materials as a substitute for sanitary napkins .

More over they suggested that government can provide sanitary napkins at subsidised rates to reduce their burden and few people are of the view that their school going children suffer more of menstrual problems as they have to be accompanied by their mother or any other elderly women at home to reach the common toilet. In urban schools and offices, it is commonly observed that a napkin vending machine is available ,which can be accessed by inserting a coin of ₹.5 .This can be adopted in common toilets in the urban slums which will be of great use to the women and young girls. Though individual toilets can provide complete solution, this can reduce their burden to a certain extent.

4.2 SANITATION AND HYGIENE

Sanitation, hygiene, and cleanliness are the hallmarks of a civilized society. Sanitation is critical for health and sustainable socio-economic development. (UNICEF, 2012). Water and sanitation are key elements in the field of development. Water, sanitation, and hygiene have a profound effect on health and nutrition .Good sanitation and hygiene practices make major differences in people's health, education and socio economic development. Poor sanitation and poor access to safe water causes serious health hazards. According to the World Health Organization (2002), lack of safe adequate sanitation, lack of hygiene, and lack of supply of safe water are the most significant risk factors for poor health in developing countries. Hygiene promotion along with improved water supply and sanitation, have wider health implications, Adequate sanitation and proper hygiene practices reduces disease incidence by 47 percent` (Curtis and Cairncross, 2003). UNICEF estimates that more than 90 percent of deaths from diarrheal illnesses in young children can be attributed to unsafe or inadequate water, sanitation, and hygiene (WASH) practices. Diarrhea, pneumonia and birth complications are the top three killers of children under age 5 worldwide. Each year diarrhoea alone causes the death of 760,000 children under 5 (11 percent of all child mortality).If mothers and other caregivers used basic hygiene practices

and had better access to safe water and adequate sanitation this could greatly reduce under 5 deaths and improve child nutrition.(UNICEF. 2012).

Diseases due to poor sanitation can be reduced to a greater extent through a comprehensive approach of promoting improvements in key hygiene practices (hand washing, treatment and safe storage of drinking water, safe disposal of faeces, and food hygiene); improving access to safe water and sanitation technologies and products; and facilitating or supporting and enabling environment. Improved policies, community organization, institutional strengthening, and public-private partnerships. The quality of human life, directly or indirectly, depends upon accessibility to better sanitation. In the post globalization scenario, water and sanitation have become important agendas for developing countries. Inadequate sanitation is a persistent threat to child health, particularly in urban slums in developing countries. Inadequate sanitation remains a leading cause of diarrheal disease and mortality among children in developing countries, particularly in urban slums. As the urban slum population grows rapidly in the coming decades, the sanitation crisis will continue to threaten the health and wellbeing of vulnerable children. Well-designed and effective sanitation improvement projects are urgently needed. The Water Supply and Sanitation Collaborative Council of India (WSSCC) defines Environmental sanitation as (a) the promotion of hygiene and (b) the prevention of disease and other consequences of ill-health related to environmental factors (www.wsscc.org). Environmental sanitation has two dimensions, environmental factors and sanitation practices. Environmental factors include disposal of human excreta, household sewage and other waste likely to contain infectious agents, drainage water, domestic water supply, and housing. All of these have an impact on the transmission of infectious agents and incidences of diseases. Sanitation practices refer to the various hygienic practices of the communities, as well as their knowledge and skills governing their behaviour.

Sanitation is also one of the major environmental health issues to be addressed. Improving drinking water condition and sanitation facilities remains a

major concern globally. According to previous study, burden of diseases on world could be decreased by 10 percent through prevention by improvement in the quality of drinking water and water resource management simultaneously with sanitation and hygiene. That is why, in 2008, the Prime Minister of India quoted Mahatma Gandhi who said in 1923, “sanitation is more important than independence” Unless access to water, both in terms of quantity and quality, and sanitation facilities are available universally, reducing the health burden from waterborne diseases and unhygienic practices will continue to remain a challenge in India. In India, an estimated 0.4 to 0.5 million children under five die due to diarrhoea each year (Government of India, 2002). Likewise, it is estimated that the improvement of water and sanitation services would result in a reduction of 17 percent in the number of diarrhoea cases (an annual reduction of 1.8 billion cases globally). Inadequate urban sanitation disproportionately impacts women’s health, dignity, and human rights.

Millions of urban poor women lack access to adequate water and sanitation even though sanitation is a basic human right. Sanitation is a multidimensional concept which includes liquid and solid waste disposal, food hygiene and personal as well as environmental hygiene. In accordance with the studies and various findings, there are a few most important elements involved in urban slum sanitation. If these elements are handled properly, many public health problems can be solved. Majority of the diseases are spreading due to lack of proper sanitation and availability of protected drinking water sources. Although the protected drinking water source is available, if there is no proper sanitation or water handling and better sanitation practices, the problem will be the same. Keeping this in view, WHO or UNICEF identified sanitation issues in a focused manner. Later these were identified as better sanitation hygiene practice. They are:

- Safe handling of drinking water
- Disposal of wastewater
- Safe disposal of human excreta, since human excreta is associated with more than 50 per cent of diseases

- Safe solid waste disposal
- Home sanitation and food hygiene
- Personal hygiene, particularly, washing one's hand with soap, and
vii) Sanitation in the community. (WSP,2010)

The above-mentioned best hygiene practices are unavoidable aspects in the process of urban sanitation. So far, due to lack of awareness, rural communities are generally not familiar with the hygiene practices. The major problem in urban slum is lack of awareness and inadequate sensitization. With effective communication strategies, these problems can be tackled. The urban poor living in slums and informal settlements are the most disadvantaged with respect to access to basic services. Urban slum settlers are not recognised as legitimate citizens of the city and are considered a “burden” by utilities and service providers. A majority of such informal settlers either lack completely or have inadequate access to formal systems for supply, sanitation, and solid waste management.

Realising the gravity of the sanitation issue, a thorough probe was made into the following aspects. An indepth study of these issues would highlight the plight of the women and others sufferings from lack of basic facilities and the burdens they carry every day.

- **Drinking Water**
- **Illness and death reported due to poor sanitation**
- **Solid waste management**
- **Cost of poor sanitation**
- **Sanitation and cultural factors**
- **Sanitation at Workplace**
- **Hygiene**
- **Problems faced by slum women**
- **Sanitation Index**

4.2.1 Drinking Water

Water is one of the precious natural resource for not only human beings, but also for all living beings including animals and plants. Water, which is essential for life, growth, and health, can also be a source of spread of disease and cause of ill health, if contaminated or improperly handled and stored. Safe drinking water and improved sanitation play a major role in the overall well-being of the people, with a significant bearing on the infant mortality rate, death rate, longevity, and productivity. The poor, both in rural and urban areas, bear a disproportionate burden due to non-availability of water, as well as of poor quality. They often supplement public sources of water with supplies obtained at high prices from other sources. Women bear the physical burden of fetching water. Women and children are particularly vulnerable to the effects of water contamination. Without the access to safe drinking water and sanitation facilities, it is impossible to protect public health. Access to safe drinking water and sanitation is considered to be a fundamental human right that acts as a safeguard of health and human dignity. (WSP, 2012). Water and sanitation are key elements in the field of development. Shortage of water is now recognized as one of the world's biggest problem. Active participation from household in adoption of improved drinking facilities as well hygiene practices also play a great role in improving urban health as the outcome of safe drinking water and adequate sanitation. Some facts related to drinking water, its availability, duration of study, quality of water, its storage and treatment by the selected sample are depicted in the following table:

Table 4.9
Drinking Water

Particulars		Frequency	Percentage
Source of drinking water	Piped water	383	53.0
	Ground water	239	33.1
	Surface water	101	13.9
Distance to the nearest	<50m	207	28.6

Particulars		Frequency	Percentage
source from home	50-100m	288	39.8
	500m	119	16.5
	>500m	109	15.1
Time taken to fetch water	< 15 minutes	91	12.6
	15-30 minutes	262	36.2
	30 minutes -1hr	298	41.2
	>1hr	72	10.0
Duration of water supply	8-24 hrs	182	25.2
	4-8 hrs	257	35.5
	Less than 4 hrs	89	12.3
	On alternate days	82	11.3
	Once in a week	113	15.6
Amount spent for water/month (in ₹)	Less than 150	97	22.1
	150-300	209	47.7
	Above 300	132	30.1
Quality of water	Clean	374	51.7
	Blackish	93	12.9
	Muddy	181	25.0
	Smelly	75	10.4
Do you Purify the water	Yes	561	77.6
	No	162	22.4
Method used to purify	Strain by cloth	173	23.9
	Water filter	127	17.6
	Boiling	275	38.0
	Electric purifier	81	11.2
	Nothing	67	9.3
Availability of Sufficient	Yes	317	43.8

Particulars		Frequency	Percentage
water	No	406	56.2
Storage of water	Plastic drums	218	30.2
	Plastic plots	132	18.3
	Stainless steel pots	297	41.0
	Metallic drums	76	10.5
Clean the storage container	Yes	634	87.7
	No	89	12.3
Cleaning of container	Daily	139	21.9
	Alternate days	197	31.1
	Once in a month	204	32.2
	Once in six months	70	11.0
	Never	24	3.8
Source of water for bathing and cleaning	Bore water	389	53.8
	Drinking water	334	46.2
Drainage facility	Yes	267	36.9
	No	456	63.1
Nature of drainage	Covered	89	33.3
	Open	63	23.6
	Flowing	47	17.6
	Clogged	68	25.5

(Source: Field survey 2015)

Despite high access to improved water sources, safety, reliability and other elements of service quality of household water sources are still compromised. Contaminations at the point-of-use are likely and there are risks for waterborne diseases among slum households. Piped drinking water, which is subjected to full set of drinking water treatment to eliminate microbial, physical, and chemical agents that may pose people to health risk, cannot be accessed by many of slum

households. (Nasti.et.al, 2013). Water is the key ingredient for sanitation that determines the sanitation status of the people. Approximately 88 percent of all diarrheal infection worldwide are attributed to unsafe water supply (Evans,2005). The basic facilities enforce people to achieve their goals and actualise their capabilities. Slum dwellers in the city are disadvantaged in terms of their access to urban services like safe water, electricity, gas supply, toilet facilities and garbage disposal. The quality of these services has been found to be poor and the supply remains highly irregular and inadequate. Several studies document the gravity of the condition (Hossain, 2006, Zhang (2008), Clasen (2015)).

- It is obvious from the study that the main source of drinking water, is piped water(53 percent), provided by the corporation. Meanwhile 33 percent of women depend on ground water and 14 percent of them stated that surface water is the main source of drinking water. While the finding of Sundari(2003)(confirms with our results, Agarwal (2011) found that , in Delhi, the capital and one of the wealthiest cities, it was only 30 percent. Studies depicts a direct relationship between public tap and incidence of illness (Sufaira, 2011). Women play the role of housekeeping in Indian families, where they have to do multiple tasks of cooking, cleaning, doing the laundry, and taking care of the children and elderly. In the households, which do not have their water source on plot, or close by the house, the women have to go and fetch it, stand in long queues, wait for it, carry the water on their heads, making it a troublesome task. Thompson and Porras et al., (2001) pointed out that women who commonly carry water on the head, have increased chances of headaches, general fatigue, and pains in the chest, neck, back and waist. Also, daughters are frequently kept out of school to ensure that water can be obtained when available (UNDP, 2006).
- The distance travelled to fetch water poses burden to the slum dwellers. The range of distance varies from less than 50 to more than

500 metres .Nearly 40 percent of women walk 50-100 meter from dwelling place to collect the water and 27 percent of them walk less than 50 metre from their home and 17 percent of them fetch water walking 500 metre distance from the dwelling place. Since the distance pose a major hurdle for the women, they economise the use of water only for drinking and more the distance, lesser is the amount of usage and hence leads to poor sanitation. Women, who have to collect the drinking water, are vulnerable to a number of unsafe practices. The time spend for fetching water affects their productive time they would have otherwise spend for earning. Women and children are engaged in fetching water in majority of the houses and only very few men are engaged in collecting water for their family. School children even miss their school days when they travel a long distance to collect water .Even though water is provided by the municipality, the problem becomes so severe during summer and women again bear the burden of fetching sufficient water for their family. The young girls do help in fetching water. Young males have to fetch water in very few cases. In majority of households the female children and the female head of the household are responsible for water collection. Young girls have to fetch water and do other chores at home which prevents them from attending school. Adequate water supply minimises their daily burden of fetching water. This effect is stronger for young girls. Households with children that have to go and fetch water on a daily basis are more likely to be affected in their school-attendance than children of households who ha ve their water source on plot or close to the house.

- Time spent for collecting water is a crucial factor as all other activities are affected by it. During normal period when there is no water scarcity, women just spend up to 1 hour for fetching water (nearly 41 percent) Some spend around 15 to 30 minutes (around 36 percent) and some spent less than 15 minutes(around 13 percent). Only 10

percent of women fetch water daily, and they need to be in a long queue for more than one hour. Women and girls are the burden bearers of the worst consequences due to the despair water system.

- The duration of water supply is not a fixed one as it may vary according to the availability of water from the main source. Normally water supply in the city is reported to vary over different periods 36 percent of the women reported that they get water for 4 to 8 hours while 25 percent availed water when the supply runs from 8 to 24 hours. Water supply for once in a week is reported by 16 percent of women. Insufficient water supply, i.e., less than 4 hours per week is reported by 12 percent while water supply on alternate days is reported by 11 percent of women.
- In their day to day struggle in life, expenses on water consumption are felt as a real burden. In the study, nearly 61 percent of women reported that spend certain amount for water consuming and 39 percent of them stated that they do not spend any amount for utilization of water even during water scarcity. Majority of the women (48 percent) spent ₹ 150-300 per month for taking water; 30 percent of them spent more than Rs300 per month and 22 percent of them only spent less than ₹ 150 per month on water for utilization. The amount spend is less when there is sufficient water supply and they usually spend more on water during summer when water scarcity exists all over the city. Meanwhile, water from vendors, bottled water, are two very popular choices they make despite their higher price compared with water from improved sources.
- Nearly 52 percent of women revealed that quality of water is good and 25 percent of them opined that the water is very muddy and 13 percent stated that water is very blackish and it is very difficult to consume. Only 10 percent reported bad smell of water.

- Even though the slum dwellers were assertive on getting dirty water frequently, none of them are using any scientific devices for bacteria filtration or disinfection. However 38 percent of them boil water and 11 percent use electric purifiers .Around 78 percent purified water through some methods while the rest is unaware of any purification methods. The most popular method is boiling water in which despite its efficacy, it provides no residual protection with scalding and economically and environmentally unsustainable .Various methods of purification were followed other than boiling or straining by cloth (24 percent), water filter (18 percent), and the rest (9 percent) of them do not use any method to purify the water and they directly consume it. According to UNICEF, 4,200 children die of water-related diseases every day, and nearly 900 million people worldwide lack access to safe drinking water (Owuor and Foeken, 2009). In fact, no water supply and sanitation programme can be successful if water-related illnesses are not reduced. It is a matter of concern that despite the progress made with water supply, the level of water-related diseases continues to be high. The supply of additional quantity of water by itself does not ensure good health. Proper handling of water and prevention of contamination are also equally important.
- Interventions to improve water quality at the source, along with treatment of household water and safe storage systems can make rapid difference in the health profile of the slum dwellers. Out of 723 women from the selected sample only 317 women have sufficient amount of drinking water daily but 406 women reported that they still do not get sufficient quantity of drinking water daily.
- Bacterial contamination of drinking water occurred due to post-source contamination during storage in the household. Hence safe storage and household water treatment interventions may improve water quality in slums (Subbaraman.et.al,2013). Being recognized as human

right, achieving sustainable urban water system to ensure equal access of water and sanitation for all urban dwellers is never more important than now. The prevailing situation does not guarantee quality water supply in the area as water obtained from these sources are not treated before use. Therefore the people stand a great risk of contacting serious water borne diseases. The drinking water supply was found to be inaccessible for the entire study area, as water supply was not available within the premises of these urban poor.

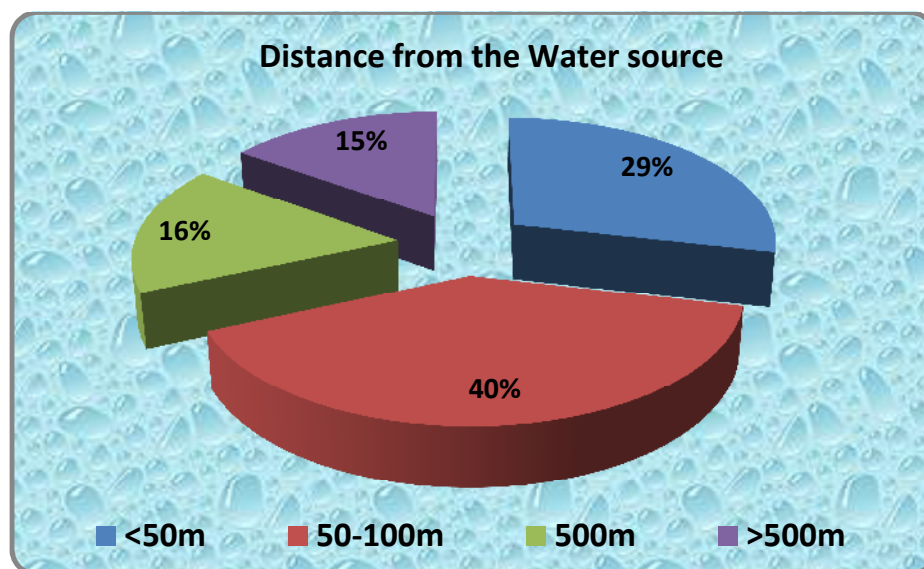
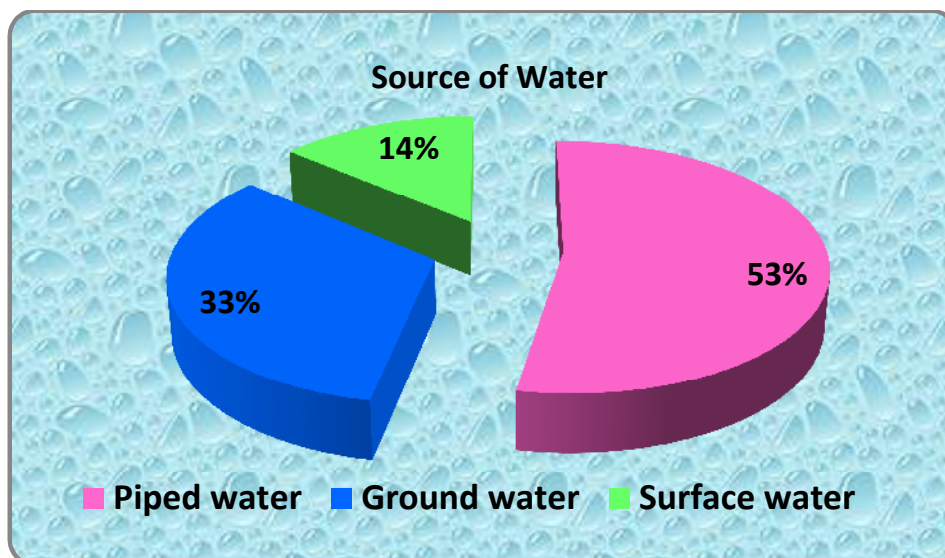
- Nearly 41 percent of the women store their drinking water in stainless steel pots; 30 percent store the water in plastic drums and 18 percent store the water in plastic drums and 18 percent use plastic pots for storing the water. Only 11 percent store their both drinking water and bore water in separate metallic drums.
- The water storage containers were cleaned regularly by 88 percent and the rest do not clean regularly. This agrees with the findings of Pande (2018). Even though the frequency of cleaning depend on the frequency of water supply, 32 percent of women clean the containers once in a month regularly, 31 percent clean on alternate days, 22 percent clean daily and 11 percent clean it once in six months and around 4 percent do not clean at all. The investigator came to know that many of respondents are unaware of the fact that they may be infected by diarrhoea when the storage container is not washed and cleaned regularly is very low. Therefore the investigator insisted on regular cleaning of the storage containers and made them aware on its importance in avoiding diseases.
- Access to an improved water source would mean decrease in water-borne diseases and be beneficial for human health.(Chung,2011). Proven and field-tested household water treatment options that are currently being promoted include chlorination, filtration, combined flocculation and disinfection, boiling, and solar disinfection.

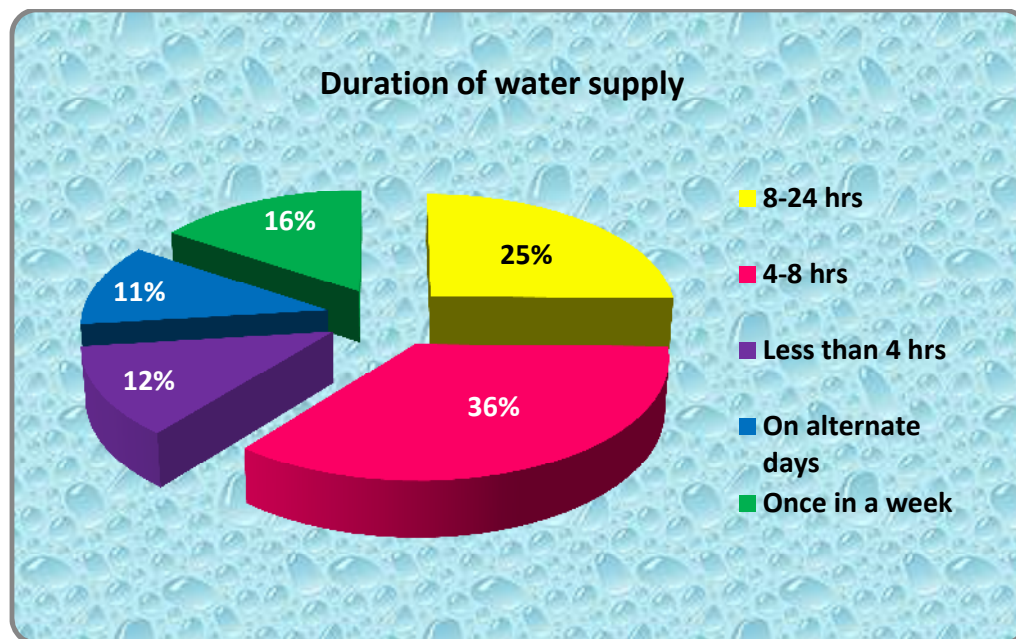
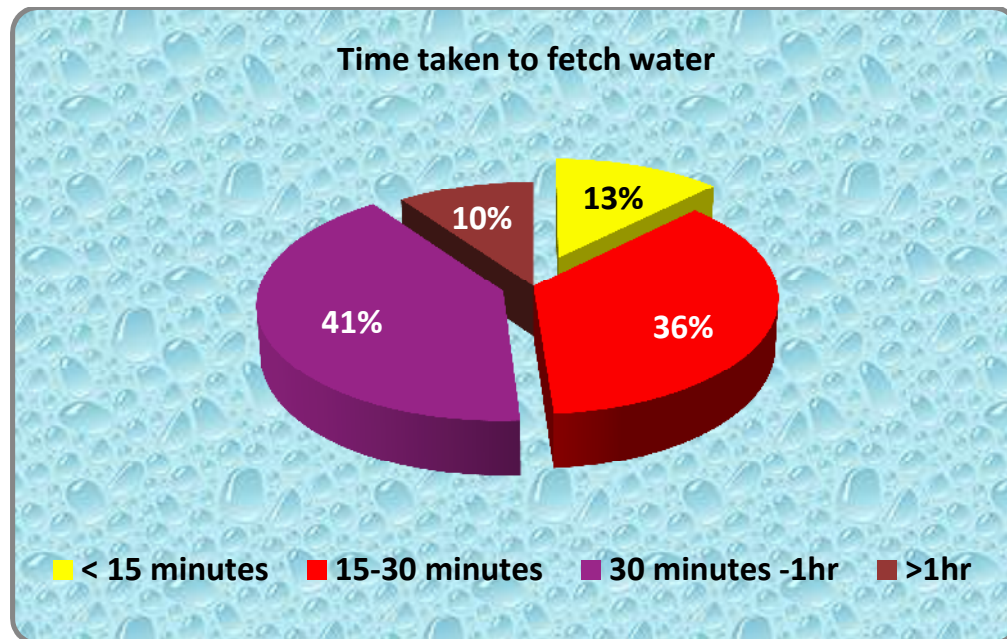
Household water treatment could potentially be scaled up quickly and inexpensively in both development and emergency situations. It has even become common practice in large cities where homes are connected to a municipal water supply, since water is often polluted between the source and the point of use. (Diarrhea report ,2009).,

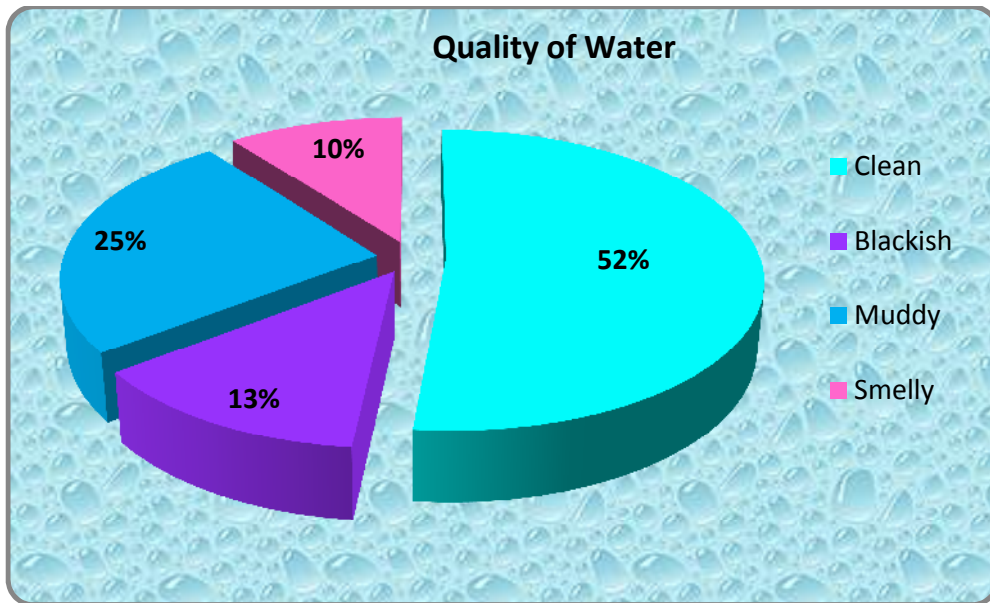
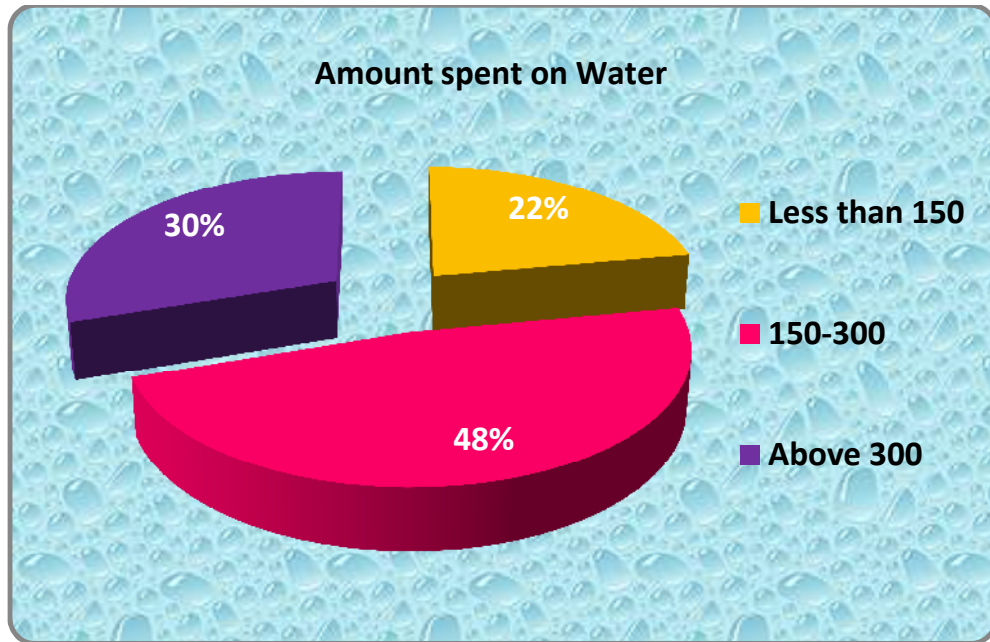
- Around 46 Percent use good water for bathing and cleaning while 54 percent use bore water for this purpose.
- Nearly 37 percent have proper drainage facility and the remaining 63 percent do not enjoy the facility. The drainage is covered in few places, (33 percent), but in some places, it is left open (around 24 percent). The drainage appears to be clogged (25 percent) and drainage water overflows in few areas (17 percent). Drainage was not properly maintained hence the wastes flow into the areas which lead to many infectious diseases. The public awareness is also very low as many people just dump the waste materials in to the drainage, without understanding the consequence of clogged drainage. This becomes the breeding ground for mosquitoes, rodents, cats and dogs.

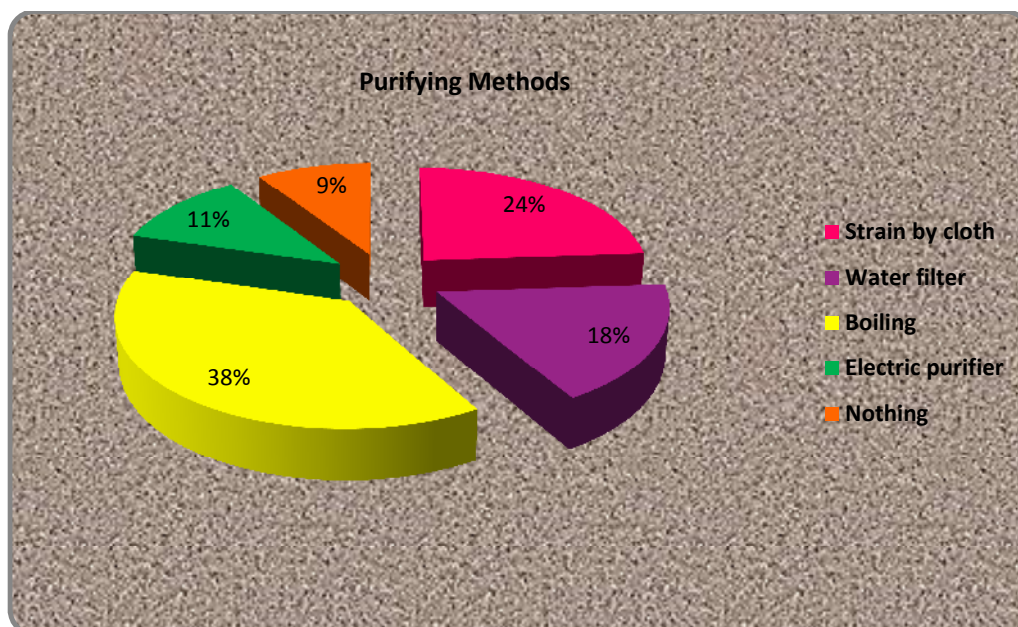
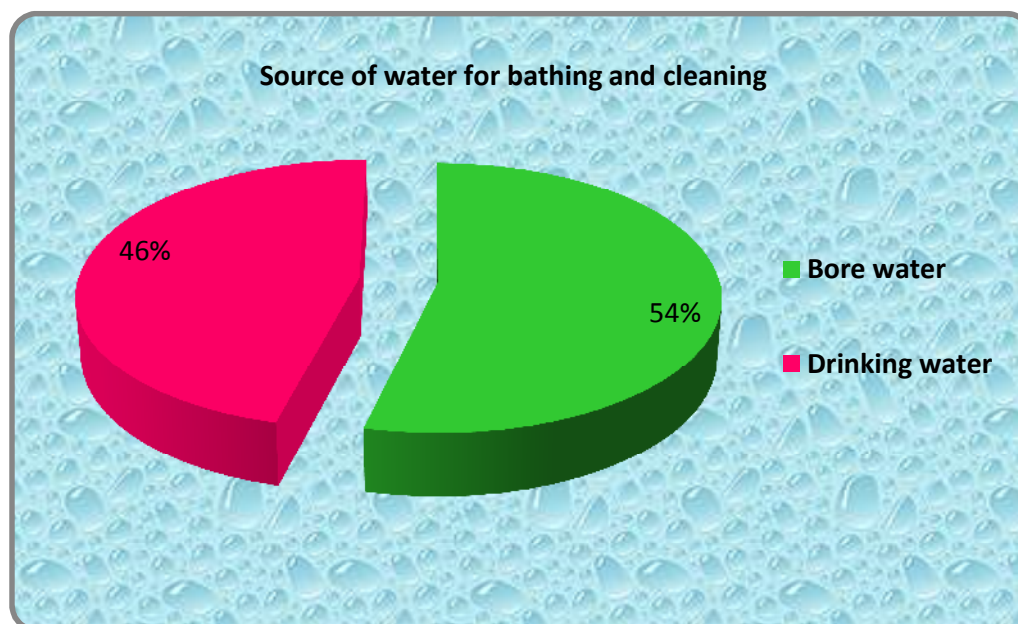
The struggle for drinking water during summer is severe in urban slums. Apart from, losing their productive earning time, children miss their school days ,as mostly women and girl children are engaged in fetching water for their family. Some men also indulge in fetching water and hence their income is affected when there is water scarcity as they have to spent good amount of time in either standing in the queue or travelling a long distance .This prevents them from working in their regular field. The cleanliness in common toilets become a big question, reports some women as they prefer to defecate in the open rather than using dirty toilets.

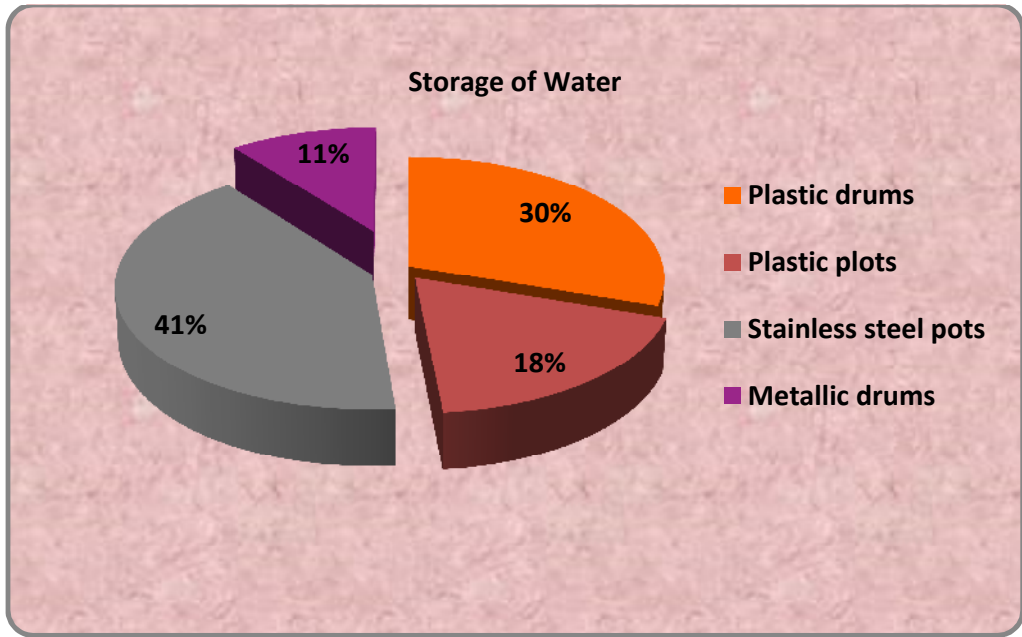
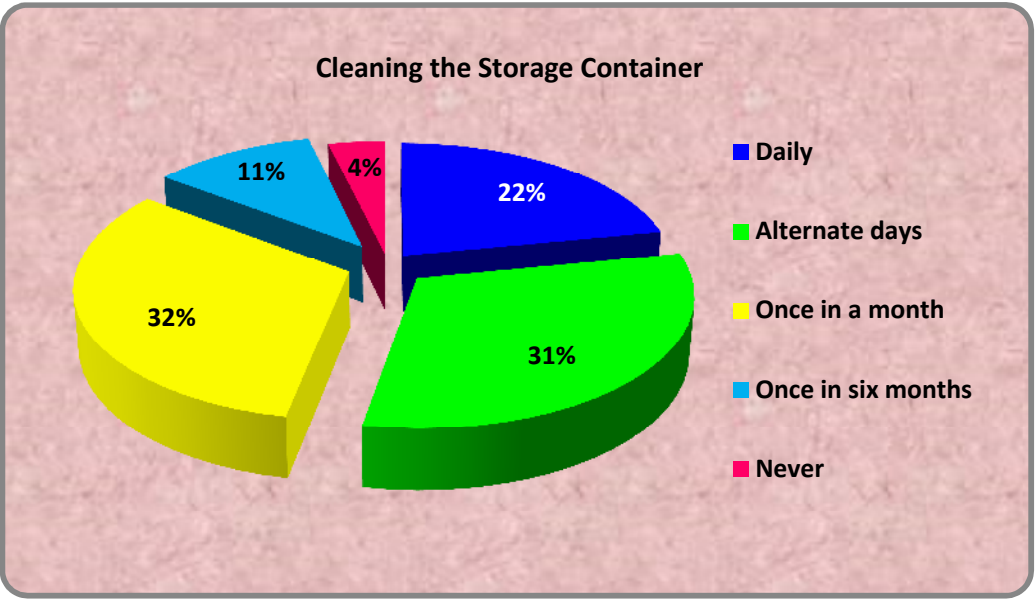
Figure 4.7
Drinking water

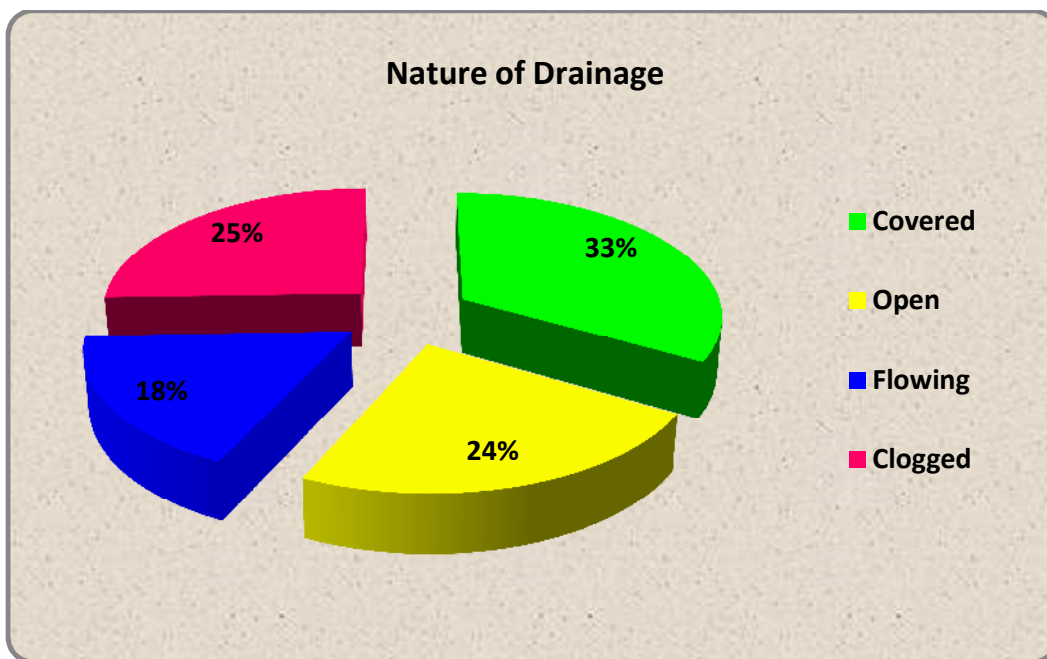
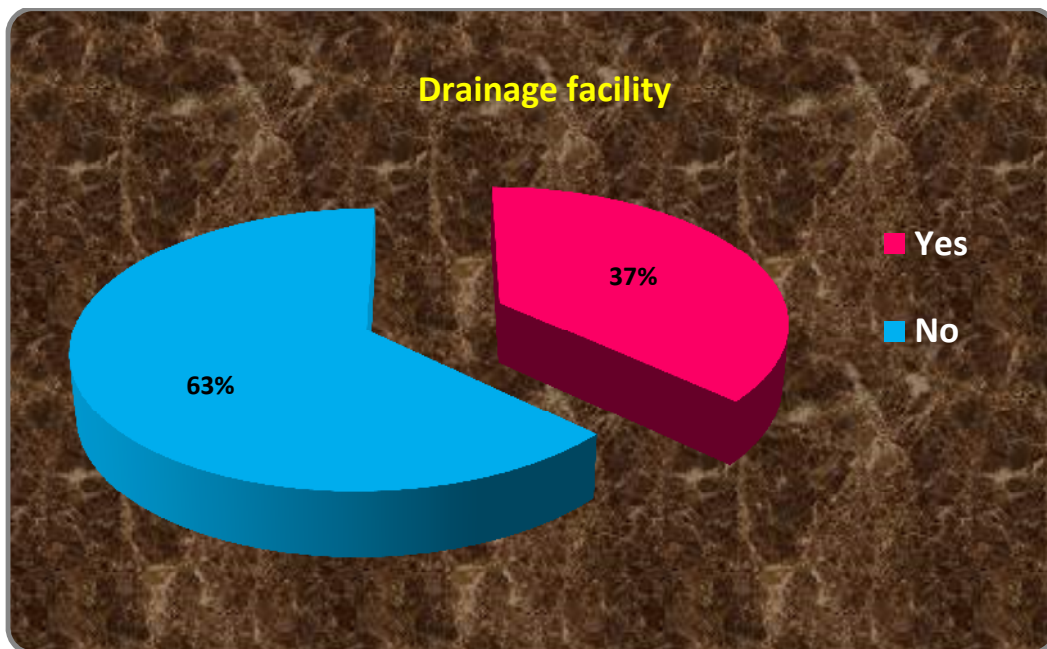












Source: Field Survey 2015

4.2.2 Illness due to lack of Sanitation

Health status is a key indicator of human well being .Healthy population are more productive population. Without a healthy and productive labour force, the economic growth that is necessary to break out of the cycle of poverty will not be achieved.(Begam,2012).Slum resident are particularly vulnerable to a variety of diseases and sicknesses, fires, floods and earthquakes. The lack of basic services creates severe health and environmental harms. Cholera, malaria, diarrhoea and other disease rise to epidemic proportions in slums .The health of the people depends on multiple factors such as clean and nutritious food, clean drinking water, pollution free environment, place of defecation, nature of drainage, place of garbage disposal, and also on personal hygiene such as bathing, washing clothes, washing hands on different occasions and individual behaviour on cleanliness. Health complaints give an interesting view on various diseases among the people. Poor are the negotiators and worst victims of environmental degradation.(World Bank ,1992).

Sanitation is vital for good health and leads to a rise in life expectancy. (WSP,2012). Basic sanitation is not only essential to prevent the spread of diseases but also for the respect, dignity and safety of individuals . The physical environment of slums can lead to higher prevalence of communicable diseases. The density of people in slums makes for a fertile breeding ground for emerging and re-emerging infectious diseases. A current example is the rise in cases of 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). Malaria mosquitoes breed well in stagnant water and vectors for urban dengue or yellow fever lay their eggs in open toilets or soak-away pits (Sclar et.al, 2005). Chronic diarrheal diseases from faecal contamination of water affect millions of urban kids per year (Davis, 2004). Some slums in developing countries resemble slums in the West in and around the 18th century, before the mechanisms of disease transmission were known (Montgomery, 2008). Women play a major role in determining the health of the community since women are often health caregivers and recipients at the same time. Therefore, women's health must place a higher priority on understanding a

woman's health care needs (Hill and Mullett, 2005). In order to gain insight into the various diseases caused mainly due to poor sanitation, the study looks at the incidence of sickness faced by the selected women. This is shown in table

Table 4.10
Incidence of Sickness due to poor Sanitation

Type of sickness	Frequency	Percentage
Viral fever	598	19.9
Chicken pox	191	6.4
Jaundice	103	3.4
Diarrhoea	472	15.8
Asthma	149	4.9
Skin allergy	77	2.6
Head ache	106	3.5
Eye problem	98	3.3
Urinary infection	95	3.2
Stomach ache	86	2.9
Diabetics	82	2.7
Blood pressure	247	8.3
Tuberculosis	95	3.2
Respiratory problems	73	2.4
Gynaecological problem	167	5.6
Anaemia	194	6.5
Frequent cold	109	3.6
Joint pains	51	1.7

Source: Field Survey 2015

Poor housing and sanitation, lack of adequate water supply and unhygienic environment and surroundings leads to various diseases among the residence in the slum areas. Most of the selected households have various health issues which hampered their work and day to day life. The study made an investigation on the health problems experienced by the women and their family members during the last 6 months was included for the study. The interaction with the respondents prevails that they often neglect minor sicknesses and do not consult a doctor for a remedial cure unless they fall ill.(Kumar.et.al,2003,Goswami,2014)

From the selected sample some of them have communicable and non-communicable diseases. Nearly 20 percent of the household members had viral fever which is a common problem met by them in their areas. Diseases associated with poor sanitation are diarrhoeal diseases, acute respiratory infections, under nutrition and other tropical diseases such as helminth and infections. Diarrhoea is less prevalent than fever in almost every city.(NFHS-3). Findings of a study by Sundari (2003) also show that viral fevers are very common among the slum dwellers. The next major sickness is Diarrhoea.Eighty-eight percent of cases of diarrheal diseases worldwide are attributable due to unsafe water, inadequate sanitation, and poor hygiene., (Mathers .et.al 2001, Lopez .et.al,2006) .Many of the studies in slums reported incidence of diarrhoea, Akter (2010), Dwivedi (2012),Prasad,(2013). WHO (2007) rates India 14 in the occurrence of diarrhoea, (Begam, 2011) .Diarrhoea accounts for almost one-fifth of all deaths (or nearly 535000 annually, reports WHO (2007). Diarrhoeal disease is one of the leading causes of morbidity and mortality in less developed countries, especially among children aged under 5 years . Children weakened by frequent diarrhoea episodes are more vulnerable to malnutrition and opportunistic infections such as pneumonia. Nearly 48 per cent of children in India are suffering from some degree of malnutrition. Diarrhoea and worm infection are two major health conditions that affect school age children impacting their learning abilities (UNICEF, 2011) .One of the most rampant diseases is chronic diarrhoea, which makes it hard for people to wait in long lines. This lack of operational toilets is especially hard on women.

Around 16 percent of the surveyed women have diabetics which is a long standing and life style related disease which is followed by blood pressure (8 percent). Most of them suffer from anaemia (7 percent) mainly due to low food intake resulting in poor nutrition level and a few of them have gynaecological problem. A telling example of consequences of barriers to urban health care is the reproductive health status of poor urban women in developing countries. Where the female urban population as a whole has a lower fertility rate than women in rural areas, deeper analysis of data shows poor urban women in a lot of cities are rivalling their rural counterparts. Yet another common illness prevalent in the slum areas is chicken pox. (6 percent). Meanwhile 5 percent of them suffered from asthma which is followed by frequent cold and head ache (4 percent). Next to communicable diseases, a slum's physical environment can give rise to non-communicable diseases. For example increased air pollution can exacerbate asthma .Most of the household members (3 percent) suffered very common diseases or illness like jaundice, diarrhoea, skin allergy, eye problem, urinary infection and tuberculosis which is followed by respiratory problem and joint pains (2 percent) among the household members. Only two percent reported respiratory problem, which shows that indoor air-pollution is low as the majority of them use kerosene(40 percent)as fuel for cooking which is comparatively better than burning of bio-mass as observed in the slums of Kenya (Gulis.et.al,2000).The findings on illness in the present study is in line with that of a study by Kiranmai.et.al(2012).

When ever there is an outburst of any epidemics in the cities, slums are the most common victims and originating points. The unhygienic condition accompanied with insanitary condition paves way for easy outburst of any epidemics like dengue, influenza, chicken pox and many other diseases .

Table 4.11
Particulars of Illness

Particulars		Frequency	Percentage
Frequency of illness	Often	871	40.2
	Once in a month	809	37.3
	Rarely	489	22.5
Treatment sought at	Government hospitals	1018	46.9
	Private hospitals/clinics	646	29.8
	Self/home remedy	505	23.3
Medical expenses in ₹/year	Less than 5000	1121	51.7
	5000-10000	743	33.3
	Above 10000	305	14.0
Number of days hospitalized	Less than 5 days	485	22.4
	5-10 days	1043	48.1
	Above 10 days	641	29.5

Source: Field Survey 2015

Nearly 40 percent of household members have frequency of illness often due to unhygienic and environmental problems in their surroundings. While 37 percent of them have sickness once in a month, 23 percent of household family members have illness very rarely.

Majority of the household's members (47 percent) have taken treatment only in government hospitals due to free treatment and medicine; meanwhile 30 percent have resorted private clinic/hospitals for their treatment for good quality for health care services. Only 23 percent of them still follow home remedy for normal sickness like dysentery, cold and cough, chicken pox, jaundice. Though some people prefer Government hospital, waiting in a long queue makes them plump for private hospital.

The medical expenses is a big burden for all ,specially for the poor. Spiralling cost of medicine coupled with the high consultation and treatment charges ,push the poor into debt burden. Many households became poor due to the financial burden of health expenditure .In the study the yearly expenditure of the households were considered. Nearly 52 percent of households members spent below ₹ 5000 for their treatment; 33 percent of them had their medical expenses between ₹ 5000-10000 and only 14 percent incurred above ₹.10000 for their surgical and diagnostic towards their treatment.

The sickness during the past twelve months from water borne diseases were analysed. Nearly 48 percent of the family members were hospitalized for 5-10 days and 30 percent were in the hospital due to acute illness. Only 22 percent of them were hospitalized for less than 5 days due to various health issues .

Poor sanitation causes economic losses associated with the direct costs of treating sanitation –related illness and lost income through reduced or lost productivity. In addition ,poor sanitation also leads to time and effort losses due to distant or inadequate sanitation facilities ,lower product quality resulting from poor water quality, reduced income from tourism (due to a high risk of contamination and disease),and clean up cost.(Minh and Hung,2011). Steep barriers to accessing quality health services and emergency services, primarily for slum dwellers, make it difficult for poor urban residents to prevent and treat these devastating health problems. Even though urban health services comprises of various types of providers such as public hospitals and clinics, private physicians and nurses in private hospitals and clinics, as well as non-profit or faith-based non-governmental organization clinics, user fees, which are frequently charged by public and private health providers, are often unaffordable to slum dwellers. Healthcare in India consists of a universal health care system run by the respective State Governments. The Constitution of India charges every State Government with ‘raising of the level of nutrition and the standard of living’ of its people and ‘the improvement of public health’ as among primary duties.

The National Health Policy was endorsed by the Parliament of India in 1983 and updated in 2002. Although, both these policies aimed to achieve “Health for All” within a specified time frame, the reality is different after decades of their implementation. In the absence of a proper policy framework, there is a heavy burden on government sector hospitals which are generally understaffed and underfinanced. Poor services at state-run hospitals force many people to visit private medical practitioners and private clinics and hospitals. Government hospitals, some of which are among the best hospitals in India, provide treatment at taxpayer expense. Most essential drugs are provided free of charge to all patients in these hospitals. Government hospitals provide treatment either free or at minimal charges. For example, an outpatient card at AIIMS (one of the best hospitals in India) costs a onetime fee of rupees 10 (around 20 cents US) and thereafter outpatient medical advice is free. In-hospital treatment costs in these hospitals depend on financial condition of the patient and facilities utilised by him but are usually much less than the private sector. For instance, a patient is waived full treatment costs if he is below poverty line. Another patient may seek for an air conditioned room, if he is willing to pay extra for it. The charges for basic in-hospital treatment and investigations are much less in public hospitals as compared to the private hospitals. The cost for these subsidies comes from annual allocations from the Central and State Governments. In addition to the network of public and private hospitals, there are charitable dispensaries and hospitals, many of which provide treatment and facilities parallel to those provided by private hospitals at highly concessional rates or in some cases free of costs to needy population.

4.2.3 Relation between Socio economic condition and the health status

World Health Organization’s (WHO) constitution defines health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”. Webster’s International Dictionary defines illness as a state of being ill or sick, bodily indisposition disease. It refers to anything affecting the total well-being of the patient. The health of the population is influenced by the demographic characteristics and socio-economic status of that community, types

of health care services available quality and types of health care providers, medical technology, and health knowledge available (Abbasi, 1999; Kaplan *et al.*, 2005). With the objective of examining the relationship between the health status (measured by the incidence of sickness during the last one year of survey period) and the Socio economic status (age, type of family, size of the household, occupation, income and education of the households), Multinomial Logistic Regression test was done. Several studies have used Logistic Regression technique to test the significance of various factors on health.(Chung,2011).

In the current study the multinomial logistic analysis was used to identify the socioeconomic condition and their impact on the health status.

$$Y_i = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + U_i$$

where,

Y_i = Health

X_1 =Age

X_2 = Type of family;

X_3 =Size of the household

X_4 =Occupation

X_5 = Monthly income

X_6 = Education

U_i =Error term.

The null hypothesis framed

H_0 = The health status is independent of the socio economic conditions.

H_a = The health status is dependent on the socio economic conditions.

Table 4.12

Estimated multinomial logistic regression co-efficient of health condition in socio economic condition as related to selected variables.

Likelihood Ratio Tests				
Variables	-2 Log Likelihood of Reduced Model	Chi-Square	Df	Sig.
Constant	1341.123	32.86342	6	0.0000
Age of the respondent	1316.694	8.435191	6	0.21
Type of Family	1541.202	232.9431	6	0.00**
Size of the household	1421.884	113.6243	6	0.00**
Occupation of the respondents	1751.318	443.0582	6	0.00**
Monthly Income	1608.892	300.6327	6	0.00**
Education of the respondents	1527.115	218.8561	6	0.00**
Cox and Snell	0.800			
Nagelkerke	0.825			
McFadden	0.459			
Number of observation	723			
Classification percentage	57.10			

Source : Estimated based of field survey, 2015

** Significant at 5 percent level.

Table above represents the estimated multinomial logistic regression co-efficient of health condition as related to selected variables. Likelihood ratio tests shows the contribution of each variable to model that the independent variables like type of family, size of the household, occupation, monthly income and education are significant independent variables related to the health and socio-economic groups. Cox and Snell R and Nagelkerke R square values are 0.800 and 0.825 respectively, suggesting that 80 percent to 82 percent of the variability is explained by these variables used in the model. The overall predictive accuracy for the present model is 57.10 percent. All the socio economic factors except age are highly significant in determining the health status of the households and hence the null hypothesis is rejected at 5 percent level. Based on the result, it shows that

socio economic factors affect health conditions mostly. Therefore the socio economic factor has strong direct effect on health conditions .Those links are even more relevant in the developing world, where billions of the world's poor live in precarious housing submarkets known as slums. Therefore the health status is dependent of socio economic factors and the alternate hypothesis is accepted. Many studies correspond to the findings of the present study and found that there is a strong relation between socio economic condition and health status of the slum dwellers. (Naveed and Anwar, 2014, Lukeman, 2014, Karn .et.al.2011). Some studies have empirically proved the effect of socio-economic and the environmental factors affecting health status of urban poor, (Sufaira, 2013, Lukeman.et.al, 2014).

4.2.4 Relation between Sanitation condition and health status

Children are vulnerable to health hazards associated with poor water and sanitation. In India, nearly every second person is defecating in the open air defecation, every third person is drinking unsafe water and at least 1000 children are dying every day due to a preventable disease like diarrhea. Each year, an estimated 2.5 billion cases of diarrhea occur among children under the age five.(UNICEF and WHO, 2007). The significance of sanitation condition on determining the health status of the slum dwellers is estimated using the same technique of Multinomial Logistic Regression. The health status is measured by the incidence of various diseases within one year period of survey and the sanitation factors like source of drawing water, treatment of drinking water, cleaning the water container, frequency of cleaning the container, waste disposal, prevalence of mosquito, condition of drainage and the toilet facilities available were important sanitation variables considered for the study.

The multinomial logistic analysis was used to identify the significance of sanitation facilities and health.

$$Y_i = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + U_i$$

where,

$Y_i =$ Health

$X_1 =$ Source of water

$X_2 =$ Purification of water

$X_3 =$ Cleaning the water container

$X_4 =$ Frequency of cleaning the water container

$X_5 =$ Waste Disposal

$X_6 =$ Prevalence of Mosquito

$X_7 =$ Drainage

$X_8 =$ Toilet facilities

$U_i =$ Error term.

The null hypothesis framed is

$H_0 =$ There is no correlation between Sanitation factors and the health status.

$H_a =$ There is high correlation between sanitation factors and the health status.

Table 4.13

Estimated multinomial logistic regression co-efficient of health condition in Environmental sanitation as related to selected variables.

Likelihood Ratio Tests				
Variables	-2 Log Likelihood of Reduced Model	Chi-Square	Df	Sig.
Constant	682.7908	267.2115	2	0.00
Source of water	502.0395	86.46018	2	0.00**
Purification of water	978.8148	563.2355	2	0.00**
Cleaning the water container	416.7212	1.141918	2	0.56
Frequency of cleaning	470.8361	55.25681	2	0.00**
Waste disposal	418.3175	2.738193	2	0.25
Mosquito	720.4056	304.8263	2	0.00**
Drainage	423.481	7.901711	2	0.02**
Toilet facilities	617.4702	201.8908	2	0.00**
Cox and Snell	0.753			
Nagelkerke	0.856			
McFadden	0.662			
Number of observation	723			
Classification percentage	78.10			

Source: Estimated based of field survey, 201.

** Significant at 5 percent level.

Likelihood ratio tests shows the contribution of each variable to model that the independent variables like source of water, purification of water, frequency of cleaning, mosquito prevalence, drainage and toilet facilities are significantly related to the health and sanitation facilities. Cox and Snell R and Nagelkerke R square values are 0.753 and 0.856 respectively, suggesting that 75 percent to 86 percent of the variability is explained by these variables used in the model. The overall predictive accuracy for the present model is 78.10 percent. Source of water, purification of drinking water, frequency of cleaning the storage container, prevalence of mosquito, and drainage facilities are highly significant factors

.Therefore the null hypothesis is rejected at 5 percent level of significance. There is a strong correlation between some of the sanitation factors and the health. Source of water, purifying drinking water, frequency of cleaning the containers, prevalence of mosquitoes, drainage condition, and toilet facilities are highly significant factors in determining the health of the slum dwellers. Therefore there is a strong correlation between sanitation factors and health status of the slum dwellers. Many studies have worked out the correlation between sanitation factors and health (Owoeye, 2011,) using various regression methods.

Therefore by using Multinomial Logistic Regression, the investigator found that a strong correlation exists between various independent variables grouped under socio economic variables and sanitation variables with the dependent variable of health status. Hence there is a need for improvements in the multidimensional factors of the urban slum dwellers. Improvement in their socio economic condition like education, income ,etc are important to create awareness on healthy living .Sanitation condition also should be equally improved and the slum dwellers should have access to clean and good sanitation facilities to protect themselves from various diseases which pose threat for their existence.

4.2.5 Solid Waste Management

Wherever humans gather, waste also accumulates. 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 nuisance for heavily populated areas, carrying the risk of infectious disease, particularly to vulnerable groups such as the very young, the elderly and people suffering from diseases that lower their resistance. Poorly controlled waste also means daily exposure to an unpleasant environment (Smith, 2002). The collection of municipal solid waste is a public service that has important impacts on public health and the appearance of towns and cities. Regrettably many urban administrations seem to be losing the battle of coping with the ever-increasing quantities of waste. The challenge is made greater by the diversity of materials in the waste, which is no longer mainly food waste and ash, but includes more and more plastic packaging, paper and discarded electronic equipment (UN-HABITAT, 2011).

Improper and inadequate garbage system, lack of adequate open spaces and green areas, improper land uses, institutional and financial crisis, lack of awareness and political will are causes for the present condition of slums. The provision of urban infrastructure becomes exorbitantly costly and squatter settlements (Gowda et.al, 2014).

In slums, the lack of solid waste management is one of the biggest factors for environmental pollution and health risks. Solid waste is responsible for many vector borne diseases, such as dengue. The collection of municipal solid waste is a public service that has important impacts on public health and the manifestation of towns and cities. The detail of garbage disposal in the study area is given below:

Table 4.14
Garbage Disposal

Particulars		Frequency	Percentage
Generation of waste (in Kg) per day	Below 3kg	74	10.2
	3-5kg	548	75.8
	Above 5 kg	101	14.0
Collection of waste	Local authority	203	28.1
	Private agency	109	15.1
	Corporation workers	380	52.6
	Others	31	4.3
Disposal of waste	Open yard	382	58.2
	Dustbin	161	22.3
	Streets	101	14.0
	Unused plot of lands	79	10.9
Problems of Flies and Insects	Yes	458	63.3
	No	265	36.7
Drainage facility	No drainage	86	11.9
	Open drainage	440	60.9
	Closed drainage	107	14.8
	Underground	90	12.4
Total		723	100.0

*Figures within parentheses indicate percentage

The stench of rotting food and garbage is prevalent in many slums. This stench attracts flies, which play a major role in the spread of communicable diseases. There is the absence of segregating the waste before disposing. Segregation at source for the purpose of recycling is pointless unless the wastes are kept separate when they are collected. Compaction refer to mixed waste degrading the quality of recycled materials that may later be removed by sorting. People are unaware of segregating the wastes at the point of generation. Majority of the women (63 percent) stated that they have the problems of flies and mosquitoes due to open drainage and open defecation in their area, which leads to health problem, Meanwhile 37 percent of women stated that there is not much problem of flies and mosquitoes. Nearly 76 percent of the women generated 3-5 kg of waste per day from their home and 14 percent of them generate above 5 kg and only 10 percent generate below 3 kg of waste daily. The Solid Waste Management of present study is in line with that of Mony et al. (2006) and Rahman (2008) who carried out study in the slums of Aligarh city and Vellore town, respectively where waste was found scattered in the streets and nearby the dwellings. In the study area, municipal dust bin for the collection of solid wastes are not sufficient and the inhabitants have to dispose solid waste in open spaces and road sides that is very vulnerable for the environment.

Nearly 58 percent of the women dispose the waste in the open yard nearby their residence. Eleven percent of women dump the waste in unused plots of land and 22 percent of them dispose their waste in dustbin. Similar findings were observed in studies by Money et al (2006), Rahman (2006), Malaviya and Bhagat(2013). Experience has shown repeatedly that it is necessary not only to inform the public of arrangements for waste collection, and to educate them regarding the correct dealing with waste, but that it is also important to involve the public in the planning of issues that affect them, such as the type of collection service, the frequency of collection, the provision and location of storage containers and the charges that must be paid for various levels of service. (UN-HABITAT, 2011).

Among the selected sample, 61 percent of women reported that there is open drainage and 15 percent of them reported closed drainage nearby their house. Only 12 percent had underground drainage and 12 percent have no drainage facilities. Studies on slums reported that majority of the urban slums are characterized by open drainage and lack of underground drainage system. (Sundari, 2003), Many people seem to think that drains are a good place for waste. Due to poor drainage system water logging in the slums of Tamilnadu becomes critical during monsoon seasons and rain water often enters in the houses of these poor people as only 5 percent of the households had well drainage system (Sundari, 2003). They probably imagine that the flowing water will flush all the waste away so that the waste will no longer be a nuisance. In fact, drains are the worst possible place for waste because the waste blocks them, providing stagnant stretches of water for mosquitoes to breed in and also causes flooding. Removing waste from drains is often a difficult process because the waste is heavy and it may either lose its cohesion so that it can only be removed in small pieces, or it may combine with sand and grit to form cemented deposits. The sewerage system was of sub-standard type that clogged during rainy season as the result of which over spillage was common. Nearly 71.42 percent of the respondents complained about the lack of proper sewerage system and demanded immediate improvement, while 12.24 percent respondents considered the sewerage system to be good owing to the establishment of the locality on raised land and easy drainage of the water while 16.32 percent felt that it was satisfactory. The level of hygiene knowledge and practice is very low and the drainage system is the most neglected sector in the slums. Solid waste management and drainage system are totally unsatisfactory in the study area and also it is observed that houses, shops, drains, roads etc have been constructed without proper planning and the open drainage causes severe health hazardous condition.

4.2.6 Loss of Income

Poor sanitation causes economic losses associated with the direct cost of treating sanitation related illness and loss of income through reduced or low productivity. In addition it also leads to time and effort losses due to distant or

inadequate sanitation facilities, lower product quality, reduced income from tourism (due to high risk of contamination and diseases), and clean up cost. (Minh and Hung, 2011). The loss of income during sickness which is due to poor water and sanitation deserves special attention, because of the increased stress they face during these periods. Though they are sick, they need to do the job or take care of the people at home. The cost of poor sanitation is yet another burden for the people who already undergo various struggles for living under unhygienic conditions in slum. Treatment cost imposes a burden on the people suffering from sickness and apart from that loss of income due to sickness is felt as a double threat by the slum dwellers.

Whenever a member in a family gets sick, mostly women have to look after the sick member and they lose their daily wage. The costs of poor sanitation are inequitably distributed with the highest economic burden falling disproportionately on the poorest. The average cost associated with poor sanitation, constitutes a much greater proportion of a poor person's income than that of a wealthier person. For the poorest therefore, poverty is a double edged sword – not only are they more likely to have poor sanitation but they have to pay proportionately more for the negative effects it has. The following table explains the loss of income due to sickness for a period of one year, i.e the year proceeding the survey.

Table 4.15
Income loss due to sickness

Particulars		Frequency	Percentage
Number of days of illness/year	Less than 10 days	157	53.2
	10-20 days	98	33.2
	More than 20 days	40	13.6
Loss of working days due to illness/year	Less than 3 days	47	43.1
	3-5 days	29	26.6
	More than 5 days	33	30.3
Income loss due to illness/year(in ₹)	Less than 1500	41	49.3
	1500-3000	23	27.7
	Above 3000	19	30.0

Source : Field Survey 2015

From the study it is evident that majority of the women (53 percent) was sick for less than 10 days due to viral fever. Meanwhile 33 percent of them were ill for 10-20 days and 14 percent of them had to pregnancy related problem, jaundice, chicken pox, asthma etc. Majority of the women (43 percent) lost three days due to illness; 30 percent lost 3-5 days and 27 percent lost more than five days due to sickness. Nearly 49 percent of women have lost less than ₹.1500 of their income and 30 percent lost above ₹.3000 due to various kinds of illness. Only 28 percent of women incurred a loss of ₹.1500-3000 of their income. Due to illness the women take leave from their work which leads to loss of income because majority of women are working in unorganized sector and their daily wage is lost. As most of the women are engaged in informal sectors, their long leave leads to the termination of the job and hence they are forced to search some other jobs, or left unemployed until they get a new job.

4.2.7 Sanitation and Cultural factors

Culture refers to an integrated pattern of belief and behaviour that varies from local group to group and is valued for itself. There are several factors which directly or indirectly affect the health. Culture is the product of human societies and man is largely a product of his cultural environment. Culture stands for the customs, beliefs, laws, religion and moral precepts. Cultural factors in health and disease have engaged the attention of medical scientists. It is now fairly established that cultural factors are deeply involved in matters of personal hygiene, nutrition, immunization, outlook on health and disease, in short, the whole way of life. Our cultural backgrounds have tremendous impact on our lives. There can be many cultures within a society and the social inequalities span across cultures. All human shares the need for food, clothing, shelter, social justice and love. Accesses to these factors have impact on health. Sometimes, people in the slums get sick and start to develop symptoms that later on turn out to be a mortal disease, but the reasons why they do not go and seek help is because, it is considered luxury to them. Toilet is being considered as a luxury by some group that prevents them from constructing own individual toilets at home.

Some people still don't realise the consequences of open-defecation, and they may be of view that nothing is wrong in it. Unless awareness is created, it is very difficult to eradicate open defecation completely. Open defecation among children is a common phenomena observed in slums, which increases the gravity of the problem. The children are subjected to defecate in front of the houses or near the drainage and some times, their stools are left as it is which leads to the easy spread of diseases and also lead to other effects.. Flies can easily transfer the disease mediums in the case of open defecation. Moreover, the women have to be educated on the safe disposal of their children's stools.

4.2.8 Sanitation at Work place

Good sanitation at the work place is a basic right of the workers which many are not aware of. With the increasing rate of migration towards urban areas, the migrants who settle in any dwelling, dare not ask for better sanitation at work

place due to fear of losing job. It is ignorance and illiteracy which make them accept any job at any place. Work place sanitation and hygiene conditions have an impact on the productivity of employees, especially women. Most of the urban slum labour force are unskilled and employed in informal sectors that lack job security, safety and other benefits as found in formal sectors. The migrating rural labour force becomes a competitive factor for the urban labour force who are already employed and hence they are in the weaker side for bargaining better wages . Various problems the women face in their work place are summarised in the table below:

Table 4.16
Problems at the Work Place

Particulars		Frequency	Percentage
Health problems	Cold and cough	20	2.8
	Fever	130	18.0
	Headache	151	20.9
	Leg/joint pains	270	37.3
	Back pain	109	15.1
	Allergy	36	5.0
	Dysentery	7	1.0
Sufficient drinking water	Yes	328	45.4
	No	395	54.6
Proper lighting and ventilation	Yes	310	42.9
	No	413	57.1
Proper toilet facility	Yes	286	29.6
	No	437	60.4
Maintenance of toilet	Good	118	16.3
	Better	356	49.2
	Worse	249	34.4
Total		723	100.0

Sources: Field survey, 2015

Figures within parentheses indicate percentage

Various health problems are reported due to the poor and insanitary working condition. Leg pain is found to be a common problem among 37 percent of the women as they are engaged in jobs that require standing and walking for a long time. The next health problem reported is head ache (nearly 21percent), which reflects stress and tension in the urban life style. Fever (nearly 18 percent), Backpain (15percent), cold and cough (nearly 3 percent), allergy (5 percent) and dysentery (1percent) are the other health issues reported by women. Improved awareness on hygiene is critical to prevent outbreak of diseases and epidemics, especially in congested living areas. The informal labour force have little chances for demanding hygienic toilet facilities in their work place. Women working as domestic servants reported that they are not allowed to use the toilets in the houses where they work and hence they again use the pay and use toilets except under emergencies. Women working in shops reported that the condition in their work place is so bad that the toilets are cleaned rarely. But they still use it even though they anticipate some diseases. Unless rules are made strict and health inspections at the work place takes place on a regular basis. Women will continue to leave the brunt of such diseases and remain sick in course of time.

4.2.9 Hygiene Practices

Hygiene is an old concept related to medicine, as well as to personal and professional care practices related to most aspects of living. Health and hygiene status of a population is one important indicator of human development. Hygiene practices are employed as preventative measures to reduce the incidence and spreading of disease. Cleanliness and hygiene are important not only from the public health point of view, but also socio and economic development of the family. There is no doubt to say in this era that sanitation dictates the human life. (UN, 2008). One of the most effective ways we have to protect ourselves and others from illness is good personal hygiene. Maintaining personal hygiene is necessary for many reasons; personal, social, health, psychological or simply as a way of life (Surja, 2015).

The women were asked to rank the hygiene practices followed in daily life in their order of priority. The ranks were then converted into percent position and from the percent position the individual scores were determined on a scale of 100 points by using Garrett's rating scale. The average scores and the ranks corresponding to each purpose are shown in table :

Table – 4.17
Hygiene Practices Followed by the Selected Women

Practices	Scores	Rank
Covering the drinking water	50.6	1
Washing the cooking and feeding utensils	47.3	3
Hand washing before cooking and eating	48.4	2
Washing hands after defecation	45.1	4
Store the raw food	39.7	7
Washing the clothes daily	38.9	8
Regularly clean home and bathroom	40.5	6
Use garbage bin for waste disposal	38.6	9
Toilet having disposal system and cleaning	37.8	10
Cleaning the surroundings daily	42.6	5

Sources: Field survey, 2015

Women expressed the hygiene practices followed by them in their day to day life. The different practices were ranked and the following ranks were accorded. Discussed in this section. The women stated 'covering the drinking water' (1st rank), 'Hand washing before cooking and eating' (2nd rank), 'Washing the cooking and feeding utensils', (3rd rank), 'Washing the hands after defecation' (4th rank) and 'Cleaning the surroundings daily' (5th rank). 'Regularly clean home and bathroom' (6th rank), 'Store the raw food' (7th rank), 'Washing the clothes daily' (8th rank), 'Use garbage bin for waste disposal' (9th rank) and 'Toilet having disposal system and cleaning' (10th rank). The study found that women were practicing some of the hygiene practices in their daily life which helps them to prevent the spread of infection and illnesses that are conditioned by the

perception level of the community. Similarly Surja (2015) in her study stated that most of the families were a little conscious of personal hygiene. Personal hygiene indicators such as daily bathing, daily brushing, and washing hands before meals, cutting of nails were practiced in their daily life.

Hand Washing after defecation has been proved to be an effective method of reducing diarrhoea. In the present study, It is quite pleasing to know that more than half of the respondents do wash their hands after defecation(68 percent),and a gratifying result that 41 percent use soap/hand wash liquid for hand washing. The investigator conducted group discussions with the respondents and stressed the importance of hand washing, also the worst consequences of not hand washing were also highlighted. The hand washing practice is instructed to around 50 percent of children by the parents .Apart from water alone almost 46percent, people use various agents to wash hands such as soap(about 29 percent),mud(13.6 percent),and hand washing liquids (roughly 11percent). Women are the care takers of their children and so they were inquired on hand washing at critical times like cleaning their children's bottom, before cooking, and before handling food. Around half of the sample were conscious in washing their hands after cleaning their children's bottom and also before cooking and handling food. As hand washing before taking food is a common phenomena by 77 percent, it is highly acceptable that there is some awareness on hygiene among the slum dwellers. Mothers need more awareness on cleaning their hands before feeding their children as only around 56 percent follow this hygiene practice.

Other factors that determine their hygiene behaviour, are poor socio-economic profile , poverty and struggle for survival in small houses of one or two rooms ,lack of bath room, or a wash –basin etc. After walking a long distance to the common toilet or for open defecation, they feel very difficult to wash their already dried hands. Many houses lack separate kitchen and women reported that they feel difficult to walk out and wash their hand each time before cooking and handling food, they sometimes skip it. Women need to be educated on the importance of hand washing and it should be practised regularly.

4.2.10 Problems Faced by the Selected Slum Women

The quality of human life, directly or indirectly, depends upon accessibility to better sanitation. In the present study the respondents were asked to state their opinion on various problems they faced being a slum dweller. The investigator ranked the problems on a five points scale with maximum point being for strongly agree and -2 for strongly disagree. Cronbach's alpha test was conducted to determine the internal consistency for all constructs. The Cronbach's Alpha for thirteen items was 0.827, exceeding the minimum alpha of 0.76 (Nunnally, 1978), indicating good reliability of all items.

Having established the consistency of all items, factor analysis was used to identify the underlying pattern of relationship between the various dimensions of problems faced by the women slum dwellers and whether these problems can be grouped in terms of a composite variable. To determine the appropriateness of applying factor analysis, the KMO and Bartlett's test measure was computed. The KMO statistics was 0.750 signifying higher than acceptable adequacy of sampling. Bartlett's test of sphericity was also found to be significant at one percent level providing the existence of the presence of relationship between variables to apply factor analysis. The communalities for each constructs assessed to determine the amount of variance accounted by the factors was found to be greater than 0.50 signifying substantial portions of the variance are accounted by the factors. Table enlists the Eigen value, the relative explanatory power and factor loading for 17 linear components identified within the dataset.

Table 4.18

KMO and Bartlett's Test Measures

KMO and Bartlett's Test	
Kaiser-Mayer -Olkin measures of sampling adequacy	.750
Bartlett's test of sphericity Approx. Chi-square	1059.69
Degrees of freedom	136
Significance level	.000

Source: Estimation based on field survey, 2015

The communalities for each variable were assessed to determine the amount of variance accounted by the variable to be included in the factor rotations. All the variables had value greater than 0.50 signifying substantial portions of the variance accounted by the factors. Table enlists the Eigen values, their relative explanatory powers and factor loadings for 17 linear components identified within the data set.

Table 4.19
Rotated Component Matrix

Problems	Components				
	1	2	3	4	5
Lack of proper sanitation facilities	.731				
Lack of access to adequate drinking water	.719				
Inadequate provision for social infrastructure	.689				
Low awareness of services and programme		.636			
Unhygienic environment	.673				
Lack of garbage disposal			.597		
Non-availability of basic facilities in slums	.785				
Lack of job security					.716
Unreliable sources for prevention and care					
Inadequate nutritional intake			.784		
Due to non-availability of subsidized ration properly			.718		
No proper solid waste management				.752	
Lack of proper social safety net				.697	
Inadequate provision for social infrastructure		.629			
Lack of information and financial resources		.823			

Problems	Components				
	1	2	3	4	5
Overcrowding increases the health risk		.826			
No proper sewage services					.677
Eigen value	4.621	2.203	1.685	1.365	1.024
Percentage of variance	27.184	12.961	9.909	8.029	6.022
Cumulative percentage	27.184	40.146	50.055	58.084	64.105

Source: Estimation based on Field Survey, 2015

Extraction Method: Principal Component Analysis

Rotation Method : Varimax with Kaiser Normalization, rotation converged in 9 iterations

Factor 1 has significant loadings for five dimensions namely Lack of proper sanitation facilities, Lack of access to adequate drinking water, inadequate provision for social infrastructure, Unhygienic environment, Non-availability of basic facilities in slums. These dimensions explained nearly 27 percent of the variance. Factor 2 has significant loadings for four dimensions namely Low awareness of services and programme, inadequate provision for social infrastructure, Lack of information and financial resources, Overcrowding increases the health risk which explain nearly 13 percent of the variance. Factor 3 has significant loadings on three dimensions namely Lack of garbage disposal, inadequate nutritional intake and non-availability of subsidized ration properly which explains 10 percent of the variance. Factor 4 has significant loading on two dimensions namely no proper solid waste management and lack of proper social safety net. It explains nearly 8 percent of the variance. Factor 5 has significant loading on two dimensions namely lack of job security and no proper sewage services which explains nearly 6 percent of the variance. Hence these are the various problem faced by the selected women slum dwellers.

Unlike the people with facilities like wash basin and wash rooms, it is very difficult for the slum dwellers to follow a routine hygiene practices. It will be of

immense use if a hand wash is provided at the common toilet itself. Providing a hand wash liquid in the Ration shops (PDS Shops) by the government at the subsidised rate, will promote hand-washing habit among the public. Also, utmost care should be taken by the authorities to provide sufficient water and all facilities in the common toilets. Even though maintenance fee is collected at some common toilets, Government may lend the service free of cost, as sanitation is the basic rights of the people. As food for living, good sanitation and hygiene too play an equally important role in determining the healthy living of mankind. Hence utmost importance should be given for promoting good sanitation and hygiene practices among all the people and slum dwellers in particular as they lack knowledge on good sanitation and also insufficient sanitary facilities makes the problem more severe. Also, in their day to day struggle for earning their living, it can be least expected to give importance for hygiene and sanitation, as most of the slum dwellers live below poverty and the vicious circle of poverty tend to act up on them such that economically these people are not able to break the cycle of poverty. Investment in sanitation by the Government and NGO's to break this cycle and let them become manifest of sanitation crisis. Only then the human kind can be a productive economic factor contributing to the multidimensional development. While the links between sanitation and human health are well documented, the disproportionate and overlapping disease, care giving, education, and economic, and social dignity impacts are rarely captured together for women and girls living in urban informal settlements. Yet, improving slum sanitation can enhance child and maternal well-being, which is particularly important to global urban health since more people are living in cities and women are often primary care givers and household money managers.

4.2.11 Sanitation Index

In developing and under developed countries, sanitation continues to be a big challenge for the governments, as well as civil society. Sanitation is a comprehensive term and it means more than just toilets. Sanitation can be understood as interventions that reduce human exposure to diseases by providing

a clean environment to live. It involves both behaviours and facilities, which work together to form a hygienic environment. Environmental sanitation is quite a new phenomenon. This does not confine only to personal hygiene but essentially includes potable water and toilet facility. Preparation of index assumes importance of all the concepts that define sanitation. Each slum exemplified differences in sanitation practices. The investigator has made a pioneering attempt in preparing an environmental sanitation Index.

The concept of sanitation is much broader comprising personal hygiene, which includes hand wash before food and after toilet use, brushing teeth, wearing chappal, cutting nails, bathing and maintaining hair and so on. Access to drinking water and toilet facilities are considered more important which are inextricably linked to environmental sanitation being reckoned for formulating Environmental Sanitation Index. This index is a pointer to administrators to accord priorities to sanitation sector. The human development indicators also depend upon better sanitation accessibility to the marginalized communities. A better environmental sanitation contributes to better environmental sustainability which in turn improves human productivity and ultimately enhancing human welfare. (Balamurugan and Ravichandran, 2014).

Only some studies gave a lead in an attempt to devise a method of devising sanitation index. Environment sanitation has always been an ignored area as far as empirical study is concerned. The present prevailing situation untie the realization that sanitation is central to environmental protection spreading across various levels. The initiative on formulation of sanitation index indicates that resourceful monitoring would be a step towards sustainable development. The sanitation index was developed by Mukherjee and Kathuria (2006), and Mukherjee and Chakraborty (2007) in various studies. Gunawardana and Galagedara (2013) have used data gathered from three communities in Sri Lanka and developed Sanitation Index Monitoring (SIM).

Sanitation Index (SI) of the households is constructed by using four indicators namely Disposal of waste, Condition of drainage, accessibility of drinking water and type of toilet accessed. Table 4.2.9 indicate the composite index of sanitation.

Table 4.20
Sanitation Index

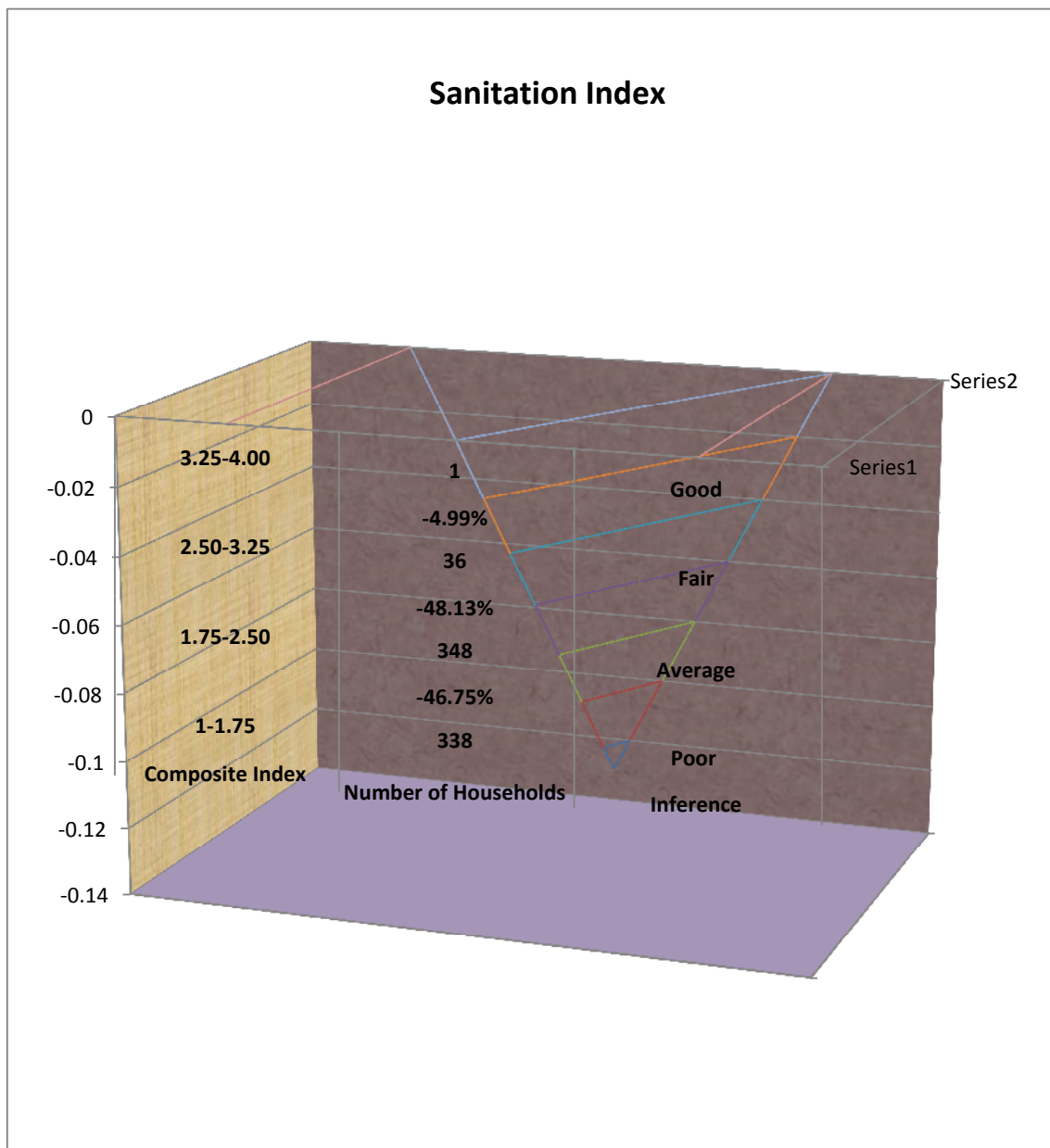
Composite Index	Number of Households	Inference
1-1.75	338 (46.75)	Poor
1.75-2.50	348 (48.13)	Average
2.50-3.25	36 (4.99)	Fair
3.25-4.00	1 (0.13)	Good

Source : Estimation based on field survey 2015

Figures in parentheses indicate percentage to total

The majority of the respondents (nearly 49 percent) fall under average sanitation index and approximately 47 percent fall under poor sanitation index ,depicting the fact that sanitation in the study area is average and not so poor. Only five percent fall under fair and less than 1 percent fall under good sanitation index. Urban slums which are in the heart of the city receives more attention than that of slums in the outskirts of the city. More over the Coimbatore Corporation is under the initiative of implementing “Swatch Bharath” mission initiated by the Indian Government. In the study by Balamurugan and Ravi Chandran (2014),on constructing the sanitation index for different districts of Tamilnadu, Coimbatore ranks 3rd with the score of 0.759 as the sanitation index. It was observed that in the visited the study area the condition is far better when compared to some semi-urban and rural slums. The sanitation index of the study area go in line with that of the findings of Balamurugan and Ravichandran (2014).

Figure 4.8
Sanitation Index constructed for the study area



Source : Estimation based on field survey, 2015

4.3 Willingness to Pay (WTP) for better sanitation services

WTP is essentially the maximum amount of money the beneficiaries are willing to pay for certain hypothetical service. However, from a practical perspective to design a tariff structure it is also essential to match household's WTP with its ability to pay (ATP) (Fujita et al. 2005). The WTP concept generally refers to the economic value of a good or service perceived by a person or a household under given conditions. Willingness to pay is a reflection of the maximum amount a consumer thinks a product or service is worth. Improvements in sanitation situation heavily rely on the financial contributions from households, which in turn depends on not only household's willingness to pay (WTP) but also on each household's ability to pay for the improved sanitation services. The study aims at understanding the effectiveness of interventions in improving slum dwellers willingness to pay for community toilet access. This study will not only contribute to the understanding of drivers of poor sanitation, but will also enlighten on the financial feasibility of the different interventions. The following table explains the details regarding the WTP.

Table 4.21

Willingness to pay for better sanitation facilities

S. No	Characteristics		Frequency	Percentage
1	Willing to pay	Yes	458	63.3
		No	265	36.7
2	Amount in ₹/Month	Below 50	142	31.0
		50-100	214	46.7
		Above 100	102	22.3
3	Agency suggested by Women	Public	143	31.2
		Private	209	45.6
		NGO	106	23.1
4	Mode of Payment	Monthly	139	30.3
		Quarterly	195	42.6
		Half-Yearly	88	19.2
		Yearly	36	7.9

Source : Field survey, 2015

In the study area, nearly 63 percent of them were willing to pay for maintenance of sanitation. This irresistible positive response of the households ought to be considered in the context of conditions stated in creating the hypothetical scenario for value elicitation. Only 37 percent of them were not willing to pay. The study noted that willingness to pay not only depend upon the income but on other socio-economic factors also. A similar finding was purported by Minh et.al (2013). Majority of women (46 percent) preferred private agency because they will do the work systematically and effectively. Meanwhile 31 percent preferred public agency and only 23 percent of women preferred NGO for undertaking sanitation maintenance. This is in contrast with a study on Korail slums by Biplob (2011), where almost 79percent respondents are not interested to pay money to get safe latrine while 21percent respondents are interested to take safe latrine by the paying. It was observed in many studies that most of the people are not willing to pay for using sanitation facilities due to lack of awareness on safe sanitation and their health as well as their poor economical status. (Biplob2011)The amount they were willing to pay ranges from less than ₹.50 (31 percent), ₹.50 to ₹.100 (46 percent)and even above ₹.100 (22 percent) per month. It is interesting to notice that 43 percent of the women were ready to pay the amount quarterly and 31 percent are willing to pay the amount monthly and 19 percent were willing to pay half yearly. Only 8 percent were willing to pay the amount yearly due to unsteady income.

An attempt was made to analyse the impact of socio-economic factors on willingness to pay for maintenance of sanitation among the selected women by fitting logit model where the dependent variable is women's willingness to pay for sanitation is 1 and 0 otherwise. McKeown insist on the principle that socio economic conditions and health directed human agency are key to health improvements (Szreter, 2002).Social and economic conditions provide the resources that enable humans to enhance their health. The variables that were considered as independent for the analysis were age, education, occupation, income and family size which opt to determine the willingness to pay for sanitation among women. In this section, an attempt was made to examine what determines

the willingness to pay of the respondents, by fitting a binary logit model, where the dependent variable takes the value '1' if the respondent is willing to pay and '0' otherwise. The estimated binary logit model of willingness to pay for sanitation among women is shown in table.4.3.2.

Table 4.22
Estimated Logit model

Variables	Coefficient	Standard correlation	t value	Sig
Age	.072	.133	1.075	.037
Education	.291	.174	1.185	.058
Occupation	.170	.531	1.084	.069
Income	.237	.182	1.197	.007
Family size	.083	.298	1.047	.179
Constant	.810	.557	2.113	.012
Nagelkarse R square	.074			
Hosmer and Lemeshow test	19.083			
Number of observations	723			
Classification of percentage	67.4			

Source : Estimation based on field survey 2015

The estimated logit model gives a good fit to the data from the statistical parameter the X^2 value was significant of one percent level. Nagelkerke R² value signifies nearly 74 percent of the variation was accepted by logit model. The estimated model show that the sign of all the co-efficients were more or less according to the expectation. Age had an impact on willingness to pay for sanitation because the people in the young age groups had awareness about the issues of sanitation. The coefficient of education and occupation emerge as an important factor and are found to be statistically significant. If the women are

educated, they have more knowledge about sanitation and health issues which affect their family and society. Occupation will enable the women to handle the various problems. Income is the most crucial variable which has great impact on the willingness to pay for sanitation and found to be statistically significant at one percent level. Income variable had a positive influence over willingness to pay for maintenance of sanitation. The household size was found to be a negative variable and it will decrease the probability of willingness to pay for sanitation because in the large families they cannot afford and payment towards sanitation will be low. Bigger the size of the family, greater is the need to clean environment. The study found that willingness to pay for sanitation will depend on the socio-economic conditions of the women which influence the ability to pay for maintenance of sanitation in their locality. The finding of the study is similar to that of Seraj (2008). One of the most commonly quoted reasons for poor households not accessing formal water and sanitation services is price and their poverty is the hinderance for accessing and paying for better sanitation services. On the other hand, many research have revealed that poor households have high willingness to pay for services and in many cases they pay significantly more for a low level of services.

4.4 Government Programmes for Improvement of Sanitation

It was during 2001–2011 that the absolute increase in urban population rose above the increase in rural population for the first time after independence. It is also projected that in the next two decades, the size of the urban population will be 50 percent of India's total population, which may lead to an even faster increase in slum population by increasing rural urban migration. As part of the Twelfth Five-Year Plan (2012–2017), a centrally sponsored scheme (CSS), Rajiv Awas Yojana (RAY), has been under implementation to make India slum-free by the year 2022. The main objective of this program was to provide housing, basic civic infrastructure, and social amenities to slum dwellers. In fact, this can be considered as one of the best initiatives by the government of India (GOI) to combat proliferation of slums in urban India (Tripathi, 2015). In a bid to address the

issue of slums and urban poverty, the Government of India has under taken several initiative .The programmes which aims at better sanitation and hygiene are listed below:

- **Valmiki Ambedkar Awas Yojana (VAMBAY)** was launched in December 2001, VAMBAY was a centrally sponsored scheme with an in-built subsidy for undertaking construction of dwelling units for slum dwellers. The scheme was successful in providing affordable houses to the urban poor and with the launch of JNNURM, elements of this scheme were dovetailed into JNNURM.
- **Jawaharlal Nehru National Urban Renewal Mission (JNNURM)** was launched on 3rd December, 2005 with the objectives of augmenting infrastructure facilities in cities and towns along with provision of shelter and basic civic services to slum dwellers/urban poor. JNNURM aims at creating 'economically productive, efficient, equitable and responsive cities' by a strategy of upgrading the social and economic infrastructure in cities, provision of Basic Services to Urban Poor and wide-ranging urban sector reforms to strengthen municipal governance in accordance with the 74th Constitutional Amendment Act, 1992. Besides health, education and wedge, housing to the urban poor is a big challenge and cause of concern for the governments. Central and State Governments are trying to provide housing to the people from low-income-groups/slums of urban areas. Central Government's ambitious project- "Jawahar Lal Nehru National Urban Renewal Mission (JNNURM)" has substantial funds and provisions to make available the housings for the urban poor. Prima-facie, it seems a very good attempt by the government, but at the same time, if we look back on the similar programs/efforts and analyse the net outcome, we will discover another side of the coin. The slums upgradation and providing affordable housing to the slum dwellers is not an easy task and needs to be thought differently to come to grips with the situations (Chathurvedi, 2013)

- **Swarna Jayanti Shahari Rozgar Yojana (SJSRY)** aimed at providing gainful employment to the urban unemployed and under-employed poor, through encouraging the setting up of self-employment ventures by the urban poor living below the poverty line, skills training and also through providing wage employment by utilizing their labour for construction of socially and economically useful public assets.
- **Integrated Low Cost Sanitation (ILCS):** This scheme envisages the conversion of dry latrines into water seal twin-pit sanitary latrines on a whole town basis.
- **Affordable Housing in Partnership (AHP):** It seeks to promote various kinds of public-private partnerships -government with the private sector, the cooperative sector, the financial services sector, the state parastatals, urban local bodies, and etc-to create affordable housing stock. Under the scheme, the Government provides subsidy at the rate of ₹.50, 000 per affordable unit or 25 percent of the cost of infrastructure (internal and external), whichever is lower.
- **Rajiv Awas Yojana** was launched on 02.06.2011. The Phase I covered about 250 cities, across the entire country and the selection of the cities was done in consultation with the Centre. The States would be required to include all the mission cities of JNNURM, preferably cities with more than 3 lakh population as per 2001 Census; and other smaller cities, with due consideration to the pace of growth of the city, of slums, predominance of minority population, and areas where property rights are assigned. The scheme progress at the pace set by the States. Under the Scheme, Fifty percent (50 percent) of the cost of provision of basic civic and social infrastructure and amenities and of housing, including rental housing, and transit housing for in-situ redevelopment – in slums would be borne by the Centre, including operation and maintenance of assets created under this scheme. For the North Eastern and Special Category States the share of

the Centre would be 90 percent including the cost of land acquisition, if required.

- The Affordable Housing in Partnership Scheme, which is intended to encourage public private partnerships for the creation of affordable housing stock is being dovetailed into “Rajiv Awas Yojana” (RAY). Under this scheme central support will be provided at the rate of ₹ 50,000 per unit of affordable dwelling unit or 25 percent of the cost of civic infrastructure (external and internal), whichever is lower.
- The Government of India launched the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) on 3rd December, 2005 to assist cities and towns in taking up housing and infrastructural facilities for the urban poor in 65 cities/towns in the country under the Basic Services to the Urban Poor Programme (BSUP) for the urban poor in the country.
- The Interest Subsidy Scheme for Housing the Urban Poor (ISHUP) provides interest subsidy on housing loans to the Economically Weaker Sections (EWS) and Low Income Group (LIG) as part of credit-enablement measures and encourages those households to avail of loan facilities through Commercial Banks/Housing Finance Companies for the purpose of construction/acquisition of houses and avail 5 percent subsidy in interest payment for loans up to ₹. 1 lakh. The loan repayment period would be 15-20 years. Households with monthly income of upto ₹. 3,300 (now revised ₹. 5,000) are classified as EWS while those with monthly income between ₹.3301 and 7300 (now revised between ₹. 5001 to ₹. 10,000/) are termed LIG. This is a demand driven scheme.

Based on the surveyed sample, it was evident that only few women were aware of the government programmes implemented towards sanitation .Out of 723 women, only 169 women had awareness about the some programmes. Even though they were aware of some Government programmes, they were not able to exactly point out the name of the schemes under which they are benefited.

They knew that government is providing funds for building toilets and other facilities but their ignorance and low education status prevents them from knowing the procedure for applying for fund and getting help from the welfare office.

With regard to the beneficiaries of any Government welfare schemes ,only 34 percent received some benefits while 66 percent of the women who are aware of government programmes did not benefit out of any of the schemes by the government.

Women are expecting a better house to be provided by the Government and in Pillaiarpuram area, even the patta (land document) is not issued for many and they lack basic facilities very badly. The government welfare schemes have to be implemented in such area where the sufferings and hardship of women is immense. No drainage facility, no street lights and a common toilet which is far away from the residence and improper road facility make the situation pitiable. The slums of west zone, (Kamarajapuram) is better though not good ,than Pillaiyarpuram slum because being in the heart of the city makes all the welfare measures to be a reachable to them.

Only 47 reported that they are the beneficiaries of government programmes and all of them made use of the amount for the purpose for which it is being given by the government. Meanwhile 53 percent of them did not properly use the amount received from the government for sanitation and they used for some other purposes.

Table 4.23
Problems in Receiving the Amount

Problem	Frequency	Percentage
Yes	43	74.1
No	15	25.9
Total	58	100.0

Sources: Field survey,2015

Majority of the women (74 percent) revealed that they have some problems in receiving the money from the government and 26 percent did not face any problem in receiving the money from the government for constructing sanitation.

Table 4.24
Beneficiary of other Government Programmes

Programmes	Frequency	Percentage
ICDS	109	29.9
Midday meal	138	37.9
National health mission	83	22.8
Others	34	9.3
Total	364	100.0

Sources: Field survey, 2015

From the selected sample, 38 percent were beneficiaries of midday meal program and 30 percent benefitted from ICDs and 23 percent were beneficiaries of National Health Mission(NHM) programme on various circumstance. Only 9 percent were beneficiaries of some other programmes related to health and nutrition of women and children. Environmental health in slum communities protects family members from disease. Provision of safe drinking water, adequate sanitation facilities and wastewater removal systems to every household helps in health improvement. Though there are various policies and government programmes addressing the concerns of the urban poor, their impact on the lives of the urban poor has been limited due to the non-effective delivery mechanism calling for greater public vigilance. There is great need to strengthen community networks such as self- help groups and women's health groups and their linkages with health providers .Furthermore, it appears that most slum dwellers are not aware of the interdependent relation between environmental health and their personal health conditions. It is therefore argued that raising awareness in this area can also be an effective means of supporting personal endeavours to

improve household financial situations .It is heartening to note that despite facing several impediments, the government of India has been able to solve the problem of slum dwellers partly. However, slums have been thriving exponentially due to unplanned urbanization, totally outpacing institutional efforts either to stop slum growth or effect environmental improvements of the slums.

Tackling the sanitation issue is not only a development agenda but also linked with behavioural aspects. Even today, open defecation has been the way of life in many places. There is a need to usher in behavioural change with regard to rural sanitation and hygiene. The behaviour change communication has to take place thoroughly by taking into account the prevailing socio, economic, political and cultural diversifications.

4.5 Impact of Educational interventions on hygiene and better sanitation Practices

An intervention is a combination of program elements or strategies designed to produce behavioural change or improve health status among individuals or an entire population. Interventions may include educational programs, new or stronger policies, Interventions may be implemented in different *settings* including communities, worksites, schools, health care organizations, faith-based organizations or in the home. Interventions implemented in multiple settings and using multiple strategies may be the most effective because of the potential to reach a larger number of people in a variety of ways.

Evidence has shown that interventions create change by:

- influencing individuals' knowledge, attitudes, beliefs and skills;
- increasing social support; and
- creating supportive environments, policies and resources.

To create awareness among women and to enlighten them on hygiene and cleanliness ,the women were asked to assemble.

The null hypothesis assumed

H₀ = There is no significant improvement in the hygiene and sanitation practices after the educational intervention.

The alternate hypothesis

H_a = There is significant improvement in the hygiene and sanitation practices after the education intervention.

The respondents showed keen interest in learning about personal, food and environmental hygiene practices. The respondents understood that the spread of diseases was due to open defecation and improper disposal of garbage. They were educated on the importance of keeping their toilet and their surrounding clean. The worst consequence of diarrhea due to the micro organisms that exist in hand due to improper washing is also pointed out and recommended to use soap and water to clean their hand at all times. It could be observed that there was a phenomenal change in the attitude and behaviour of these women. The hygiene practices followed before and after were listed in the table below:

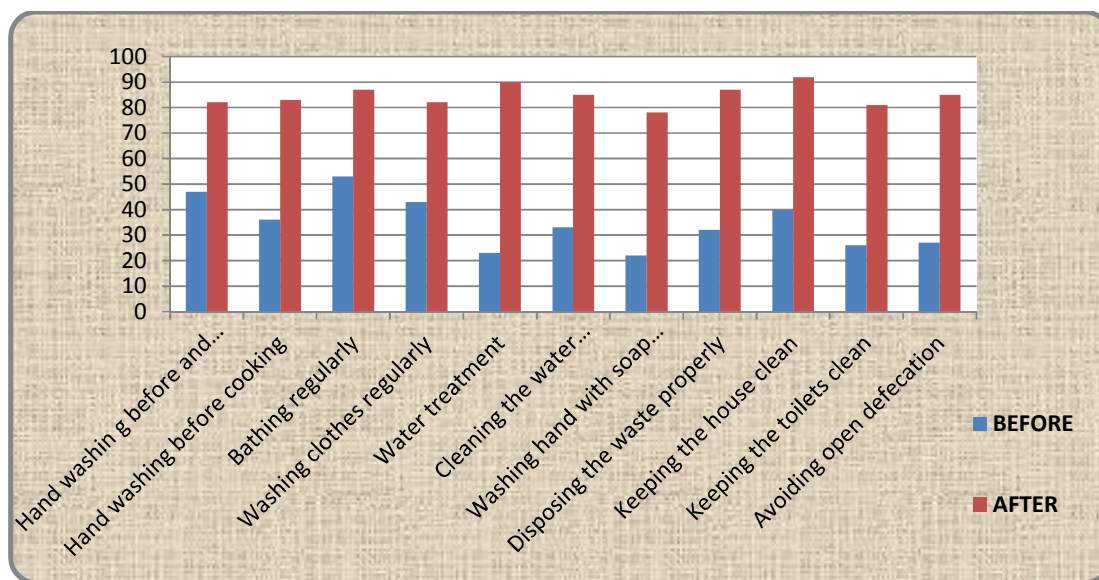
Table 4.25

Knowledge on Hygiene and Sanitation practices

No.	Hygiene and Sanitation practices	Before	After
1	Hand washing before and after food	47	82
2	Hand washing before cooking	36	83
3	Bathing regularly	53	87
4	Washing clothes regularly	43	82
5	Water treatment	23	90
6	Cleaning the water containers regularly	33	85
7	Washing hand with soap after defecation	22	78
8	Disposing the waste properly	32	87
9	Keeping the house clean	40	92
10	Keeping the toilets clean	26	81
11	Avoiding open defecation	27	85

Source : Field Survey

Figure 4.9
Knowledge gained on Sanitation and Hygiene



Source: Field Survey

Attitude development:

The intervention programme resulted in the change in the attitude of women towards following hygiene and sanitation. Individuals realised their role in maintaining the public toilets clean without expecting the authorities to clean it. They were made aware of the importance of pure drinking water and importance of cleaning the water containers regularly. The vital role of hand washing before and after eating food, after defecation, after handling their children were insisted and they involved in the intervention programme willingly and they reported that they are following those hygiene practices regularly. There is large change in their attitude toward clean and hygiene.

Impact of Educational Intervention on Sickness

The selected group who were educated on good sanitation and hygiene practices were also inquired on the frequency of sickness and the cost they incur for medical purpose. There was a remarkable improvement in their attitude as well as their incidence of sickness, which is given in the table below:

Table 4.26**Impact of Educational Intervention on sickness**

Particulars		Before Intervention	After Intervention
Frequency of Illness	often	63	28
	Once in a month	32	10
	Rarely	5	62
Medical expenses /month	Less than 5000	7	64
	5000-10000	32	10
	Above 10000	62	26

Practices adopted:

The respondents who took part in the intervention programme reported of an immense change in their hygiene practices.

Paired 't' test was used to analyse the knowledge gained and practices adopted by respondents through educational programme and the result is shown in Table

Table 4.27**Analysis of knowledge gained by the respondents through educational Intervention**

Aspect	Mean	N	Std. Deviation	T	Sig.
Knowledge score-before	3.1600	100	1.3756	33.855	**
Knowledge score-after	10.6000	100	1.0880		

** Significant at 1 percent level

The significant value is .000, at 5percent level and so there is a significant improvement in knowledge scores of hygiene practices of the respondents after the educational intervention. Therefore it could be pointed out that the educational interventions done is effective and there is remarkable improvement in the hygiene and sanitation practices Therefore the null hypothesis is rejected and the alternate hypothesis stating that there is significant changes in the hygiene and sanitation practices of the respondents after the educational intervention is accepted.

Hence there is a remarkable improvement in the attitude and sanitation practices as well as the frequency of sickness have been observed to be fallen to a great extend. Therefore if proper awareness programmes are conducted and educated, slumdwellers will definitely improve their sanitation and hygiene practices. However individual toilet facilities and continuous water supply can facilitate the people to follow the better sanitation and hygiene practices .Water is essential to follow good sanitation practices and hence in order to improve the sanitation and health of the urbanslum dwellers, Government should assure uninterrupted water supply and provision of good toilet rooms to them. Also better sanitation practices can be insisted through various awareness programmes and also by making them financially better ,so that they can access the facilities on their own. Education is a powerful tool for development .Thus proper sanitation facilities along with proper education and awareness can create a clean India.