

DISSERTATION ON

**CROSS-SECTIONAL STUDY ON PREVALENCE OF
DIARRHOEA IN UNDER 5 CHILDREN AND UNMET NEEDS
OF THEIR MOTHERS IN AN URBAN SLUM OF ZONE – 1
CHENNAI**

Submitted in partial fulfillment of
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CERTIFICATE

This is to certify that this dissertation entitled “**CROSS-SECTIONAL STUDY ON PREVALENCE OF DIARRHOEA IN UNDER 5 CHILDREN AND UNMET NEEDS OF THEIR MOTHERS IN AN URBAN SLUM OF ZONE-1 CHENNAI**” has been Re-submitted by **Dr.N.ILANCHEZHIAN**, who appeared for Part II M.D. Branch XV Community Medicine Degree examination in September 2006 is a bonafide record of work done by him under my direct audience and supervision in partial fulfillment of regulations of the Tamil Nadu Dr. M.G.R. Medical University, Chennai. I forward this to the Tamil Nadu Dr.M.G.R. Medical University, Chennai, Tamil Nadu, India.

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**CROSS – SECTIONAL STUDY ON PREVALENCE OF DIARRHOEA IN
UNDER 5 CHILDREN AND UNMET NEEDS OF THEIR MOTHERS IN AN
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INTRODUCTION

Diarrhoea is the most common and important cause for mortality in under 5 children in the developing countries as per WHO (1). In urban setting it is more common in the slum dwelling children who live in an environment with poor sanitary facilities and polluted water (3).

According to WHO, (7) 'Human faeces remains one of the most dangerous pollutant, spreading microbes causing various diseases like enteric fevers, diarrhoea '. In India especially in urban (12) slums poor sanitary conditions was the most important cause for most of ADD episodes.

In developing countries, the problem was on the rise in the last decade due to escalation of the urban slum population.

For the control of morbidity and mortality in under five children due to diarrhoea, it is critical to look at the key health care practices of mothers in diarrhoea prevention (20).

There is an imperative need to know about prevalence of diarrhoea and to assess the existing gap between knowledge and practice on key community health care practices such as hand washing and use of sanitary toilet. This is all the more important in case of mothers with under five children in whom the morbidity and mortality to diarrhoea is known to be very high.

There is also a need for supply of safe drinking water and maintenance of clean environment through provision of sanitary latrine and proper disposal of refuse.

OBJECTIVES

- 1) TO STUDY ABOUT PREVALENCE OF DIARRHOEA IN UNDER FIVE CHILDREN IN URBAN SLUMS OF ZONE 1 CORPORATION OF CHENNAI.

- 2) TO STUDY ABOUT THE UNMET NEEDS OF THEIR MOTHERS.

JUSTIFICATION

Worldwide there are 2.21million deaths every year due to diarrhoea and in India 192 million episodes occur in under five children. The estimated under five deaths is 700,000 per year in India (2). The prevalence of diarrhoea among under five children constitutes 22% of the childhood morbidity.

- 1) The population under study, the under five children of identified urban slums forms the major segment of cases as per the data available with Corporation of Chennai (2a).
- 2) There is an urgent need to control morbidity and mortality due to diarrhoea in under five children as it forms major cause (4).
- 3) As Diarrhoeal diseases are mostly preventable through proper health care practices and knowledge on personal hygiene of under five mothers regarding above and assessment of gap between knowledge and practice is essential for planning appropriate health services. (9).

- 4) Studying knowledge and practice regarding diarrhoea and its preventive methods provide an insight into their health seeking behaviour and awareness about home available fluids (10).
- 5) The motivating factors behind ORS usage and home available fluids can be used for future utilization in health programs (11).
- 6) In a small way, this study may kindle interest in under five mothers to learn more about diarrhoea preventive health care practices, home available fluids and ORS solution (12).
- 7) Very few studies have been conducted in other parts of the world especially in assessment of unmet needs of under five mothers. Hence this study may help to bring out the aspects of knowledge and practice on prevention of diarrhoea as well as prevalence of under five diarrhoea in Zone 1 Corporation of Chennai.

REVIEW OF LITERATURE

ADD in 1998 accounted for 2.21 million deaths world wide (1). According to Dr.Gupta and Dr.Mahajan it accounts for 28% of deaths in under fives i.e. 1million deaths /yr in India. (2) In India, 192 million episodes of ADD occurs in under fives. This amounts to 1.7 episodes/child year (3).

THE OBJECTIVES OF NATIONAL PROGRAM FOR CONTROL OF DIARRHOEAL DISEASES ARE:

- Creating awareness that most diarrhoea cases can be managed in home settings using home available fluids.
- Educating mothers on feeding practices of children during diarrhoea.
- Educate the mothers on preparation and administration of oral rehydration solution and home available fluids to children with diarrhoea.
- Ensuring continued availability of ORS packets widely available in the community.
- Reducing under five mortality by 50% over a period of 5 years (3).

The approaches to meeting these objectives were:

- Training of Health Personnel
- Health education.
- Supply of ORS packets
- Provision of trained staff .
- Monitoring.

ACTIVITIES TO BE UNDERTAKEN BY A) VHG/ANGANWADI /DAIS AND B) H.W (M&F)

A) VHG / ANGANWADI/DAIS

- Detect diarrhoeal cases early
- Assess degree of dehydration
- Give ORS as treatment.
- Educate mother to prepare ORS at home.
- Educate and motivate the mothers to continue feeding the child.
- Report to health worker weekly, including nil report.
- Report to HW all occurrences of diarrhoeal outbreaks immediately.

B) HEALTH WORKER (HW)

- Collect information on diarrhoeal episodes.
- Replenish stock of ORS periodically.
- Continuing education of VHG/AWW/DAI in ORS, giving on the spot counseling and guidance.
- Investigate deaths due to diarrhoea using the standard format.
- Detect and report outbreaks of diarrhoeal diseases to M.O through regular surveillance.
- IEC campaigns to sensitize and educate mothers; self help groups, community leaders and community regarding diarrhoeal diseases control.
- Assist M.O in investigation and containment of diarrhoeal outbreaks.

MONITORING OF DIARRHOEAL DISEASES CONTROL PROGRAM

WHO and UNICEF guidelines (4, 5):

- ORT (increased fluid intake) plus continued feeding
- Proportion of all diarrhoeal cases in children less than 5years receiving increased amounts of fluid and continued and more feeding than normal.
- Access to ORS: Proportion of population of under five children with a regular supply of ORS available in their community.

- Caretaker knowledge of the three rules of home care management and proportion of mothers or other caretakers who know 3 rules of home case management.

They are

- 1) To give increased amount of fluid.
 - 2) To continue feeding.
 - 3) To select treatment outside the home for a child with diarrhoea when appropriate.
- Cases correctly managed at health facilities and proportion of diarrhoea cases among children less than 5 years seen at health facilities who receive standard case management.
 - Standard case management includes correct assessment and advice to the caretakers for children who are dehydrated (plan A) and correct assessment and treatment for children who are dehydrated (plan B &C) (11, 12)

- **Health facility case management capability for diarrhoea**

The proportion of facilities at with at least one HW trained in standard case management (where training includes practice) and with a regular supply of ORS

STANDARD CASE MANAGEMENT

DIARRHOEA ASSESSMENT CHART:

TAB –A

| | | | |
|--------------------------------|-----------------------------------|---------------------------------|------------------------------------------------|
| 1. Ask about diarrhoea- | Less than 4 liquid stools per day | 4-10 liquid stools /day Some | More than 10 liquid stools /day |
| Vomiting | None or small amount | Greater than normal | Very frequent |
| Thirst | Normal | | Unable to drink |
| Urine | Normal | A small amount, dark | No urine for 6 hrs |
| 2. Look at condition | Well, alert | Unwell, sleepy or irritable | Very sleepy, unconscious floppy or having fits |
| Tears | Absent | Absent | Absent |
| Eyes | Normal | Sunken | Very dry and sunken |
| Mouth and tongue | Wet | Dry | Very dry |
| Breathing | Normal | Faster than normal | Very fast and deep |
| 3. Feel skin | A pinch goes back quickly | A pinch goes back slowly | A pinch goes back very slowly |
| Pulse | Normal | Faster than normal | Very fast, weak or you can't feel it. |
| Fontanelle (in infants) | Normal | Sunken | Very sunken |

Contd..

| | | | |
|---------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 4. Take temperature | | | |
| 5. Weight possible | No weight loss during diarrhoea | Loss of 25-100 gms for each kg of weight | Loss of more than 100 gms for each kg of weight |
| 6. Decide | The patient has no signs of dehydration Use plan A | If the patient has 2 or more of these signs, he has some dehydration Use plan B | If patient has 2 or more of these danger signs, he has severe dehydration. Use plan C |

TREATMENT PLAN - A

To prevent dehydration

Explain to the mother how to treat diarrhoea at home following 3 rules:

1. Give your child more fluids than usual, such as:

- Rice water, fruit juice, water tea, or salt and sugar solution and
- Breast milk, or milk feeds mixed with equal amounts of water.

2. Give your child food:

- As much as the child wants
- 5-7 times a day
- Which is easy to digest
- Which contains potassium

3. Watch for signs of dehydration (you must show the mother how to ask, look and feel for the signs. Then ask her to show you). Bring your child back if:

- You see any signs
- Your child has diarrhoea for another 2 days.

- Tell the mother these rules are important. Explain that she can prevent diarrhoea, if:
 - She gives her child fresh, clean and well-cooked food and clean drinking water
 - She practice good hygiene
 - Show the mother how to prepare and give ORS solution at home, if her child has been on plan B
 - It is national policy to give ORS solution to all children who visit a health centre for diarrhoea treatment
 - The mother can't come back if the diarrhoea gets worse
 - Give the mother enough ORS packets for 2 days
 - After each loose stool, tell her to give:
 - 50-100 ml(1/4 -1/2 cup) of ORS solution for a child less than 2yrs old.
 - 100-200 ml for older children. Adults can take as much as they want.
 - If the child vomits tell her to wait 10 minutes and then continue slowly giving small amounts.

Note: children being given ORS solution should not also receive salt and sugar solution.

TREATMENT PLAN - B

To treat dehydration with ORS solution

1. Use this table to see how much ORS solution is suitable for 4-6 hrs treatment.

TAB -B

| | | | | | | |
|---------------------------------------------------------------------------------------|-------------------------------------------------|------|------|------|-------|-----------|
| Patient's weight in KG | 3 5 7 9 11 13 15 20 30 40 50 | | | | | |
| Patient's age | 2 4 6 8 10 12 18 mths 2 3 4 6 8 15yrs &above | | | | | |
| Give this much solution for 4-6 hrs in ml in local units of measures | 200- | 400- | 600- | 800- | 1000- | 2000-4000 |
| | 400 | 600 | 800 | 1000 | 2000 | |
| | | | | | | |

- Use the patient's age only when you do not know the weight. The approximate amount of ors required (in ml) can also be calculated by multiplying the patient's weight(in kg) times 75.

- If the child wants more ORS than shown, give more.
- Encourage mother to continue breast feeding.
- For infants under 6 months who are not breast-fed, also give 100-200 ml clean water during the period.

Observe the child carefully and help the mother give ORS solution:

- Show her how much solution to give her child.
- Show her how to give it – a teaspoonful every 1-2 minutes for a child under 2 yrs, frequent sips from a cup for an older child.
- Check from time to time to see if there are problems.
- If the child vomits, wait 10 minutes and then continue giving ORS, but more slowly, for example, a spoonful every 2-3 minutes.
- If the child's eyelids become puffy, stop ORS and give plain water or breast milk. Give ORS according to plan A when the puffiness is gone.

After 4 hrs, reassess the child using the assessment chart. Then select plan A, B or C to continue treatment:

- If there are no signs of dehydration, shift to plan A. When dehydration has been corrected, the child usually passes urine and may also be tired and fall asleep.
- If signs indicating some dehydration are still present, repeat plan B. But start to offer food, milk and juice as described in plan A.
- If signs indicating severe dehydration have appeared, shift to plan C.

If the mother must leave before completing treatment plan B:

- Show how much ORS to give to finish the 4 hrs treatment at home.
- Give her enough ORS packets to ensure rehydration, and for 2 more days as shown in plan A.
- Show her how to prepare ORS solution.
- Explain to her the three rules in plan A, for treating her child at home.
 - To give ORS or other fluids until diarrhoea stops
 - To feed the child.
 - To bring the child back to the health worker, if necessary.

TREATMENT PLAN C

To treat severe dehydration quickly

Follow the arrows. If the answer to the question is 'yes,' go across, if it is 'no,' go down.

Start here

YES

CAN
↓
drink, give

Yes No - Start IV fluids immediately. If the patient can
↓
ORS by mouth while the drip is set up.

The study was conducted in Nov – Dec 05.

Background data:

Prevalence of ADD in Zone -1(study area: Tondiarpet)

The diarrhoeal episodes in each month that was reported in children of study area in 2005 were as follows:

TAB –C

| Month | Males | Females |
|--------------|--------------|----------------|
| Jan & Feb 05 | 7 | 4 |
| March 05 | 4 | 2 |
| April 05 | 10 | 4 |
| May 05 | 4 | 3 |
| June 05 | 11 | 12 |
| July 05 | 17 | 11 |
| Aug 05 | 17 | 12 |
| Sep 05 | 4 | 11 |
| Oct 05 | 4 | 8 |
| Nov 05 | 64 | 49 |
| Dec 05 | 14 | 15 |
| Total | 170 | 141 |

(Source : AHO office zone 1)

An estimated death in the year is 700,000. It accounts for a major share of pediatric admissions.

Diarrhoea in under five children forms important cause of under five deaths in developing countries (14). Rotavirus forms a major cause for diarrhoeal diseases in children less than 2 years of age

The WHO bulletin 2003 (16) states that the burden of under five diarrhoea is at an average 3.2 episodes per child year. It also mentions that when focused in poorest localities, the total morbidity of the disease burden is greater than previously available data.

Lesser use of ORS was observed in 61% of children with diarrhoea taking treatment in hospital in the previous 2weeks (21).

Effective implementation of ORT by HW at village level had a very good impact in WHO diarrhoeal diseases control program in India (24).

The prevalence of diarrhoea in under 5 children in an international study in Turkey was found to be 22.9 % (18).

The diarrhoeal diseases form 3rd most common cause of deaths among infants (0-1yr) and 1-4yrs age group (19).

The under 5 mortality due to diarrhoea in urban slum children conducted in Lucknow was 18.3% in a similar study conducted by Aswathi and Pande V K (26)

MATERIALS AND METHODOLOGY

STUDY DESIGN

This study is a cross sectional type of study conducted using pre-tested structured questionnaire.

Study area is 5 slum pockets selected randomly from zone 1 of corporation of Chennai.

STUDY POPULATION

The total population of study area is 4920 and the families with under five children were 296. The study population were mothers and their under five children living in the study area.

SAMPLING TECHNIQUE

The 5urban slum pockets were selected randomly from the total 16slum pockets of zone 1 corporation of Chennai by using lottery method. All the mothers with under five children are selected for the study. The total under five mothers were about 296 and only 255 were able to be interviewed.

The total under 5 children in the study group is 468. Out of 468 children of 296 mothers only 402 of 255 mothers were taken for the study.

The study was conducted through house to house visit by the principal investigator and if door is locked, revisiting of the house is done twice with a gap of one week and if locked excluded from study. Other reasons for exclusion are given in reasons for exclusion below.

The total number of mothers to be surveyed is 296, out of which 14 were excluded due to various reasons like deaf and dumb, mother tongue other than Tamil and mothers not knowing English. 7 mothers were not willing to be interviewed and 30 houses were locked.

The locked houses were revisited after 1week and available 10 mothers were interviewed.

The remaining 20 houses were excluded from the study.

Tab D: Reasons for exclusion

| <i>Reasons for exclusion from study</i> | <i>Number of mothers</i> |
|-----------------------------------------|--------------------------|
| 1. Deaf And Dumb | 2 |
| 2. Mother tongue other than Tamil | 12 |
| 3. Not willing for interview | 7 |
| 4. Not available for interview. | 20 |

The investigator went to interview the total families (houses) of 282, by house-to-house visit and were able to get data by interview of 255 mothers.

DEFINITIONS:

- 1) Diarrhoea case is defined as the child who had 3 or more episodes of watery stools in a day in the previous 2 weeks period.
- 2) Regular – presence of ORS in stock at the time of evaluation, and reports that sufficient stock has been available all or most of the time in past 3m to meet the needs of population.
- 3) Community: - For evaluation of this indicator, the house hold survey cluster will be considered as the community. For monitoring

communities will be defined as the natural geographic groups recognized within an area. This may be a village, an urban ward or a quarter. If no natural communities exist, a formula based on time and distance may be defined at the national level.

DEVELOPMENT OF QUESTIONNAIRE

Since no readymade questionnaire was available a new questionnaire was made as per guidelines given in basic biostatistics by A.Indrayen and L.Sathyanarayana and after reviewing relevant earlier publications, WHO guidelines in review of potential interventions (9) and GOI (12) report of workshop for epidemiological surveys.

Pretesting of questionnaire was done in 40 samples selected randomly in 4 streets in the respective slum area of Tondiarpet.

The questionnaire developed studied the following elements:

- 1) Age and sex of under five population and occurrence of diarrhoea in last 2weeks period.
- 2) Family details:
 - a) Parents name age and occupation
 - b) Type of family
 - c) Size of family

- 1) Breast feeding and weaning practices of the mothers.
- 2) Knowledge about awareness of diarrhoea in relation to its occurrence and transmission.
- 3) Preventive health practices in relation to diarrhoea.
- 4) Drinking water source.
- 5) Existing sanitary facilities and the needs to be covered.

The model of questionnaire(Tamil and English version) is given in annexure 1 and 2.

The survey was carried out during evening time between 4pm to 6pm, to suit their convenience as most of mothers were daily wagers. Majority of fathers (60%) were fishermen and the mothers usually sell the fish in the market from 10 AM to 4PM.

The age of the child was obtained from either child immunization cards or birth certificate issued by corporation of Chennai.

Immunisation history was obtained from both mothers and by inspection of the immunisation cards.

All children were examined for the presence of BCG scar

CASE DEFINITION

A case of diarrhoea is defined as the child having an episode of 3 or more times watery stools in past 2weeks period from the date of investigation (survey).

Home available fluids include those items locally available fluids prepared at home as per WHO ie. Rice gruel, coconut water, buttermilk, salt and sugar solution etc.

The gap between knowledge and practice regarding control of diarrhoea is brought about by asking each mother about methods to control diarrhoea like hand washing with soap and water after passing stools and before feeding the child and the ingredients for preparation of salt and sugar solution if they responded positively. The study was interrupted for about two weeks in November due to monsoon.

Treatment taken for diarrhoea includes those who had taken any kind of treatment including natural treatment.

Hospitals included in this study are Primary Care Centres ie Corporation of Chennai health posts, private clinics and secondary care

centers included private hospitals with secondary care treatment facilities including communicable diseases hospital Tondiarpet , Chennai-81(which is called by the community of zone 1 (North Chennai) as cholera hospital)

The map and details of study areas (slum pockets) are given in annexure 1

The total number of families in the study area was 296 and the interview was conducted among 255 mothers

The study was conducted during Nov – Dec 05.

ANALYSIS

Statistical analysis was done using SPSS version 14.0 and the prevalence of diarrhoea in under five children and the details about their mothers' knowledge and attitude regarding diarrhoea prevention was obtained.

OBSERVATIONS

AGE SEX DISTRIBUTION OF STUDY POPULATION.

TAB -1

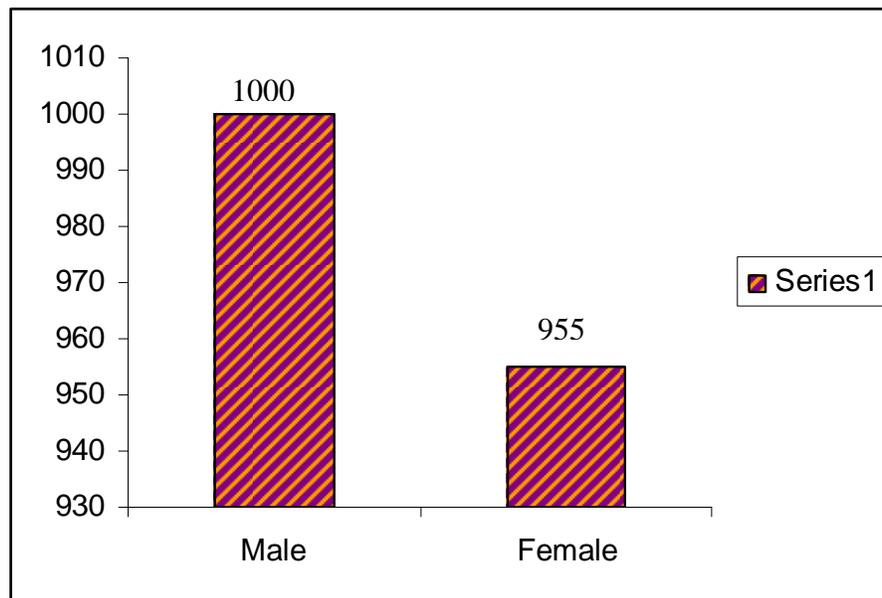
| <i>AGE IN MONTHS</i> | <i>Male(207)</i> | | <i>Female(195)</i> | |
|-----------------------------|-------------------------|-------|---------------------------|-------|
| 0-12 | 39 | 18.8% | 36 | 18.5% |
| 13-24 | 64 | 30.9% | 44 | 22.6% |
| 25-36 | 55 | 26.6% | 35 | 17.9% |
| 37-48 | 21 | 10.1% | 50 | 25.6% |
| 49-60 | 28 | 13.5% | 30 | 15.4% |

The sex distribution is that there are 207 male children i.e 51% and 195 female children were 49% that gives the sex ratio of 955females /1000 males and it is slightly higher than the national average of 933/1000

The study population of children under 2years of age that is vulnerable to Rota viral diarrhoea is about 45.4% of the total under five population

2. SEX RATIO

FIG 1



The number of females per thousand males in the study area is 955.

It is higher than that of the national average of 933/1000

3 . FAMILY

It was found that most of the families surveyed (92.3%) were nuclear families and the status of family environment were poor i.e. 70% of them surveyed has no separate kitchen and single roomed.5.7% families were joint families and 2% were extended. All the thatched houses have no sewage water drainage facility.

The mean family size was 3.4 and about 24% of the houses had mud floors and rest was with Reinforced Cement Concrete (RCC) and tiles.

About 84% of houses have no sanitary latrines and they are using either public toilets constructed by Corporation of Chennai or open air defecation.

40% of mothers said their family members use the near by play ground for open air defecation.

Among 16% of houses having sanitary toilets, only 6% has latrine with adequate water supply.

Sewage and sullage both combined are drained into public drainage system in only 86% of which 76% into open sewage canal and 10% into underground drainage system (fig 11). No drainage facilities are present for both sullage and sewage water for 14% of families.

FIG. 2

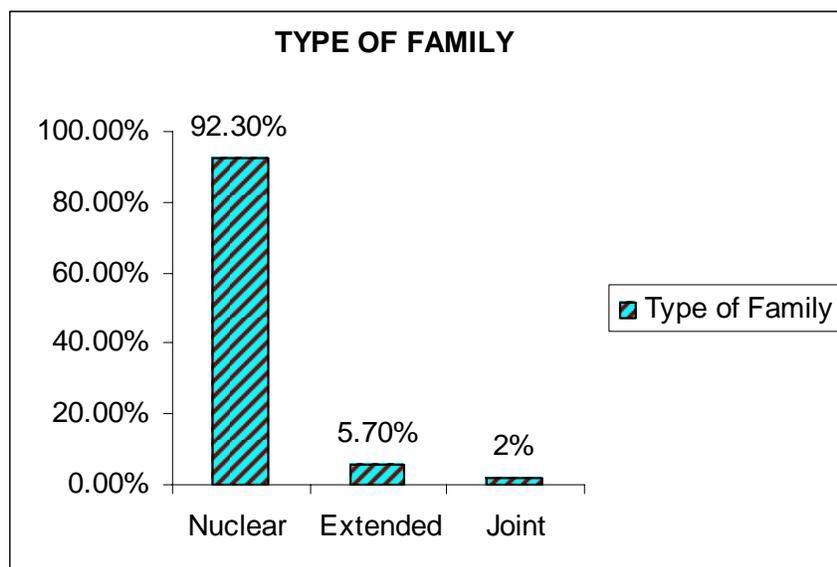
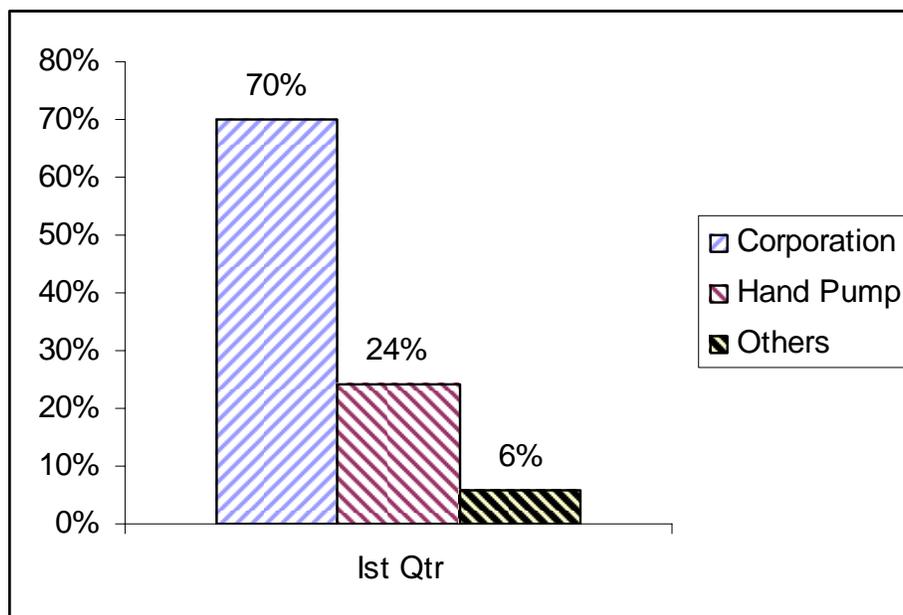


FIG. 3. SOURCE OF DRINKING WATER IN PERCENTAGE

others include packaged drinking water and from private water suppliers.

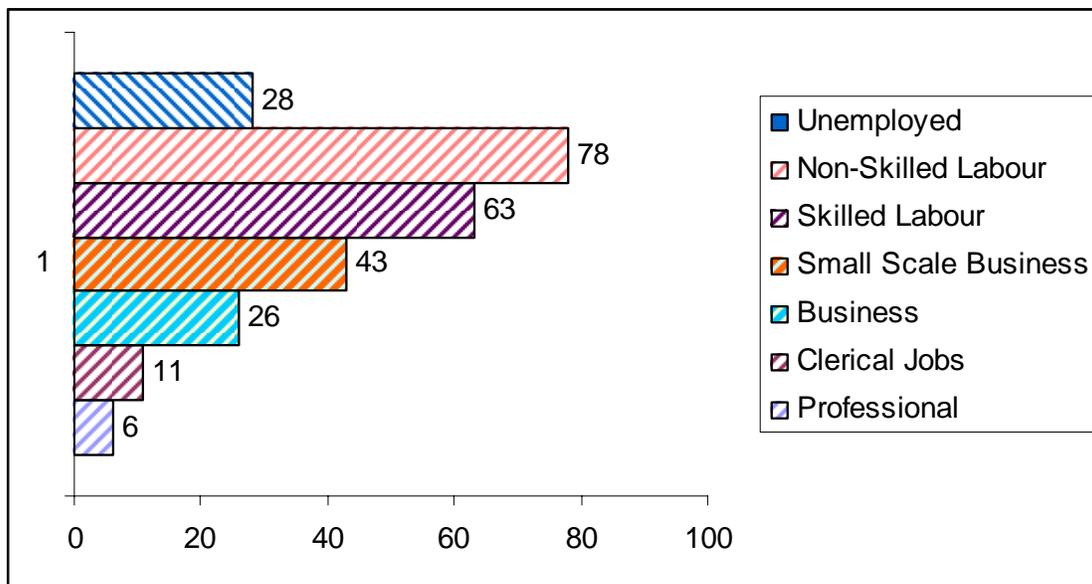
4. DRINKING WATER SOURCE

70% of households were supplied with Metro water supplied by Corporation of Chennai and 24% of households get their water from hand pump. 6% of households were consuming water supplied by private suppliers and packaged water.

Among the 70% of water supplied by Corporation 75% were through corporation Lorries to the respective slums in the corporation council wards. Only 25% of the houses were supplied with regular water supply through taps.

6. OCCUPATION OF FATHERS

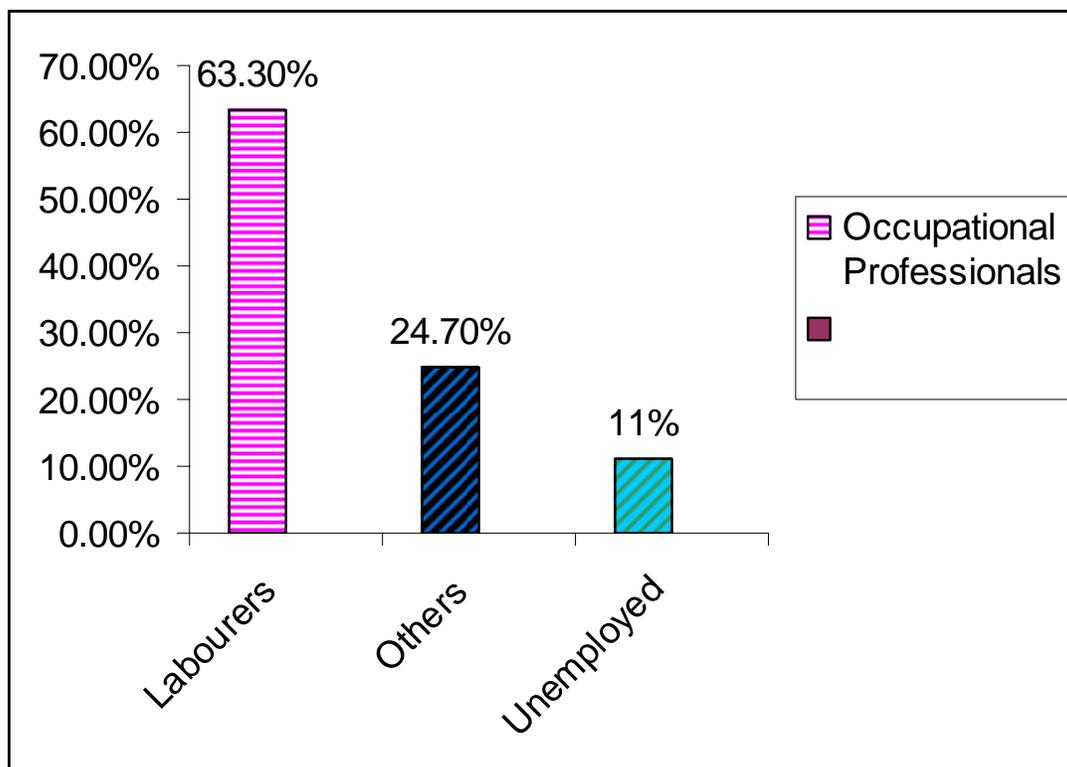
Fig 4. DISTRIBUTION OF FATHERS' OCCUPATION



The occupation of fathers of under five children were mostly daily labourers i.e 63.3 % (working as part or full time laborers in fishing). It was found that 28 out of total studied under five childrens' fathers were unemployed. The unemployment in the study households is 11%. Skilled labourers (63) constitute 24.7% of study households. Small Scale Business includes Tea Shops and Tricycle Vendors.

69 are businessmen which is 28.2%. 6 are professionals and those holding clerical jobs which is 5.4% of the total.

FIG 4A – DISTRIBUTION OF FATHERS' OCCUPATION IN PERCENTAGE



INCOME OF PARENTS

FIG. – 4-B

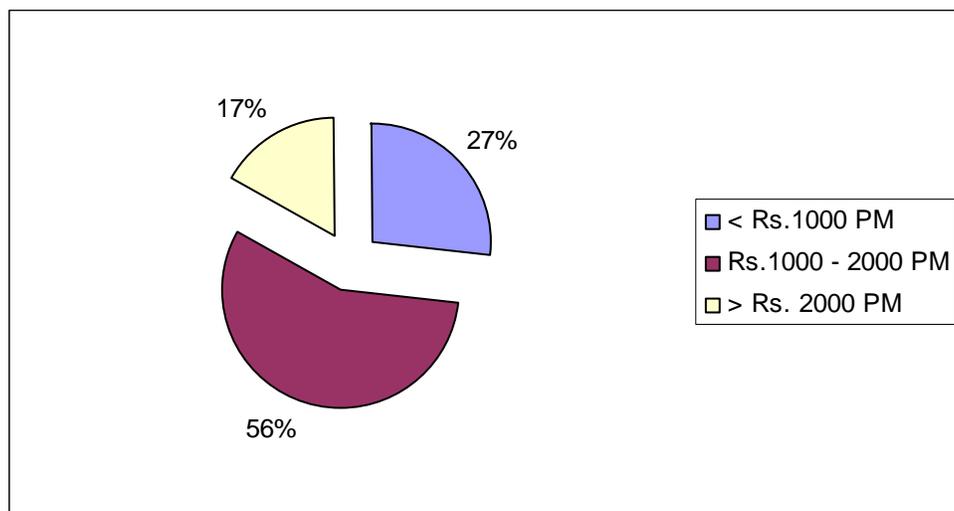
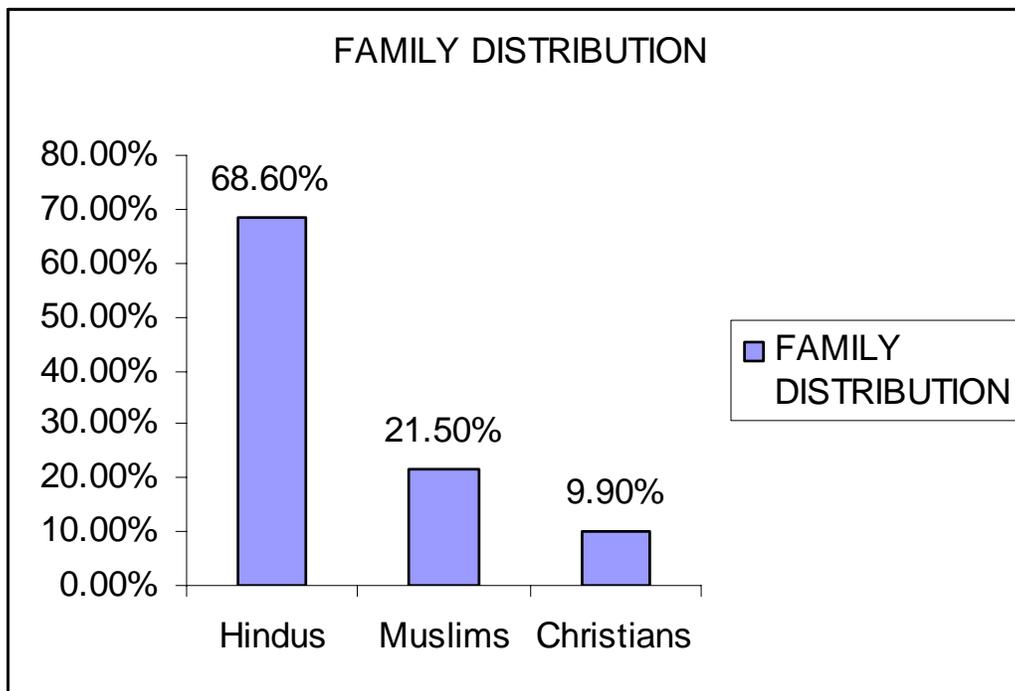


FIG. - 5

Out of 255 families surveyed 173 were Hindus which constituted 68.6% of the total. 55 were Muslims which was about 21.5% of the total and 27 were Christians which constituted 9.9% of the total families.

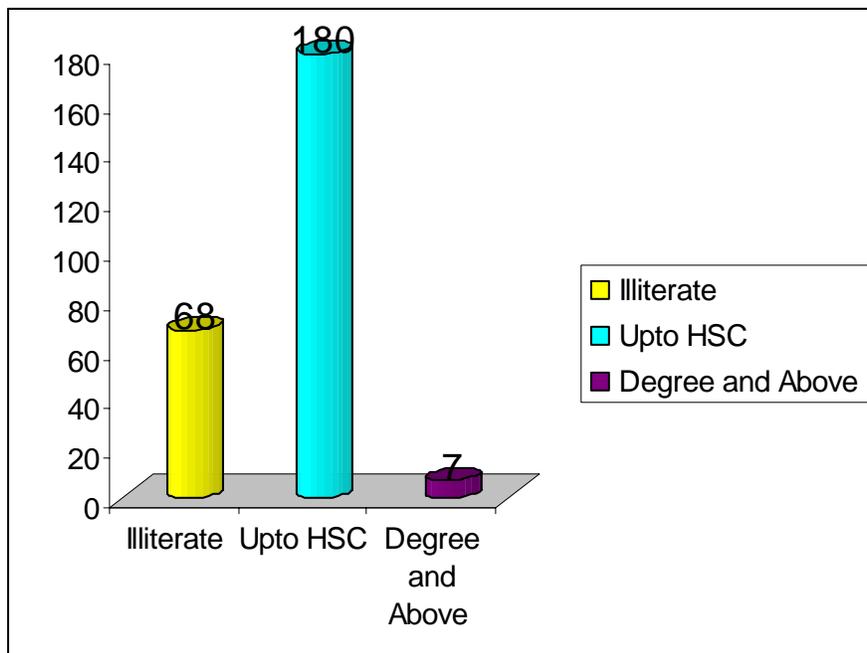
7. RELIGION

Tab 2: RELIGION OF STUDY POPULATION VS DIARRHOEAL EPISODE

| RELIGION | FAMILY DISTRIBUTION | CHILDREN AFFECT ED WITH DIARRHOEA |
|-----------------|----------------------------|------------------------------------------|
| HINDUS | 173 | 41 |
| MUSLIMS | 55 | 15 |
| CHRISTIANS | 27 | 7 |
| TOTAL | 255 | 63 |

$\chi^2_{(d.f 2)}$ 5.99 N.S (p>0.05)

It was found that Religion as a variable is in no way related to the prevalence of diarrhoeal episodes as seen from the above table and its association with diarrhoeal episodes in this study is insignificant (p>0.05)

MOTHERS' EDUCATIONAL STATUS:**FIG. - 6**

26.7% of Mothers were illiterates

70.6% studied upto HSC

and 2.7% were graduates

Tab2. RELATIONSHIP BETWEEN MOTHERS EDUCATIONAL STATUS AND DIARRHOEA IN THEIR UNDER FIVE CHILDREN

| EDUCATIONAL STATUS | STUDY POPULATION IN EACH GROUP | DIARRHOEA AFFECTED CHILDREN IN EACH GROUP |
|---------------------------|---------------------------------------|--------------------------------------------------|
| ILLITERATES | 68 | 28 |
| UPPER PRIMRAY AND ABOVE | 187 | 35 |

$\chi^2_{(d.f 1)}$ **25.5** **(P < 0.05)**

RELATIONSHIP BETWEEN MOTHERS EDUCATIONAL STATUS AND DIARRHOEA IN THEIR UNDER FIVE CHILDREN:

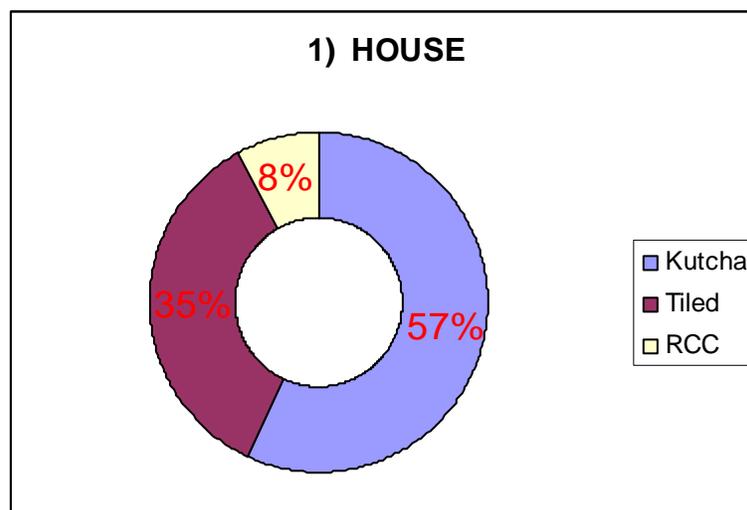
It was found that there is a relation between mothers literacy and prevalence of diarrhoea. It is higher in illiterate and primary schooling mothers group and decreases with higher educational status of mothers. It is statistically significant ($p < 0.05$)

HOUSING AND ENVIRONMENT

The types of houses in the study area are mostly of Kutcha type i.e 57% and about 35% were tiled. Only 8% were pucca houses with RCC roofs.

A) TYPE OF HOUSE-

FIG. - 7

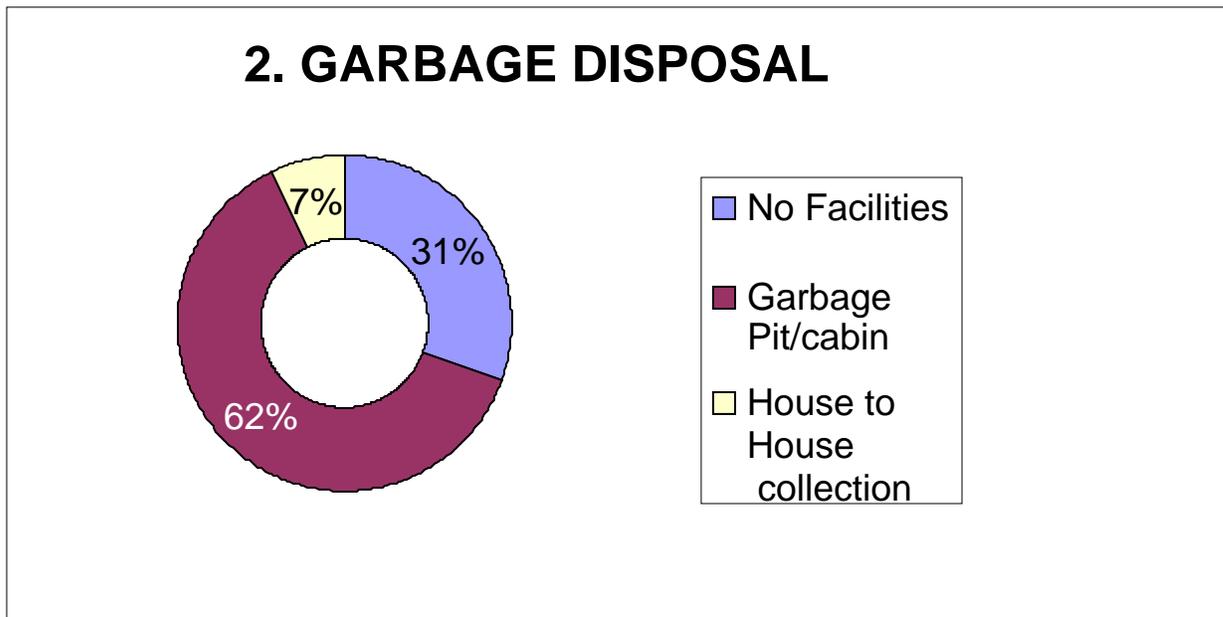


The floor and walls of kutchha houses were laid with mud and tiled houses were with cement and gravel . In all kutchha houses the kitchen and dwelling room are combined and in tiled and RCC houses it were separate .

ENVIRONMENT

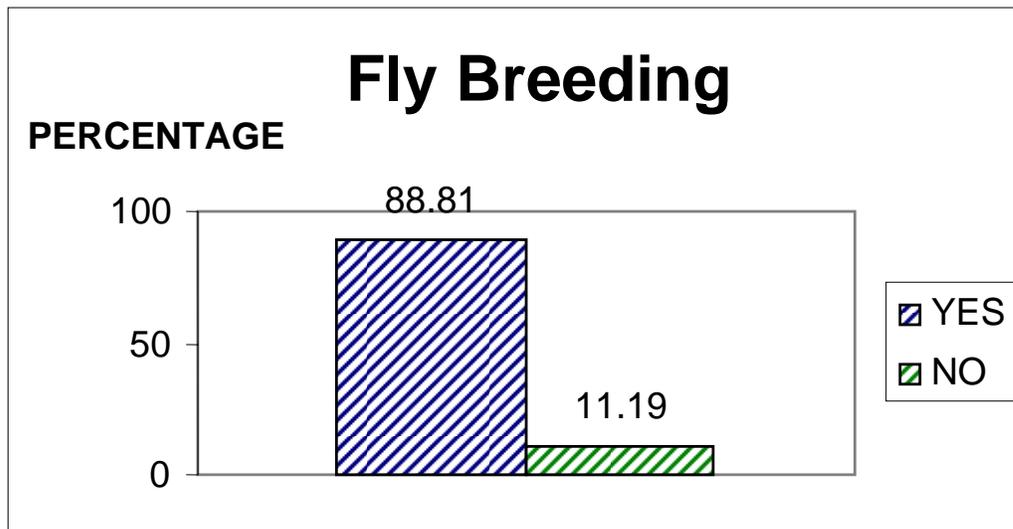
The environment around the Kutcha houses was poor with inadequate drainage facilities and the housing floor was in surface with street. There were no storm water sewage outlets.

FIG. - 8



Refuse disposal by most of households ie 62% were into garbage pits or cabin and in about 7% households the refuse is collected by house to visit by sanitary workers of corporation of Chennai.

FIG. - 9

**FLY BREEDING-**

About 88.81% of mothers complained about fly nuisance in their houses and they accepted it was due to improper refuse disposal.

RESULTS

Tab3. PREVALENCE OF DIARRHOEA IN THE UNDER 5 CHILDREN

| DIARRHOEAL EPISODE | Male(207) | | Female(195) | | TOTAL % |
|--------------------|-----------|-------|-------------|-------|---------|
| | | | | | |
| PRESENT | 30 | 14.5% | 33 | 15.9% | 15.7 |
| NO DIARRHOEA | 177 | 85.5% | 162 | 78.3% | 84.3 |

78.4% of mothers of these children were aware about the key preventive health care practices during diarrhoeal episodes. 71.3 % of mothers were illiterates. The key unmet needs identified were

- Provision of proper waste water disposal
- Garbage collection and disposal
- Availability of safe water for drinking
- Supply of ORS packets by Health care workers

56.2% of mothers were aware about knowledge on transmission of diarrhoea during diarrhoeal episodes. 67.4% of mothers knew about ORS solution and its use in diarrhoea management and 54.2% knew about the correct usage of home available fluids during diarrhoeal episodes. Only 37% of mothers knew all the three mentioned above.

The knowledge of mothers about prevention of diarrhoea through proper hand washing practices after defecation, before feeding of children and before taking food, keeping home and surroundings clean and free from fly menace is high i.e. about 82% of mothers were able to list both the interventions.

The study has also brought out the huge gap that exists between the knowledge and practice among those 82% of mothers out of which only 20% were actually practicing personal hygiene such as hand washing and keeping home and surroundings clean and free from flies.

More than 90% of the 18% of mothers with nil or poor knowledge on prevention of diarrhoea were illiterates and this was the main reason for their myths and false beliefs on diarrhoea.

8. KNOWLEDGE ABOUT AWARENESS REGARDING CONTROL AND TRANSMISSION OF DIARRHOEA

When asked about knowledge on common causative factors and transmission of diarrhoea in general, 56.2% said that they were aware about its cause and transmission and 43.8% were not aware.

The questions on common causative factors and transmission of diarrhoea include-

- A) Whether you know that houseflies are transmitting agent of diarrhoea
- B) Faeco-oral contamination
- C) Clipping of nails
- D) Eating habits.

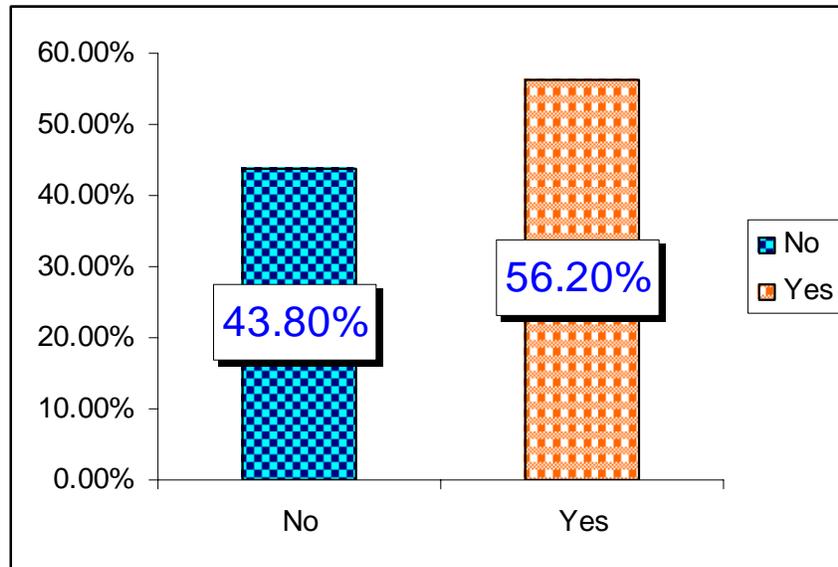
When asked about knowledge on diarrhea in general aspects related to common causative factors and transmission of diarrhoea among under five children, about 56.2% said that they were aware about its causation and transmission and 43.8% were not aware.

When asked about knowledge about home available fluids, ORS and both ORS and home available fluids the responses were

1. H.A.F aware about its types and usage = 54.2%
2. ORS Aware about its usage = 67.4%
3. Aware about both ORS and HAF use 63%

8. KNOWLEDGE ON CONTROL AND TRANSMISSION OF DIARRHOEA

FIG. - 10



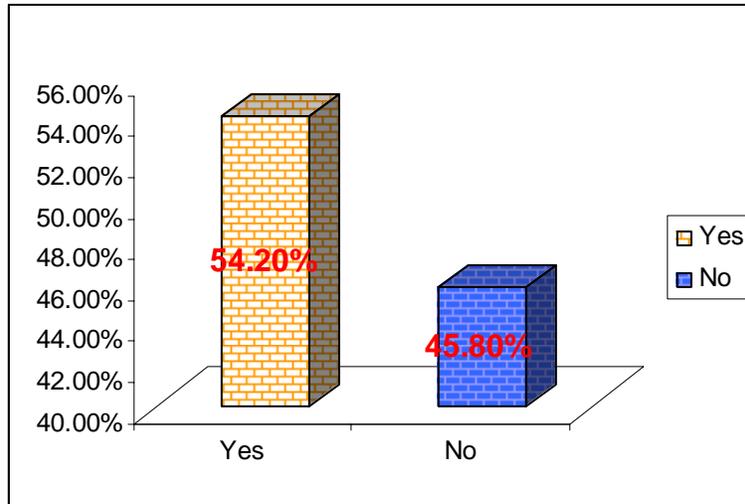
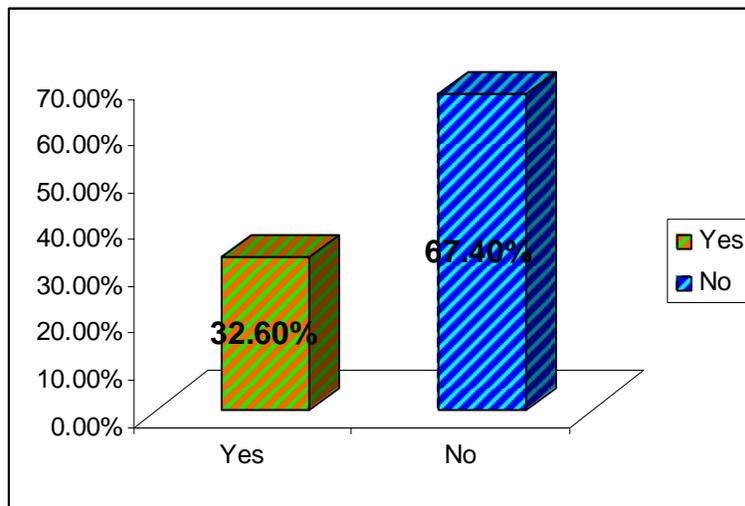
When asked about awareness about control of diarrhoea in children which includes questions regarding hand washing practices, drinking boiled and cooled water, continued breast feeding, 56.2% of mothers were able to list the methods to be adopted in control and transmission of diarrhea.

43.8% did not mention anything on control and transmission of diarrhea.

When asked about the knowledge regarding any of available home fluids in the treatment of diarrhea, 54.2% of mothers answered yes to the question of giving home available fluids during diarrhea.

45.2% of mothers said they don't know about home available fluids and the importance of giving the same in the treatment of diarrhoea in children.

When asked about the reason for not giving home available fluids, they brought about the various misconceptions on home available fluids such as giving home available fluids (HAF) would increase the diarrhoeal episode and fear of increased vomiting in children.

8 a. KNOWLEDGE ABOUT H.A.F.**FIG. – 11****8 b. KNOWLEDGE ABOUT ORS****FIG. - 12**

When asked about knowledge regarding ORS preparation and feeding practice of children, 67.4% of mothers said that they knew about ORS being issued by the hospitals for the treatment of diarrhea.

- 32.6% were not aware about ORS.

Of 67.4% of mothers only 12% has said about correct method of preparing ORS and feeding the solution by spoon.

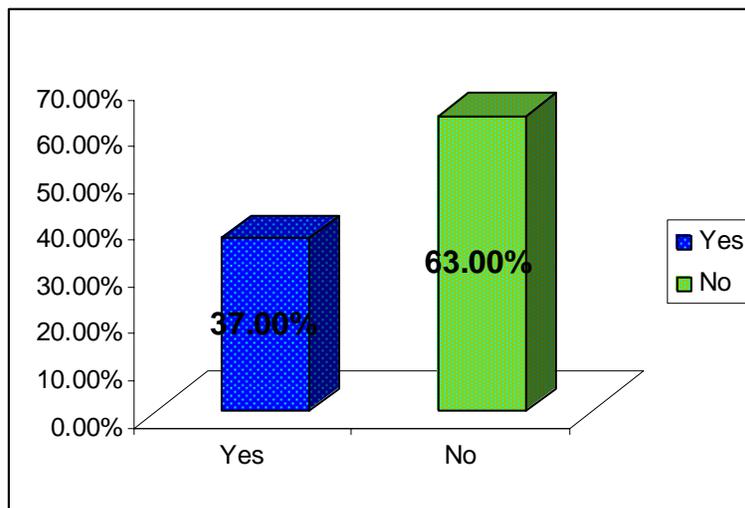
When asked to state all the home available fluids they know,

About 70% of mothers mentioned rice gruel (kanchi)

20% of mothers mentioned the use of buttermilk as home available fluid, while only 10% of mothers said they will give tender coconut water for the treatment of diarrhoea.

8c. KNOWLEDGE ABOUT ORS AND HAF

FIG. - 13



When asked about knowledge about either HAF or ORS, 63% of mothers knew either about oral rehydration salt solution or HAF for the treatment of children with diarrhoea.

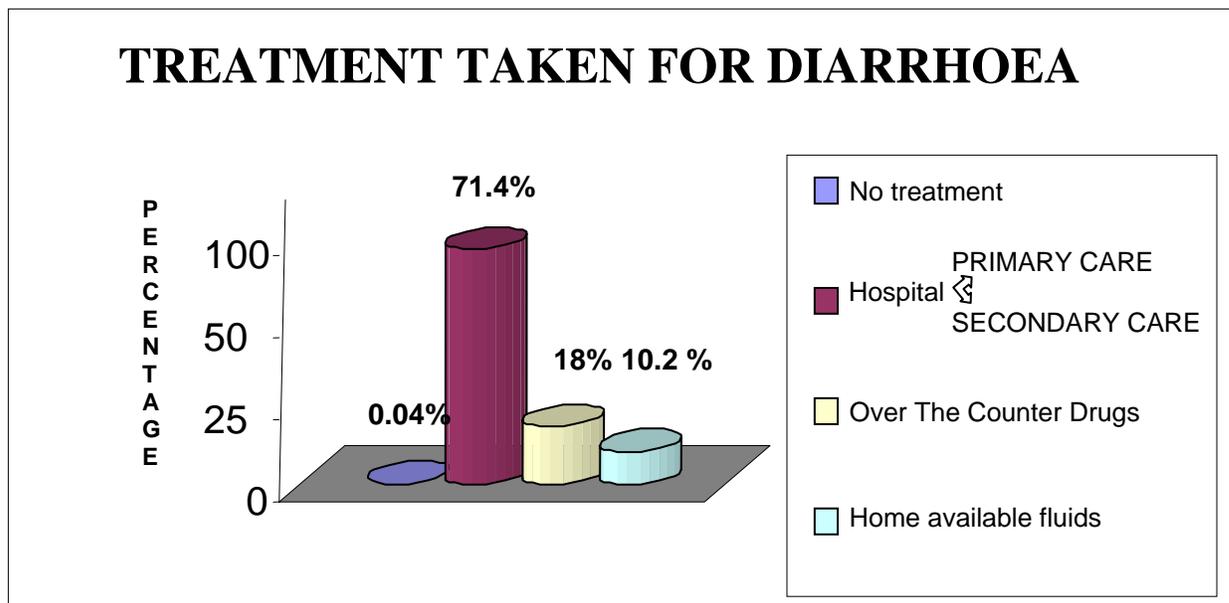
9. TREATMENT TAKEN FOR DIARRHOEA

All the mothers were asked about their knowledge regarding treatment taken during Diarrhoeal episodes of their Children. 71.4% of them said that they would take their children to Hospital (Public & Private) for treatment. Only 10.2% of them said that they would start with home available fluids first. 18% said that they would obtain medicine from Local medical shop and or seek native treatment.

Of 71.4% of people who said they will seek treatment at hospital only 15.6% of them told that they will their children to Government Primary Care Centres (Corporation of Chennai Health Posts).

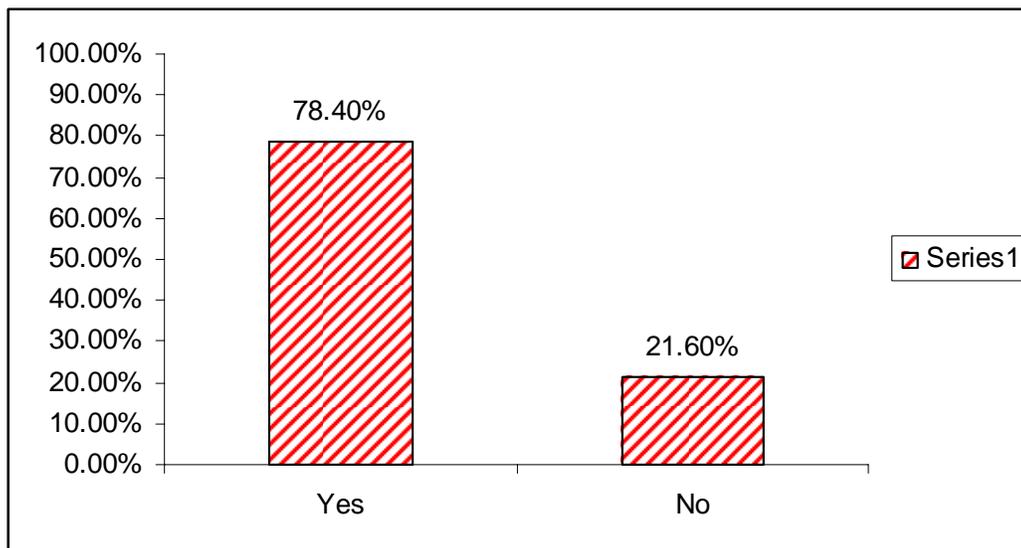
50% said that they will get their children treated at nearby private clinics and 4.8% said that they would get their children admitted their at private hospitals for the in patient care during diarrhoea.

FIG. - 14



71.4% of mothers said that they have taken treatment at primary and secondary care centres in both government and private hospitals. 50% mothers said that they would prefer to treat their children for diarrhoea with private practitioners at first then seek inpatient care if necessary. 18% of mothers said that they will get medicine at local medical shops at first and 0.04% of mothers told that they won't give any treatment for diarrhoea and will observe the child for improvement for 1 or 2 days. 10.2% mothers said that they would give native treatment in the form of leaves (pachilai in Tamil) and ginger juice.

16. PREVENTIVE HEALTH PRACTICES AWARENESS REGARDING DIARRHOEA



The preventive health practices actually followed by mothers like hand washing after using toilet and before feeding the children were asked and about 78.4% of mothers told that they follow either one the following health practices-

- Fly control of measures
- Hand washing with soap and water
- Drinking boiled and cooled water and fresh and hot foodstuffs

21.6% mothers were not practicing any of above methods.

TABLE 4: GAP BETWEEN KNOWLEDGE AND PRACTICE REGARDING DIARRHOEA

| KNOWLEDGE | PRACTICE |
|-------------------------------------------------------------------------------------|---------------------------------------------------|
| IMPORTANCE OF ILL EFFECTS OF ALLOWING REFUSE AND GARBAGE DUMPED AROUND HOUSE IS 78% | HAVING REFUSE AND GARBAGE AROUND HOUSE IS 60% |
| ON DRINKING BOILED AND COOLED WATER AND HAND WASHING AFTER DEFAECATION IS 82% | PRACTICE IS 20% |
| KNOWLEDGE ON IMPORTANCE OF GIVING ORS IS 67.4% | PRACTICE OF GIVING ORS 30% |
| KNOWLEDGE ON HOME TREATMENT 68% | PRACTICE OF HOME AVAILABLE FLUIDS TREATMENT 10.2% |

TABLE 5.UNMET NEED OF UNDERFIVE MOTHERS-

| UNMET NEED | PERCENTAGE OF UNDER FIVE MOTHERS WHO REQUIRE NEED REGARDING DIARRHOEA |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1.Regarding health care delivery system: a.Community level investigation during diarrhoeal outbreak | 85% |
| b.House to house supply of ORS packets during diarrhoeal outbreak and monsoon season | 72% |
| 2. Regarding proper maintenance of sewage drains and house to house collection of refuse. | 90% |
| 3.chlorinated drinking water supply to prevent future diarrhoeal outbreak | 94% |

This study brought about the unmet needs regarding

- a) Health care delivery – about 85% mothers of children told they required community level investigation and supply of ORS Packets
- b) Sanitary services – 72% need proper maintenance of sewage drainage facilities and house to house collection of garbage
- c) Water supply - about 94% of mothers interviewed said that daily-chlorinated water supply is must to prevent diarrhoea in future.
- d) About 20% of mothers said that they require properly laid road facilities to prevent contamination of water from hand pumps.
- e) 10% of mothers said that they require more staff and facilities for IVF infusion and in patient care at nearby corporation health centres.

DISCUSSION

The prevalence of diarrhoea in under five children in this study was found to be 15.7% and is comparable to a similar study conducted in the general population in India i.e. 8.7% to 33% (25). As our study population comprised mainly of fishermen community, diarrhoea prevalence was found to be high in this study as compared to similar study in India i.e. 4.7% (30). In a similar international study taken up in Turkey among under five children, the prevalence was found to be 22.9%. The high prevalence is observed due to the poor sanitary condition prevailing in the slums, a major risk factor. The prevalence of diarrhea in under five children of illiterate mothers is comparable to a similar study done in Mumbai (20). In a study with similar conditions done in rural areas of India, the morbidity due to diarrhea was high in illiterate mothers i.e. 93 % (27). This was statistically significant in this study also (71.3%), i.e. there was an association between diarrhoeal episodes and illiteracy of under five mothers. When the association between family environment and diarrhoeal episodes was compared in a similar study in a developing country viz: Turkey (19) it was found to be statistically significant as compared to, (median 1.48+-0.12). The association between key health care practices and family environment in prevention of diarrhoeal episodes is also statistically significant as compared to the Turkish study i.e. median

(2.00+-0.33) (21).The unmet needs of house to house distribution of ORS packets during monsoon season observed in this study was recommended in a similar study done by WHO-Diarrhoeal diseases control program (CDD) (24) and was found successful in implementation in 1991. In this study, prevalence of diarrhoea among under fives children is seen to be high 15.7% i.e. twice more than the national average of 6.7% (29) due to the seasonality of the study period. This study coincided with the monsoon period in Tamilnadu, during which diarrhoeal incidence is high compared to a similar study done at Mirzapur by Dr.Mishra.CP. et al (26). This study also brought out the health seeking behaviour of mothers of under five children i.e. most of the mothers(50%) sought treatment for their children from private practitioners similar to the previous study at Mirzapur(61%)(26). This study also suggests that timely intervention of supplying ORS packets during monsoon period by health workers would help in the management of diarrhoeal episodes which is comparable to a similar study by Zodpey SP et al 1998 (28). This study clearly brought out two important unmet needs i.e. Health care delivery and sanitation, which was not taken into account in similar previous studies in India. This study brought out the knowledge and practices of mothers of under 5 children regarding preventive health care practices in diarrhoea, breast feeding, complementary feeding, immunization and case management which was not studied in detail in similar studies.

SUMMARY

A descriptive cross sectional study conducted among a sample of 402 under fives children of zone 1 of Corporation of Chennai, reveals that 15.7% of children suffered diarrhoeal episodes over a recall period of 2 weeks. Of them 75 were infants (< 1 year of age). 207 children in the study group were males and 195 were females.

The prevalence of diarrhea in under five children in this study was 15.7% and it was found to be a significant association between diarrhoeal episodes and maternal illiteracy.

The study has also brought out huge gap that exists between the knowledge and practice among the 82% of mothers out of whom only 20% were actually practicing personal hygiene such as hand washing and keeping home and surroundings clean and free from flies.

More than 90% among the 18% of mothers with nil or poor knowledge on prevention of diarrhoea were illiterates and this was the main reason for their myths and beliefs about diarrhoea.

This study also brought out the unmet needs regarding sanitation, proper disposal of waste water and daily supply of safe potable drinking water and in case of health care delivery, supplies of house to house ORS packets.

But bridging this gap appears to be feasible, through sustained and effective IEC campaign through mass media like print, television, FM radio and folklore art. The poor sanitary practices were due to their poor socioeconomic status and lack of adequate water supply and public sanitary facilities.

RECOMMENDATIONS

- 1) The unmet needs identified in this study on issues of sanitation and health care delivery requires to be addressed on a priority basis.
- 2) The under five mothers knowledge can be improved by IEC activities through mass media stressing importance of hand washing with soap after defecation and before feeding and personal hygiene in prevention of diarrhoea and importance of breast feeding, ORS and home available fluid usage during diarrhoea.
- 3) As women self help group(SHG) is well functioning in both urban and rural areas consisting of mostly poor socioeconomic group, they can be mobilised in teaching peer group and women having under five children about ORS usage in the form of demonstration. The leader of SHG can be asked to hold monthly meetings with the members on topics on diarrhoea preventive health practices, importance of continuation of breast feeding and increased feeding during diarrhoea and keeping home and surroundings clean.

- 4) To cultivate the habit of good personal hygiene in the young minds, measures can be taken at the school level by incorporating a lesson in class X biology subject on mode of transmission of diarrhoea, its prevention and the importance of breast feeding, ORS contents and mechanism of action and its similarity to home available fluids.
- 5) Imparting the correct knowledge by IEC methods targeting under five mothers with under five children will lead to a better understanding on prevention of diarrhoea which will lead to correct attitude, and subsequent motivation at suitable time will lead to practice.
- 6) This will help in the protection and prevention from the attack of diarrhoea among under five children at least during rainy seasons as they are more prone for faeco-oral contamination.
- 7) The overall objective will be to reduce the burden of diarrhoeal diseases in the community resulting in decrease in morbidity and mortality due to diarrhea in under five children.

LIMITATIONS

1. The uncovered under five population in the area is high i.e. 90% (in zone 1) which is statistically significant . Hence it is not possible to extrapolate this study into large scale of population.

2. Qualitative study could not be done due to limited resources.

Regarding practices, it was not possible to measure the qualitatively, the hand washing practices and proper storage of water and food as this study has taken into account the subjects own statement only. Age of many children was not accurately measurable due to lack of birth certificates and it was calculated from immunization card, timing of DPT, measles immunization or as per own statement of mothers and also cross checked with family registers. While cross checking, entries relating to nearly 50 children entry were different from the family register and hence the exact date of birth was could not be ascertained.

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APPENDIX

DEFINITIONS

1. AGE – Details of age of parents were calculated from number of years at their last birth day.

Age of children was calculated from their immunisation cards, birth certificate and from statement of parents.

2. URBAN SLUM

As per guidance of AHO zone 1 chennai, the slum is a place where most illiterate and low socioeconomic status people live without any basic amenities of living such as public conveyence, garbage disposal and sewage water disposal.

3. DIARRHOEA: Defined as passage of loose, liquid or watery stools of more than three times per day (park's text book of social and preventive medicine 18th edition).

ANNEXURE 1

ABBREVIATIONS-

ADD- Acute Diarrhoeal Diseases

AHO-Assistant Health Officer

GOI- Government of India

HAF- Home Available fluids

HW- Health worker

IEC- Information Education and Counselling

ORS- Oral rehydration salt solution

ORT- Oral rehydration therapy

RCC- Reinforced cement concrete

VHG- Village health guide

WHO- World health organisation

ANNEXURE 2

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kjpg;g[ilaPh;.

,e;j nfs;tpj; bjhFg;ghdJ. vd;Dila KJfiy (M.D.) gog;gpw;fhd Ma;t[f;
fl;Liuapd; xU gFjpahFk;/ ,jpYs;s tpgu';fs; ,ufrpakhf itf;fg;gLk;/ vdnt j';fs;
mDkjp kw;Wk; xj;JiHg;ig ntz;Lfpnwd;/

1) bgw;nwhh; bgah;

2) taJ

3) fy;tp

4) bjhHpy;

5) Kfthp

6) FLk;g cWg;gpdh;fs;

7) le;J tajpw;Fl;gl;l FHe;ijfs;

vz;zpf;if kw;Wk; ghypdk;/

8) FLk;g tif

1) jdpf;Foj;jdk;

2) Tl;Lf;FLk;gk;

3) ,uz;L jiyKiwf;F nky;

9) kjk;

10) FHe;ij tpgu';fs; kw;Wk; tapw;Wg;nghf;F gw;wpa FHe;ijapd; jhapd;
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j';fs; FHe;ijf;F ngjp te;Js;sjh>

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tPl;oy; bfhLf;fg;glk; jz;zPh; czt[gw;wpa tpguk;

bjhpa[k; - bjhpahJ

ehl;L itj;jpa Kiw nkw;bfhz; Oh;fsh>

Mk; - ,y;iy

Mk; vdpy; tpguk;

13) ngjpaht FHe;ijf;F vd;d itj;jpak; bra;jPh;fs;> tpguk;

Rfhjhu njitf;fhd nfs;tpfs;

1) jh';fs; FoePh; v';fpUe;J bgWfpwPh;fs;> FoePh; vt;thW muR
juntz;Lk; vd;gJ gw;wpa j';fs; fUj;J/

m) khefuhl;rp FHha;

M) MH;Jis ePh;

,) kw;wit (FLit ePh;. jdpahhplkpUe;J)

2) Rw;Wg;g[ur; Rfhjhuk;. Fg;ig kw;Wk; fHpt[ePh; njitahd trjp

rhf;fil

1) ghjhs rhf;fil

2) jpwe;j btsp

3) trjp ,y;iy

M) Fg;ig

1) tPl;Lf;F tPL bgWjy;

2) bghJ Fg;ig bjhl;o

3) trjp ,y;iy

3) < kw;Wk; ngjp cz;lhf;f Toa Rfhjhu nfLfs; gw;wpa tpguk;

4) ngjp jLf;f muR Rfhjhuj; Jiw K:yk; nkw;bfhs;s
ntz;oa Kiwfs;/

1) jpdKk; Fnshhpd; kUe;J nghl;l jz;zPh;
Mk; - ,y;iy

2) jpdKk; tPl;Lf;F tPL Fg;ig mfw;Wjy;
Mk; - ,y;iy

3) ghjhs rhf;fil jpl;lk;
Mk; - ,y;iy

4) ngjp mjpfkhf c';fs; bjU gFjpapy; Vw;glhky;

1) tPl;Lf;F tPL X/Mh;/v!; kUe;J tH';Fjy;

Mk; - ,y;iy

ANNEXURE 3

QUESTIONNAIRE

Madam,

This study questionnaire is part of my dissertation work in my MD post graduate course and it is confidential. So I request your co-operation and consent in filling this.

Thanking you,

1. Name of the parents – a.Father -

b.Mother –

2. Address -

3. Age of parents - a. Father -

b.Mother –

More than 3times/less than 3 times

3. Was there any associated fever/vomiting?

Yes/no, if yes details-

4. Did you have your child treated?

Yes/no if yes details-

5. Date of last diarrhoeal episode –

For children less than 1 year (6, 7)

6. Did you give breast feed during diarrhoea? Yes/no, if no give reasons-

7. Did you know about weaning and weaning foods? Yes/no, if yes give details –

8. Did you immunise your child till date? Yes/no

9. Did you know about O.R.S?

Yes/no, if yes give details-

10. Did you know about the health practices during diarrhoea and to prevent it ?

Yes/no, if yes give details –

11. When did you take your child to hospital? If there was delay give reasons?

12. Did you know about home available fluids?

Yes/no, if yes give details-

13. Did you have your child taken any natural treatment?

Yes/no, if yes give details

B.QUESTIONS TO KNOW ABOUT UNMET NEEDS OF MOTHERS IN SANITATION

1. What is the source of drinking water?

a.corporation

B.bore well

c.others (c- includes packaged water, private lorry

supply)

2. Did you use sanitary toilet?

Yes/no, if no give reasons

3. Did you have your street provided with?

A.sewage drainage facility-

A.under ground-

B.open canal –

C. no facilities –

b.garbage

A.common garbage pit/cabin-

B.house to house collection –

C.no proper facility

4. Flies breeding - present /absent

5. Were there sanitary practices undertaken by sanitary workers?

Yes/no, if yes give details-

6. What are all the steps to be taken by health department to prevent diarrhoea in the community?

A. Daily chlorinated water supply

B. disinfection of street using insecticides at

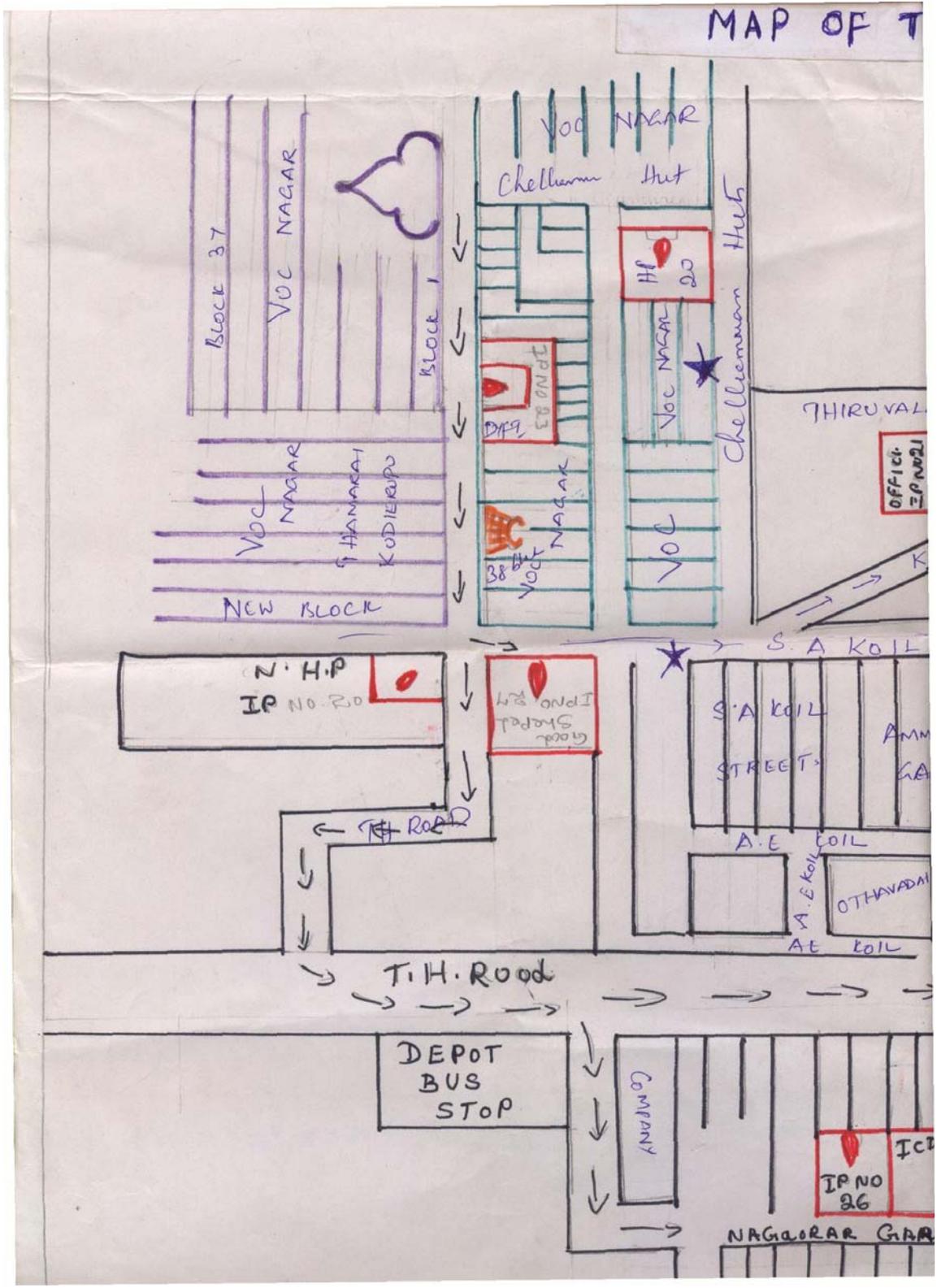
1. Weekly 2. fortnightly 3. monthly

C. proper establishment of sewage facilities

D. House to house supply of O.R.S

Further suggestions –

MAP OF T



THE STUDY AREA



★ STUDY AREA (SLUM POCKETS)