

**“A STUDY TO ASSESS THE EFFECTIVENESS OF  
COMPUTER ASSISTED PLANNED TEACHING ON  
KNOWLEDGE REGARDING SELECTED WATER BORNE  
DISEASES AND ITS PREVENTIVE MEASURES AMONG  
MOTHERS OF UNDER FIVE CHILDREN IN SELECTED  
URBAN AREA AT CHOOLAI IN CHENNAI”**

**M. Sc (NURSING) DEGREE EXAMINATION  
BRANCH –IV COMMUNITY HEALTH NURSING**

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**MADRAS MEDICAL COLLEGE, CHENNAI – 03.**



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CHENNAI – 600 032.**

**In partial fulfillment of requirements for the degree of  
MASTER OF SCIENCE IN NURSING**

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# **CERTIFICATE**

This is to certify that this dissertation titled, **“A study to assess the effectiveness of computer assisted planned teaching on knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban area at Choolai in Chennai”** is a bonafide work done by **Ms.S.Vimala, M.Sc (N) II year** , College of Nursing, Madras Medical College, Chennai-03, submitted to **The Tamil Nadu Dr.MGR Medical University, Chennai- 32** , in partial fulfillment of the award for the degree of **Master of Science in Nursing, Branch-IV, Community Health Nursing** under our guidance and supervision during the academic period from **2012-2014.**

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## ABSTRACT

Computer assisted education services are recently developing trend in giving health education , it is really an attractive , useful and attention seeking method in raising standard of community health, especially for the future generations. Mothers are considered as a best setting for the positive health and prevention of diseases in children, awakening health consciousness in which the child grows and develops. A quasi experimental study was conducted to *“assess the effectiveness of Computer assisted planned teaching programme on knowledge regarding water borne diseases and its preventive measures among mother’s of under five children in selected urban area at Choolai in Chennai”* Totally 100 mothers those who met the inclusion and exclusion criteria were selected by simple random sampling technique. A pre assessment was done by using structured questionnaire, followed by Computer assisted planned teaching programme is given. After 7 days post assessment was taken. The result of the post-test score revealed that the computer assisted planned teaching programme had its impact on improving the level of knowledge among mothers. The overall mean score of pre-test was **7.38** with the Standard Deviation **2.15**, whereas in post-test the overall mean score was **11.84** with the Standard deviation **1.57**. The t-test value was **23.16** which is statistically significant at  $P=0.001$ . After Computer Assisted Planned Teaching mothers are gained 31.9% of the knowledge than pretest. *This is net benefit of Computer assisted planned teaching programme.*

## TABLE OF CONTENTS

<b>Chapter</b>	<b>TITLE</b>	<b>Page No</b>
<b>I</b>	<b>INTRODUCTION</b>	1
	1.1 Need for the study	5
	1.2 Statement of the Problem	7
	1.3 Objectives	7
	1.4 Operational definition	7
	1.5 Assumption	9
	1.6 Hypothesis	9
<b>II</b>	<b>REVIEW OF LITERATURE</b>	10
	2.1 Review of related literature	10
	2.2 Conceptual frame work	23
<b>III</b>	<b>RESEARCH METHODOLOGY</b>	27
	3.1 Research Approach	27
	3.2 Research Design	27
	3.3 Variables	28
	3.4 Setting of the study	28
	3.5 Study population	28
	3.6 Sample	29
	3.7 Sample size	29
	3.8 Sampling Technique	29
	3.9 Criteria for sample selection	29
	3.10 Development and description of the tool	30
	3.11 Ethical consideration	30

<b>Chapter</b>	<b>TITLE</b>	<b>Page No</b>
	3.12 Testing of the tool	31
	3.12.1 Content Validity	31
	3.12.2 Pilot Study	31
	3.12.3 Reliability	31
	3.13 Development of protocol for computer assisted planned teaching	32
	3.14 Data Collection Procedure	32
	3.15 Plan for data analysis	33
<b>IV</b>	<b>DATA ANALYSIS AND INTERPRETATION</b>	35
<b>V</b>	<b>DISCUSSION</b>	61
<b>VI</b>	<b>SUMMARY &amp; CONCLUSION</b>	65
	6.1 Summary	65
	6.2 Major findings	66
	6.3 Implication of the study	67
	6.4 Recommendations	70
	6.5 Conclusion	70
	<b>REFERENCE</b>	
	<b>APPENDICES</b>	

## LIST OF TABLES

<b>Table No</b>	<b>TITLE</b>	<b>Page No</b>
1.	Distribution of Population	28
2.	Distribution Of Subjects According To Demographic Profile	37
3.	Question wise pre-test knowledge on water borne diseases and its prevention	47
4.	Pre-test level of knowledge score	48
5.	Score interpretation	48
6.	Question wise post-test knowledge on water borne diseases and its prevention	49
7.	Post –test level of knowledge score	50
8.	Comparison of question wise mother’s response	50
9.	Comparison of overall knowledge score	51
10.	Comparison of pre-test and post-test level of knowledge	53
11.	Overall knowledge gain score	53
12.	Effectiveness of computer assisted planned teaching	55
13.	Association between level of knowledge gain and mothers demographic variables	57



## LIST OF FIGURES

Figure No	TITLE	Page No
1.	Conceptual frame Work –King Goal attainment theory	26
2.	Schematic representation of Research Design	34
3.	Distribution of sample Percentage according to Age	39
4.	Distribution of sample Percentage according to Education status	40
5.	Distribution of sample Percentage according to Occupation status	41
6.	Distribution of sample Percentage according to Family income	42
7.	Distribution of sample Percentage according to Dietary pattern	43
8.	Distribution of sample Percentage according to Water Facility	44
9.	Distribution of sample Percentage according to Drainage Facility	45
10.	Distribution of sample Percentage according to Toilet facility	46
11.	Box-Plot Compares the overall average knowledge score	52
12.	Comparison of pre-test and post-test knowledge score	54
13.	Effectiveness of computer assisted planned teaching	56
14.	Association between level of knowledge gain and age group	58
15.	Association between level of knowledge gain and educational status	59
16.	Association between level of knowledge gain and family income	60

### LIST OF APPENDICES

<b>S. No</b>	<b>PARTICULARS</b>	<b>Page No</b>
1.	Tool for Data Collection	
2.	Permission letter From Institutional Ethics Committee	
3.	Certificate of Content Validity ❖ Medical expert ❖ Nursing expert	
4.	Permission Letter from City Health Officer	
5.	Summary of Computer assisted teaching programme - English	
6.	Summary of Computer assisted teaching programme - Tamil	
7.	Research Consent Form – Tamil	
8.	English Editing Certificate	

# CHAPTER I

## INTRODUCTION

*“When water fails, functions of nature cease”*

**G. U. Pope**

*“Water is the most extraordinary substance! Life is water dancing to the tune of solids”.*

*- Albert Szent-Gyorgyi (1972)*

Water is essential for all dimensions of life. Over the past few decades, the use of water has increased, and in many places water availability is falling to crisis levels. Adequate supply of fresh and clean drinking water is a basic need for all human beings on the earth, yet it has been observed that millions of people worldwide are deprived of this. Industrial growth, urbanization and the increasing use of synthetic organic substances have serious and adverse impacts on freshwater bodies. Many areas of groundwater and surface water are now contaminated with heavy metals, POPs (persistent organic pollutants), and nutrients that have an adverse affect on health.

*The World Health Organization says that every year more than 3.4 million people die as a result of water related diseases, making it the leading cause of disease and death around the world. Most of the victims are young children.*

### ***Water borne diseases:***

Waterborne infections are among the most emerging and re-emerging infectious diseases throughout the world. Waterborne diseases are infectious diseases spread primarily through contaminated water. Though these diseases are spread either directly or through flies or filth, water is the chief medium for spread of these diseases and hence they are termed as waterborne diseases. Water contamination is caused by sewage and industrial effluents, surface runoff and many anthropogenic activities that alter the physical (color, taste, and smell) and chemical characteristics of water.

***“Waterborne diseases are caused by ingestion of contaminated water from pathogens contained in human or animal excreta”.***

Most intestinal (enteric) diseases are infectious and are transmitted through faecal waste. Pathogens which include virus, bacteria, protozoa, and parasitic worms are disease-producing agents found in the faeces of infected persons. These pathogens travel through water sources and interfuses directly through persons handling food and water. Hepatitis, cholera, dysentery, and typhoid are the most common waterborne diseases that affect large populations in the tropical regions. Waterborne epidemics and health hazards are mainly due to improper management of water resources.

## **PREVALENCE**

Today, 37.7 million Indians are affected by waterborne diseases annually, 1.5 million children are estimated to die of diarrhoea alone. According to the Annual report to the people on health Government of India, Ministry of health and Family welfare 2010 they classify Cholera under ***Diseases Showing Increasing Trends.***

**The following are the details of cases and deaths due to the ADD/Cholera in Tamil Nadu.**

Year	Acute Diarrhoeal Diseases			Cholera		
	Cases	Deaths	Fatal Rate	Case	Deaths	Fatal Rate
<b>May 2013</b>	<b>18025</b>	<b>1</b>	<b>0.01</b>	<b>8</b>	<b>0</b>	<b>0</b>
<b>June 2013</b>	<b>16316</b>	<b>4</b>	<b>0.02</b>	<b>20</b>	<b>0</b>	<b>0</b>
<b>July 2013</b>	<b>16617</b>	<b>3</b>	<b>0.02</b>	<b>40</b>	<b>0</b>	<b>0</b>
<b>Aug 2013</b>	<b>18523</b>	<b>2</b>	<b>0.01</b>	<b>23</b>	<b>0</b>	<b>0</b>

The three water borne diseases which are commonly spread in our state are ***Cholera , Typhoid and Hepatitis A***

### ***1.Cholera:***

Water contaminated with **Vibrio cholera bacteria** causes cholera. People living in poverty, residing in crowded areas without adequate sanitation are more susceptible to cholera. Cholera vaccine offers protection.

#### **The cause for Cholera**

Cholera is caused by the bacterium *Vibrio cholerae*. water that has been contaminated by the faeces of infected persons. Raw or undercooked seafood may be a source of infection in areas where cholera is prevalent and sanitation is poor.

### ***2.Hepatitis A and E :***

Hepatitis means inflammation of the liver. Different viruses such as hepatitis A, B, C, D and E cause the disease. Both Hepatitis virus A and E are water-borne diseases. Consumption of water or food contaminated by the HAV or HEV infected person causes hepatitis.

#### **The cause of Hepatitis**

Hepatitis A and E viruses, while unrelated to one another, are both transmitted via the faecal-oral route, most often through contaminated water and from person to person.

### ***3.Typhoid :***

Fluctuating high fever, exhaustion, sleepiness, diarrhoea etc are the signs of typhoid. The infection spreads through contaminated food and water or through close contact with an infected person. Typhoid vaccine is available for protection against the disease.

## **The cause of Typhoid:**

Typhoid and paratyphoid fevers are caused by the bacteria *Salmonella Typhi* and *Salmonella Para Typhi* respectively. Typhoid and paratyphoid germs are passed in the faeces and urine of infected people. Once the bacteria enter the person's body they multiply and spread from the intestines, into the bloodstream

In order to prevent the spread of waterborne infectious diseases, people should take adequate precautions. The city water supply should be properly checked and necessary steps taken to disinfect it. the water should be boiled, filtered, or other methods and necessary steps taken to ensure that it is free from infection.

## **Measures To Control And Prevent Water Borne Diseases Are:**

- ❖ *Health Education*
- ❖ *Household Hygiene And Disinfection*
- ❖ *Adequate and Clean water Supply*
- ❖ *Control of Spread*
- ❖ *Safe Food Preparation and Storage*
- ❖ *Vaccination*

## ***Personal Hygiene***

- Hand washing — this is the most vital component of personal hygiene in disease prevention
- Avoid contacting soil that may be contaminated with human faeces.
- Do not defecate outdoors.
- Dispose diapers properly
- When traveling to countries where sanitation and hygiene are poor, avoid water or food that may be contaminated.

- Wash, peel or cook all raw vegetables and fruits before eating.
- Hands should be washed with soap after defecation and after cleaning and disposing of an infant's feces or after handling any contaminated material.
- Infected individuals (and domestic animals) should be treated with medicine to reduce disease transmission.

## 1.1 NEED FOR THE STUDY:

*“Let us put our minds together and see what life we can make for our children.”*

*-Sitting Bull quotes*

The burden of waterborne diseases is paramount in the globe. About 4% of the global burden of diseases are attributable to water, sanitation and hygiene . Nearly 2.2 million people die every year due to diarrhoeal diseases globally. Of these, 1.8 million deaths occur alone in low-income countries. one of the tenth leading causes of death is attributable to diarrhoea-related diseases. In Bangladesh, every year more than one hundred thousand under-five children die due to diarrhoea related diseases. On average, episodes of diarrhoea occur more than twice a year among the children. Research indicates that more than half of acute illnesses are attributable to water, sanitation and hygiene-related across all age groups.

Recent research also shows that due to climate change waterborne diseases such as diarrhoea is increasing gradually. In low-income countries waterborne diseases are well-known public health problem. Although burden of waterborne diseases is substantial in most of the low-income countries, intervention for reducing these medical conditions is fragmented. The global use of improved water sources is up to 87% but still 884 million people don't have access to safe drinking water. Along with improved water

supply, proper sanitation and adequate hygiene practices are pivotal for sustaining high water quality and reduce water related diseases. Today, only 61% of global population use improved sanitation facilities, which leaves out 2.6 billion people.

Acute Diarrhoeal Diseases and suspected cholera are common among the water borne diseases. Tamil Nadu is endemic for Acute Diarrhoeal Diseases with sporadic outbreaks of cholera in most of the districts throughout the year, and in epidemic proportions during the rainy seasons and peak summer periods.

Clean drinking water is out of reach for 4.64 crore people in rural areas in the country, says a report tabled by the Union water resources ministry in Parliament in September first week. In Rajasthan, 25,500 habitations or 1.09 crore people get water with chemical or bacterial contamination. Assam comes next with 12,879 rural habitations without safe drinking water, followed by Bihar with 10,587 households. Two lakh people in 486 habitations in Tamil Nadu are exposed to contaminated water.

Waterborne diseases represent a major burden on human health worldwide. Every year, 1.8 million people die from diarrheal diseases, of which 1.5 million are children under the age of 5. Access to safe drinking water, basic sanitation and proper hygiene education could not only prevent diarrheal diseases by nearly 90% but furthermore lead to improved health, poverty reduction and socioeconomic development. Goal 7 of the Millennium Development goals (MDG) set by the United Nations in 2000 is to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation.

Waterborne diseases are simple to explain but very complex to understand. The failure to provide safe drinking water and adequate sanitation services to all people is perhaps the greatest developmental failure of the 20th century.



The most egregious consequence of this failure is the high rate of mortality among young children from preventable water-related diseases.

If no action is taken to address unmet basic human needs for water, as many as 135 million people will die from these diseases by 2020. Even if the explicit Millennium Goals announced by the United Nations in 2000 are achieved<sup>1</sup> – unlikely given current international commitments – between 34 and 76 million people will perish from water related diseases by 2020.

## **1.2 STATEMENT OF THE PROBLEM:**

**A study to assess the effectiveness of computer assisted planned teaching on knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban area at Choolai in Chennai”**

## **1.3 OBJECTIVES :**

1. To assess the pre-test knowledge on selected water borne diseases and its prevention among mothers of under five children
2. To assess the posttest knowledge on selected water borne diseases and its prevention among mothers of under five children
3. To evaluate the effectiveness of Computer assisted teaching regarding knowledge of Water borne disease and its prevention among mothers of under five children.
4. To find the association between the level of knowledge with selected demographic variables.

## **1.4 OPERATIONAL DEFINITION:**

1. **Effectiveness:** Refers to the differences obtained in post test knowledge scores with that of pretest knowledge scores on water borne diseases and their prevention among mothers of under five children.

2. **Computer assisted Planned Teaching:** Refers to the systematic structured teaching activities designed to provide information on selected waterborne diseases and their prevention to mothers using a computer as an Audio Visual aid.

3. **Selected waterborne disease:** Refers to a disease or a major disorder caused in humans when they ingest (drinking) and / or come into contact with unsafe water (swimming). They are typhoid, Hepatitis A, and cholera.

***Cholera:*** It is characterized in its most severe form by a sudden onset of acute watery diarrhoea that can lead to death by severe dehydration

**(ACUTE DIARRHOEAL DISEASES)** Acute watery diarrhoea (passage of 3 or more loose or watery stools in the past 24 hours) with or without dehydration

***Typhoid:*** Any patient with fever for more than one week **and** with **any two** of Following: Toxic look, Coated tongue, Relative bradycardia, Splenomegaly, Exposure to the confirmed case, Clinical presentation with complications e.g. GI bleeding, perforation, etc.

***Viral Hepatitis :*** Acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue, and right upper quadrant tenderness. The biological signs include increased urine urobilinogen and >2.5 times the upper limit of serum alanine aminotransferase.

4. **Prevention:** Refers to measures designed to prevent the introduction of a disease and improve the resistance of the population and reduce the chance of infection spreading, when the disease already exist in the population.

5. **Mothers:** Refers to married females who are having children between the age Group 1-5 years.

## **1.5 ASSUMPTION**

The study assumes that

- ❖ Mothers of under five children will participate in the study willingly.
- ❖ Computer assisted Planned teaching about Water borne diseases will be effective in gaining Knowledge about prevention of water borne diseases among the participants.
- ❖ Community Health Nurses play a vital role in prevention of water borne diseases

## **1.6 HYPOTHESIS:**

- ❖ There will be a significant difference between pretest and posttest knowledge scores of the mothers regarding water borne diseases and its preventive measures.
- ❖ There will be a significant difference between the knowledge of Mothers with the selected variables

## **CHAPTER II**

### **REVIEW OF LITERATURE**

A review of the literature is an essential part of your academic research project.

The literature review will be the mechanism by which your research is viewed as a cumulative process. That makes it an integral component of the scientific process .

A review of literature relevant to the present study evaluate the effectiveness of structured teaching program among mothers of under five children on prevention and management of selected water borne diseases (Cholera, Hepatitis A and Typhoid).

***This section has two parts:***

**2.1** : Review of related literature

**2.2** : Conceptual frame work

#### **2.1 REVIEW OF RELATED LITERATURE**

- Studies related to prevalence and incidence of water borne diseases  
Diarrhea, Typhoid and Hepatitis A
- Studies related to mortality and morbidity of acute diarrhoeal diseases,  
Typhoid, Hepatitis A
- Studies related to risk factors of Diarrhea, Typhoid and Hepatitis A
- Studies related to prevention of Water borne diseases

***Studies related to incidence and prevalence of Diarrhea, Typhoid and cholera.***

***Magdalena Berger, Rita Shiau, and June M Weintraub (2013)*** conducted a study to review of syndromic surveillance and implication for water borne disease detection,. This review summarizes the evidence gathered from retrospective, prospective, and simulation studies to assess the efficacy of syndromic surveillance for waterborne disease detection. There is little evidence that syndromic surveillance mitigates the effects of disease outbreaks through earlier detection and response.

***Smith G.2013 Jun;5(2):77-84.epidem.2013.04.002. Epub 2013*** conducted a case control studies to estimate the force of infection that accounts for primary, sporadic cases in Food- and water-borne disease. The importance of these risk factors is assessed by case-control studies, in which the measure of effect (the difference in disease occurrence between one population and another) is the odds ratio. The paper finishes with a worked example using one of the most common of all food- and water-borne pathogens, *Toxoplasma gondi*.

***Robert J Corner et.al (2009)*** conducted a study the relationship between typhoid fever and economic status, in Bangladesh, bear a disproportionate burden of diarrhoeal diseases such as Cholera, Typhoid and Paratyphoid. The three Principal Factors used together explain 87% of the variance in the initial candidate predictors, which eminently qualifies them for use as a set of uncorrelated explanatory variables in a linear regression model. The best prediction, determined by analysis of the Akaike Information Criterion (AIC) was found when the three factors were combined into a quality of life index, using a method previously published by others, and had a coefficient of determination of 73%.

*Anuja Jaiswal, TNN Jul 28, 2013, RAIPUR:* Water borne diseases are on the rise in the state following incessant rain and non-availability of safe potable water to most households, especially in the rural areas. In the first six months of 2013 some five people lost their lives and 50,000 were taken ill due to water borne diseases. The fact remains that, water borne diseases are a major killer in the state. Still, health department does not have proper data about people affected by it every year. As a result, government's schemes fail to reach the affected and thousands, particularly those in tribal areas and the hinterlands, continue to suffer.

*Balasubramaniam SM et al (2009)* conducted a study by an integrated model based approach was used to improve the health status of children in an urban slum. Health care needs were taken care of and self-help groups were started to make them financially independent. This model was evaluated in 204 families with 350 under-five children. The survey revealed that 88% of them used safe garbage disposal and 95% of them had household latrines. Only 24% of under-five children had water borne morbidity in past one year and there were no vector borne diseases. 71% of the eligible couples followed some contraception

*Bhunja R, Ghosh S.(2009)*, Department of Health and Family Welfare, , West Bengal, India, reported an increased number of diarrhoea cases at the end of May 2009. This study was performed to identify the agent and the source of the outbreak as well as to propose control measures. Matched case-control study was conducted and rectal swabs and water specimens were collected. In total, 1076 probable case patients and 14 deaths (attack rate 44/10 000) were identified. Compared with controls, cases were more likely to drink non-chlorinated piped water [matched odds ratio (MOR) =16, 95% CI 4.9-51; population attributable fraction 58%) and were less likely to drink chlorine-treated water (MOR=0.06, 95% CI 0.02-0.18).

*Jacqueline L, Mohammad ali, Dipika sur, Feb(2008)* conducted a study on high burden of cholera in children: comparison of incidence from endemic areas shows annual incidence of cholera was estimated using population census as the denomination and the age specific number of cholera cases among cohort as numerator. Lowest rate was .5/1000/yr which was found in Jakarta. The estimated incidence in Kolkata was 3 times higher that means 1.6/1000/yr. The burden was 4.0/1000/yr in Beira that is 8 times higher than that of Jakarta. The greatest burden was in children under 5 years of age

*Bell B. P., et al. (2007)* conducted a study on immunogenicity of an inactivated Hepatitis A vaccine in infants and young children in the USA. Researcher compared HA Vaccine immunogenicity among infants born to immune and susceptible mother, vaccinated on different schedules. Randomized controlled method was used. Results of 248 participants, 140 were born to HA- susceptible mothers and 108 to immune mothers. The conclusion of the study is HA Vaccine is immunogenic among infant born to HA susceptible mothers and those born to immune mothers and vaccinated beginning more or equal to twelve months old.

*Mac Donald, et al. (2007)* conducted a study on maternal understanding of diarrhea related dehydration and its influence on ORS use in Indonesia. This study sought to use of ORS in home treatment .One hundred mothers of school age children in rural Indonesia were surveyed using a structured questionnaire, administered in identify two or more correct signs of dehydration and use of ORS in home treatment (OR 3.36, 95% CI 1.24,10.63).Resulting recommendations includes improved health education programming for mother of young children, as well as future programme evaluation and interventions studies.

*Wijewardene K, Fonseka P, Wijayasiri WA.(2007)* conducted a study to identify the risk factor contributing to diarrhoeal disease in children below five years. Data regarding factors contributing to acute diarrhoea in children under five years in urban populations in Sri Lanka is meagre. Studies of diarrhoeal disease have been limited mainly to descriptive epidemiological investigations. A case control study on 200 families in the Galle Municipality was undertaken to identify some of the social, behavioural and environmental factors contributing to childhood diarrhoea.

*Ram P. K., et al. (2007)* conducted a study on risk factors for typhoid fever in a slum in Dhaka, Bangladesh. Interviewed patients with typhoid fever and two age-matched controls per case about exposures, risk factor [adjusted odds ratio (AOR) 12.1, 95% CI 2.2-65.6]. Twenty three (56%) cases and 21 (26%) controls reported that water from the primary source was foul smelling (or 7.4, 95% CI 2.1-25.4). Using a latrine for defecation was significantly protective (or 0.1, 95% CI 0.02-0.9). Improved chlorination of the municipal water supply for disinfecting drinking water at the household level may dramatically reduce the risk of typhoid fever in Kamalapur.

*Jha N. Et al. (2006)* conducted a study of knowledge attitude and practices of mothers regarding home management of acute diarrhea in Sunsari, Nepal. 45, 000 school age children die due to diarrhea annually, Home management of diarrhea diseases programme, which aims to increase the correct use oral rehydration solution by mothers. 330 mothers interviewed to know the improvement the child and also preparation and use of ORS. 50% mothers could make ORS properly and gave ORS to their children ideally (after each stool). interventions such as improving basic sanitation and health care services and, raising the general nutritional status of the population can only be expected to decrease the diarrheal diseases morbidity and mortality in long term.



**Bhunja R, et.al (2006)** National Institute of Epidemiology, Indian Council of Medical Research , Chennai, Tamil Nadu, India. Conducted Outbreaks of cholera are common in West Bengal. In April 2006, They defined a case of diarrhea as occurrence of  $>$  or  $=3$  loose/watery stools a day among the residents of Garulia since April 2006. Two hundred and ninety-eight cases of diarrhea were reported to various health care facilities (attack rate: 3.5/1000, no deaths). The attack rate was highest among children (6.4/1000). Cases clustered in an area distal to leaking water pipelines. Drinking municipal water exclusively was significantly associated with the illness (OR 13, 95% CI=6.5-27).

**Kanimozhi .D (2005)** has conducted study to assess the knowledge of mothers of under five children regarding selected water borne diseases in Kumaramangalam area under Namakkal district. The results of this study revealed that 60% of mothers were in the age group of 23-30 years . 90% were hindu, 40% were illiterate, 53.3% were house wives, 72% belong to nuclear family. 40% of subjects had monthly income less than Rs 5000.

**Sinha A, Sazawal S, Kumar.R.et al. Lancet. Aug 2004** conducted a study on typhoid fever in children aged less than 5 years shows the calculation of incidence of typhoid fever during preschool year. 63 culture positive typhoid fever cases were detected. Of these, 28 that means 44% of were in children aged under 5 years. The incidence rate of Typhoid per 1000 person per year was 27.3 at age under 5 years. Results say that Typhoid is a common and significant cause of morbidity between 1 to 5 years of age.

**Dr. V. Riana Subramanian (2004)** conducted a study on the prevention and management of waterborne disease among people in different states in India. They considered different criteria for the prevention and management purposes which included improved sanitation, purified and piped water supply, vaccination and oral rehydration therapy. By the end of

the study they proved that the above mentioned components, If managed accordingly, reduce the incidence of water borne diseases in a greater margin. They advised the concerned authorities to take necessary steps to implement these suggestions made by the researchers to get an effective health output.

*Barrimah E., et al. (1999)* conducted a study on an outbreak of hepatitis A associated with treated waste water used for irrigation in Jeddah, Saudi Arabia. Ninety four cases were found to be positive for IgM antibody to HAV. A case control study was done to identify possible risk factors. Through an interview questionnaire for parents of young cases obtained the information regarding symptoms, demographics and possible sources of infection. Results showed that attack rate was twofold higher in children (2.05 %) than the total population. Analysis of the available data suggests a strong association between illness and exposure to waste water used for irrigation of gardens through playing with it, or through occasional drinking, especially among school age children.

*Saha T,et al.(2007)* conducted a study in Gayeshpur municipality which reports with diarrhoea and identified 461 cases (attack rate: 46/1000 population) and isolated *Shigella flexneri* (serotype 2a and 3a) from 3 of 4 stool specimens. The attack rate was higher among females (52/1000) and those in the age group of 45-59 years (71/1000). Cases were clustered distal to a leaking pipeline that crossed an open drain to intermittently supply non-chlorinated water to taps. The 58 cases and 58 controls were matched for age and sex. Drinking tap water (MOR: 10; 95% CI: 3-32; PAF: 89%), washing utensils in tap water (MOR: 3.7; 95% CI: 1.2-11.3) and bathing in tap water (MOR: 3.5; 95% CI: 1.1-11) were associated with the illness.

***Study related to mortality and morbidity of acute diarrhoeal diseases, Typhoid and Hepatitis A***

***Christa L. Fischer Walker, et.al(2012)*** conducted a study to assess about the diarrhoeal diseases mortality among young children's and demonstrate that diarrhea mortality can be reduced by 78% and 92%, respectively. With universal coverage nearly 5 million diarrheal deaths could be averted during the 5-year scale-up period for an additional cost of US\$12.5 billion invested across 68 priority countries .Using currently available interventions we will be one step closer to achieving success for the United Nations' Millennium Development Goal 4 (MDG4) by 2015.

***Malik A, Yasar A, Tabinda A, Abubakar M.(2012)*** conducted a study on Water-borne diseases, Lahore, Pakistan. Majority (40%) of the community had no knowledge of water-borne diseases except some had little knowledge of diarrhea and typhoid. Diarrhea followed by stomach diseases was widespread in the community. Income and water supply demand was strongly correlated with acceptability to pay for the facilities ( $r = 0.319, 0.307; P < 0.05$ ). Income had a strong influence on WTP for water and sewerage system ( $r = 0.805, 0.797; P < 0.05$ ).

***Misra AK, Singh V.(2012)*** conducted a study on mathematical model for the spread and control of water borne diseases, in Varanasi, India. A non-linear SIRS mathematical model to explore the dynamics of water borne diseases like cholera is proposed and analyzed by incorporating delay in using disinfectants to control the disease. It is assumed that the only way for the spread of infection is ingestion of contaminated water by susceptible. The analysis shows that under certain conditions, the cholera disease may be controlled by using disinfectants but a longer delay in their use may destabilize the system. Numerical simulation is also carried out to confirm the analytical results.

*Bari SM, Roky MK, Mohiuddin M, Kamruzzaman M, Mekalanos JJ, Faruque SM.(2011)* conducted a study on cholera in environmental water samples, Cholera epidemics have long been known to spread through water contaminated with human fecal material containing the toxigenic bacterium *Vibrio Cholerae*. Growth in the mammalian intestine has been reported to trigger "resuscitation" of such dormant cells, and these studies have prompted the search for resuscitation factors. These results may contribute to averting future disasters by providing a strategy for early detection of *V. Cholerae* in surface waters that have been contaminated with the stools of cholera patients or asymptomatic infected human carriers

*Mayer CA, Neilson AA.(2010)* conducted a study on Typhoid and paratyphoid fever - prevention in travellers. It is one of the leading causes of infectious disease in the developing world. Travellers to developing countries are at risk of infection. This risk varies from 1:30 000 for prolonged stays in endemic regions to 1:3000 in high endemicity areas such as the Indian subcontinent, where risk is highest. Treatment and future developments in typhoid fever diagnostics and vaccines are also briefly discussed to provide a general overview of typhoid fever and its prevention for use in travel related consultations in general practice

*Guerrero-Latorre L, et.al (2011)* conducted a study on Occurrence of water-borne enteric viruses in two settlements based in Eastern Chad: analysis of hepatitis E virus, hepatitis A virus and human adenovirus in water sources. Some of the samples were also analysed for faecal coliforms showing values before disinfection treatment between 3 and >50 colony forming units per 100 ml. Consequently, breakdowns in the treatment of drinking water and/or increased excretion of hepatitis viruses, which could be related to the arrival of a new population, could spread future outbreaks through drinking water.

**Momtaz H, Dehkordi FS, Rahimi E, Asgarifar A.(2009)** conducted a study to detect the organism causing cholera in tap water, The culture method showed that 34 (7.58%), 4 (0.89%) and 3 (0.66%) of all 448 water samples were positive for Escherichia coli, Salmonella species, and Vibrio cholera, respectively. The water of southern part of Isfahan and company 5 had the highest prevalence of bacteria. The Escherichia coli water contamination was significantly higher ( $P < 0.05$ ) in the hot seasons (July-August) than cold (November-December) seasons and in company 5 than other companies. There were significant differences ( $P < 0.05$ ) for the prevalence of bacteria between the tap waters of southern part and tap waters of central part of Isfahan.

**Sinclair RG, Jones EL, Gerba CP. (2009)** conducted a study on Viruses in recreational water-borne disease outbreaks: a review, USA. Noroviruses are believed to be the single largest cause of outbreaks, which have been documented in the published literature 45% ( $n = 25$ ), followed by adenovirus (24%), echovirus (18%), hepatitis A virus (7%) and coxsackieviruses (5%). Just under half of the outbreaks occurred in swimming pools (49%), while the second largest outbreak occurred in lakes or ponds (40%). Inadequate disinfection was related to 69% ( $n = 18$ ) of swimming pool outbreaks.

**Yoon YK et.al. (2008)** Epidemiological and genetic analysis of a sustained community-wide outbreak of hepatitis A in the Republic of Korea, 2008: a hospital-based case-control study, Korea. In the multivariate logistic regression model, the risk factors of HAV infection adjusted by age were contacts with hepatitis A case (OR 3.98, 95% CI: 1.36-11.66), residence with child aged  $\leq 5$  years (OR 3.43, 95% CI: 1.32-8.87), consuming uncooked lettuce (OR 3.98, 95% CI: 1.83-8.68) or carrot (OR 2.38, 95% CI: 2.38-5.09), drinking tap water (OR 3.68, 95% CI: 1.62-8.37) or portable spring water (OR 2.71, 95% CI: 1.11-6.62) supplied by water purifiers, and eating out (OR 3.87, 95% CI: 1.53-9.78).

*Joseph N.S. Eisenberg et.al (2007)* conducted a study on system approach to enteric pathogen transmission from individual independence to community independence. Diarrheal disease is still a major cause of mortality and morbidity worldwide; We argue for a systems-level framework that will contextualize transmission and inform prevention and control efforts so that they can integrate transmission pathways. These systems approaches should be employed to account for community effects (i.e., interactions among individuals and/or households).

*Ako AA, Nkeng GE, Takem GE.(2006)* conducted a study on Water quality and occurrence of water-borne diseases in the Douala 4th District, Cameroon, Children below 5 years were found to be more vulnerable to diarrhoea, gastroenteritis, amoebic dysentery while persons between 15-44 years were more vulnerable to typhoid and cholera. Physico-chemically, water samples had turbidities varying between 5.5-86 NTU, pH values between 4.2 and 7.1 and zero residual chlorine. Lack of access to potable water, absence of sanitation facilities and environmental factors could be advanced as the probable causes of water-borne disease spread.

*Hamner S, et.al (2006)* conducted a study on The role of water use patterns and sewage pollution in incidence of water-borne/enteric diseases along the Ganges river in Varanasi, India, In Varanasi, India, an estimated 200 million liters daily or more of untreated human sewage is discharged into the Ganges River. This study provides an estimate of water-borne/enteric disease incidence and identifies possible risk factors for residents who live by and use the Ganges River in Varanasi.

*Kulkarni AP, Powar RM, Mangalkar SM, Kulkarni VA, Nagalgaonkar RN.(1996)* conducted a study on Epidemiological investigation of an outbreak of enteric fever in a village in Maharashtra, India. Four hundred fifteen fever cases occurred in village Katkalamba, in

Nanded district, Maharashtra during November-December, 1995. Explosive nature of the outbreak, non involvement of infants, significantly higher incidence rate in the age group 1-14 years and clustering of almost all cases in the users of a particular well indicated it to be a water borne outbreak. Chemical and microbiological examination of water samples from the suspected wells gave evidence of faecal contamination of water..

***Studies related to risk factors of Diarrhea, Typhoid and Hepatitis A.***

***Seter Siziya, Adamson S.Muula and Emmannuel Raatsikira. April (2009)*** conducted a study on Diarrhea and risk factors among under five children, was conducted among 14,676 children. Overall 21.3% had diarrhea. In multivariate analysis, diarrhea was associated with age of child, area of residence, maternal education, source of water, toilet facility, disposal of children's stool and disposal of dirty water compared to children aged 48-59 months, children in the age groups 6-11 months more likely to have diarrhea. 3.2%. more likely to have diarrhea while those who belonged to house holds with protected well were 26% less likely to have diarrhea

***Mohammad Hatta, Mirijam Bakkar, Stella beers et al.(2009)*** conducted a study on risk factors for clinical typhoid fever in villages in rural area among under five children was conducted. Survey was carried out in 5 villages to collect information on prevalence of typhoid fever and of demographic and behavioral risk factors. The following independent risk factors were identified. Consumption of uncooked vegetables where adjusted odd ratio was 5.31, consumption of water with a poor quality where adjusted odd ratio was 5.29, adjusted odd ratio for use of water that is contaminated with bacteria was 4.11. It was found that adjusted odd ratio for not using soap for washing hands was 2.84.

***Gun R, Kimball, A.M. Mahmood R.Datha S.R. et al. 2006,*** done a study on 42 cases and their control to determine bottle feedings as a risk factor for cholera in infants. Highest attack rate of cholera was 125/1000,

occurred in infants in 6-11 months age group, corresponds to weaning age, significantly more cases than controls were bottle fed which means greater than 50% milk intake by bottle than principally, breast fed during the week before onset of illness. It was found that  $P=0.004$ . Analysis shows that bottle fed infants had more chance for developing cholera.

### ***Studies related to structured teaching programme on Water borne diseases***

***WH. Au, L.K.P suen, Y. Kwok. Health education. 2010***, A study on Hand washing programmes in kindergarten which has taken into account of the developmental stage of children. The programme contains five teaching sessions delivered on weekly basis: story telling, health education, games, experiment and hands- on activities are planned. Outcome evaluations include the knowledge level and behaviors on hand washing. After the education programme, knowledge level of students in both groups increased, but significant improvement in hand washing practice was observed only in intervention groups .

***Rahul Malhotra.(2008)***, A study on 136 food handlers assessed change in knowledge, attitudes and self reported hand washing practices after providing them 3 months health education using posters and interactive sessions using flip chart. Significant increase in knowledge about hand hygiene measures namely, washing hands before handling food were 23.5%, keeping nails cut and clean were found to be 8.1%. It was found that washing hands after micturations were 82.4% , and consistent use of soap at workplace was 24.3% and after micturation, 14%. Findings highlight the importance of health education in personal hygiene



## 2.2 CONCEPTUAL FRAME WORK

The conceptual framework for research study presents the measurement on which the purposes of the proposed study are based. The framework provides the prospective from which the investigator views the problem. The study is designed to assess the effectiveness of computer assisted planned teaching on knowledge regarding water borne diseases among mothers having under five children.

The study is based on the concept to assess the knowledge level before and after computer assisted teaching.

The investigator adopted the **Modified King's Goal Attainment and Transactional Process by Imogene M. King**. King has interrelated the concepts of interaction, perception, communication, transaction, self, role, stress, growth and development, time, and space into a theory of goal attainment. Her theory deals with a nurse-client dyad, a relationship to which each person brings personal perceptions of self, role, and personal levels of growth and development. The nurse and client communicate, first in interaction and then in transaction, to attain mutually set goals. The relationship takes place in space identified by their behaviors and occurs in forward-moving time.

*The definitions of these concepts are as follows:*

**Nursing** is a process of action, reaction, and interaction whereby nurse and client share information about their perceptions in the nursing situation. The community health nurse and client share specific goals, problems, and concerns and explore means to achieve a goal.

**Health** is a dynamic life experience of a human being, which implies continuous adjustment to stressors in the internal and external environment through optimum use of one's resources to achieve maximum potential for daily living.

**Individuals** here are the mothers of under five children who are rational and sentient. They communicate their thoughts, actions, customs, and beliefs through language and exhibit common characteristics such as the ability to perceive, to think, to feel, to choose between alternative courses of action, to set goals, to select the means to achieve goals, and to make decisions.

**Environment** is the background for human interactions. Here the study environment is at Choolai an urban area in Chennai, and it is concentrated on the toilet facility, water facility and personal hygiene

**Perception** is "each person's representation of reality." According to Imogene M. King's it is the primary feature of the personal system because it influences all the other behaviors, In this study the mothers are having inadequate knowledge regarding water borne diseases and its prevention.

**Interaction** is a process of perception and communication between person and environment and between person and person represented by verbal and nonverbal behaviors that are goal-directed. Here a well planned teaching was given to the study participants and it was clearly explained by the community health nurse who was the investigator of this study.

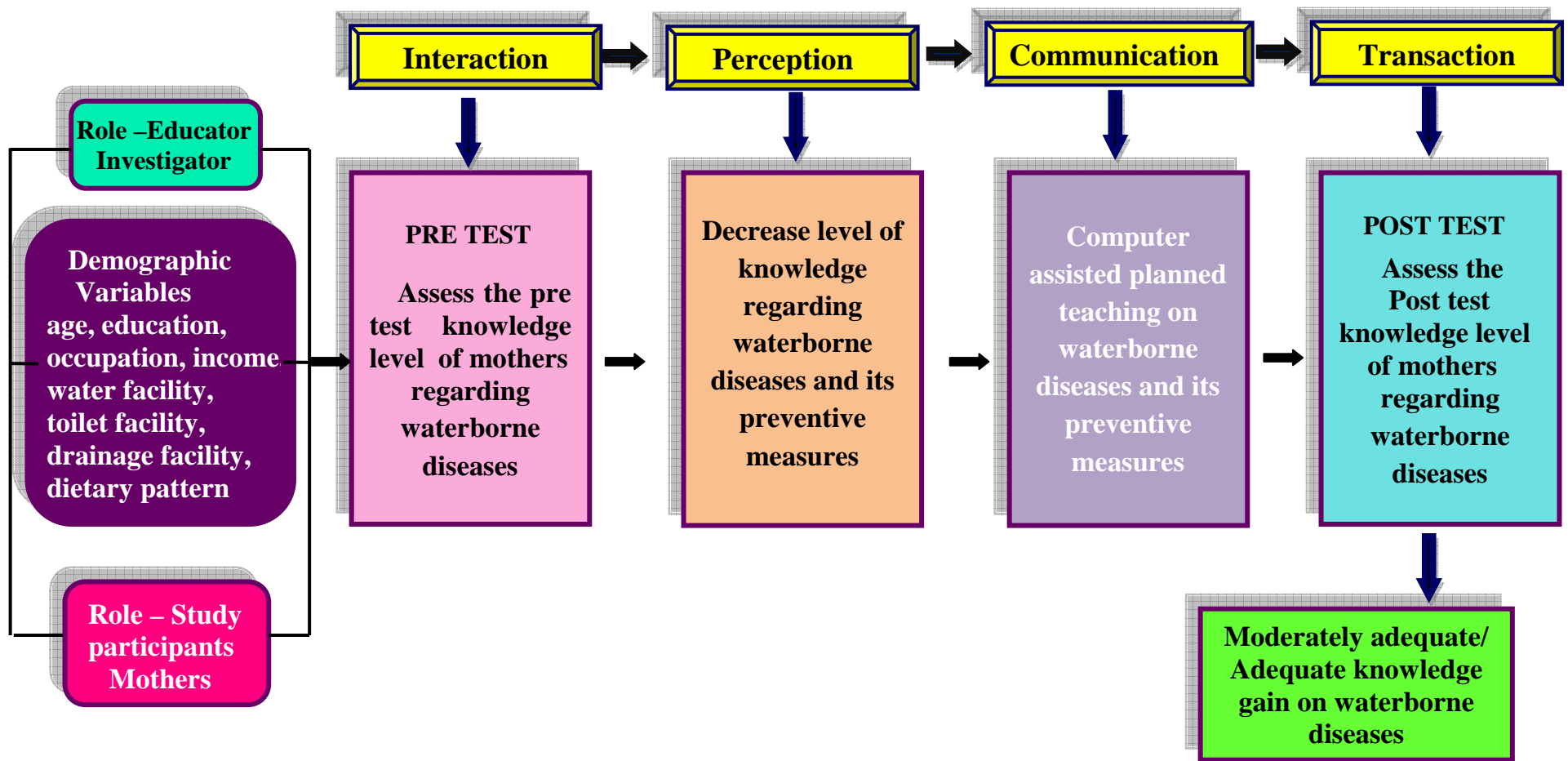
**Communication** is defined as “a process whereby information is given from one person to another either directly in face-to-face meetings or indirectly through telephone, television, or the written word.”, in this study the community health nurse gave planned teaching regarding water borne diseases and its preventive measures to the mothers with computer as an Audio Visual aid

**Transaction** is a process of interactions in which human beings communicate with the environment to achieve goals that are valued; transactions are goal-directed human behaviors, the outcome of the study shows that there is a significant knowledge gain in post test

**Role :** According to Imogene M. King’s each person occupies in a social system that has specific roles and obligations. In this study, the investigator occupies health educator role and mothers who have less knowledge regarding water borne diseases occupies study participant’s role.

**Time:** According to Imogene M. King’s a person experiences a sequence of event that moves toward the future as the individual move forward, changes occur. In this study, the mothers experience a sequence of events that is pretest, planned teaching programme and post test

**Space:** According to Imogene M. King’s each person has a designed physical area or territories that extend from the individual equally in all the directions. This study is conducted at urban area Choolai in Chennai.



**Figure 1: Conceptual Frame work based on Modified King's Goal Attainment Theory**

## CHAPTER III

### RESEARCH METHODOLOGY

*“Methodology gives those with no ideas something to do”*

*Mason Cooley*

This chapter includes the research design, the setting of the study and sampling technique. It further deals with the development of tool, procedure for data collection and plan for data analysis.

#### 3.1 RESEARCH APPROACH

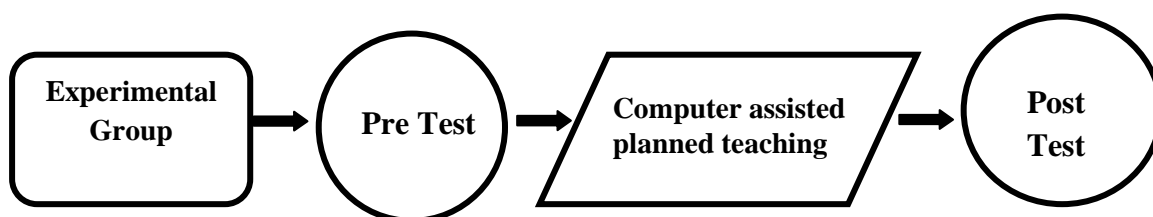
The research approach tells the researcher from where the data is to be collected, what is to be collected, how to collect and how to analyze them. It also suggests a possible conclusion and helps the researcher in answering specific research questions in an accurate and efficient way.

Research approach adopted for this study is an evaluative quantitative research approach. This study aims at assessing the effectiveness of computer assisted planned teaching on knowledge regarding water borne disease and its preventive measures

#### 3.2 RESEARCH DESIGN

The research design selected for the present study is Quasi experimental design.

In this study the subjects are randomly assigned, The knowledge level was assessed on both pre test and post test .



### 3.3 RESEARCH VARIABLES:

Independent Variable – Computer Assisted Planned teaching

Dependent Variable - Knowledge Levels of the Mother .

Demographic Variables - Age, Education, Occupation, Family income, Food practice, Water, Drainage facility, and Toilet facility

### 3.4 SETTING OF THE STUDY:

This study was conducted in urban area at Choolai, which belongs to the north Zone of Chennai Corporation and it is very near to urban health post. It has got four wards covering total population of 56,744. Totally there are 16 streets in choolai area. Among these 16 streets, 4 streets were selected. They are T K Mudhali Street and Arimuthu Mastrey Street, Andiappan Street, and Avadi Srinivasan street. By using simple random technique (lottery method) the present study samples were selected.

### 3.5 POPULATION OF THE STUDY:

Population is the entire aggregation of cases that meet a designed set of criteria. In this present study participants are subjects who are mothers having children. The accessible population for the present study is mothers having under five years children, residing at Choolai. The total samples with under five age group children from the selected streets in Choolai were 100

**Table 1 Distribution of Population**

S.No	Name of the street	Total population	Mothers of under five children
1.	T.K Mudhali Street	2045	121
2.	Arimuthu Mastrey Street	1654	170
3.	Andiappan Street	1230	119
4.	Avadi Srinivasan street.	653	45
	Total	5582	455

### **3.6 SAMPLE**

Sample refers to subjects of a population selected to participate in a research study who met the inclusion criteria. In this present study the sample were Mothers who were having children below 5 years of age.

### **3.7 SAMPLE SIZE**

Sample consist a total number of 100 subjects (Mothers) who were having children below 5 years of age residing in Choolai.

### **3.8 SAMPLING TECHNIQUE:**

Simple Random Sampling technique by lottery method was used for the present study.

The investigator conducted a survey in the Choolai area to identify the total number of Mothers . In Choolai 4 streets were surveyed and the total number of Mothers with under five age group children were selected. Each mother in particular street had been numbered and sample had been selected by simple random sampling by lottery method in each street. Required number of mothers with under five child were selected as the sample.

### **3.9 CRITERIA FOR SAMPLE SELECTION:**

The sample was selected according to the following inclusion and exclusion criteria

#### **Inclusion criteria:**

1. Mothers of under five children in the urban community area of Choolai.
2. Mothers who are willing to participate
3. Mothers who are available at the time of data collection .

### **Exclusion criteria:**

1. Mothers who cannot communicate in Tamil or English.
2. Mothers who are having children more than five years of age.

### **3.10 DEVELOPMENT AND DESCRIPTION OF THE TOOL:**

The tools for the study had two sections A and B.

#### **Section A – *Demographic variable.***

It had 8 questions with multiple options. The study participants had to tick the appropriate boxes. It had questions related to age, education, occupation, monthly income, type of latrine facility, dietary pattern, and type of water, drainage facility available in their house.

#### **Section – B - *Structured Questionnaire***

It was developed by the researcher, It had 14 questions with multiple options, It had questions related to the meaning, causes, treatment modalities and preventive measures of water borne diseases

### **3.11 ETHICAL CONSIDERATION**

Research proposal was approved by experts prior to the pilot study and permission for the main study was obtained from the ethical committee, Head of the department, Department of Community Health Nursing, College of Nursing, Madras Medical College, Chennai – 03. Permission was also obtained from the Chennai corporation health department. A written consent of each study subject was obtained before starting the data collection, assurance was given to the subjects that confidentiality and privacy would be maintained



### **3.12 TESTING OF THE TOOL**

#### **Content validity**

Validity of the tool was assessed using content validity . Content validity was determined by experts from Nursing and Medical profession. They suggested certain modifications in tool. After the modifications they agreed this tool for assessing effectiveness of computer assisted planned teaching of knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban area

#### **Pilot study**

In order to test the feasibility of the study, a pilot study was conducted among ten clients in the same manner as final study. Mothers with under five children (ten in number) were selected using simple random sampling technique for the purpose of pilot study. They were assessed for knowledge level by the pre test using the research tools and then computer assisted planned teaching on water borne diseases and its preventive measures was given.

After a week post assessment was conducted to check the knowledge level using the research tool. The tool was found to be satisfactory in terms of simplicity and clarity. Based on the findings of the pilot study it was concluded that it was feasible and practicable to conduct the main study and criterion measures were found to be effective.

#### **Reliability**

After pilot study reliability of the tool was assessed by using Test retest method. The Reliability and correlation coefficient value was 0.83. This correlation coefficient is very high and it is good tool for assessing effectiveness of computer assisted planned teaching.

### **3.13. DEVELOPMENT OF PROTOCOL FOR COMPUTER ASSISTED PLANNED TEACHING**

Computer Assisted planned Teaching was developed by the researcher after intensive review and experts opinion. It consists of

- ❖ Definition of water borne diseases
- ❖ Causes
- ❖ Transmission
- ❖ Common water borne diseases
- ❖ Knowledge about (cholera, typhoid, and hepatitis)
- ❖ Prevention of water borne diseases
  - Primary prevention
  - Secondary prevention
  - Tertiary prevention
- ❖ Community level Short term and Long term measures

### **3.14 DATA COLLECTION PROCEDURE**

The plan of data collection for the proposed study is as follows:

- Permission has obtained from the Institutional Ethics committee, Formal permission was obtained from the City Health officer, Corporation of Chennai.
- Survey was conducted in the urban areas. Samples were drawn using simple random sampling technique.
- Data collection procedure was done for a period of four weeks and the time taken for each subjects was 10-15 minutes. Pre assessment was done using structured knowledge questionnaire subsequently Computer assisted planned teaching programme given on same day for 25 minutes.
- On the seventh day post assessment was conducted using same structured knowledge questionnaire.

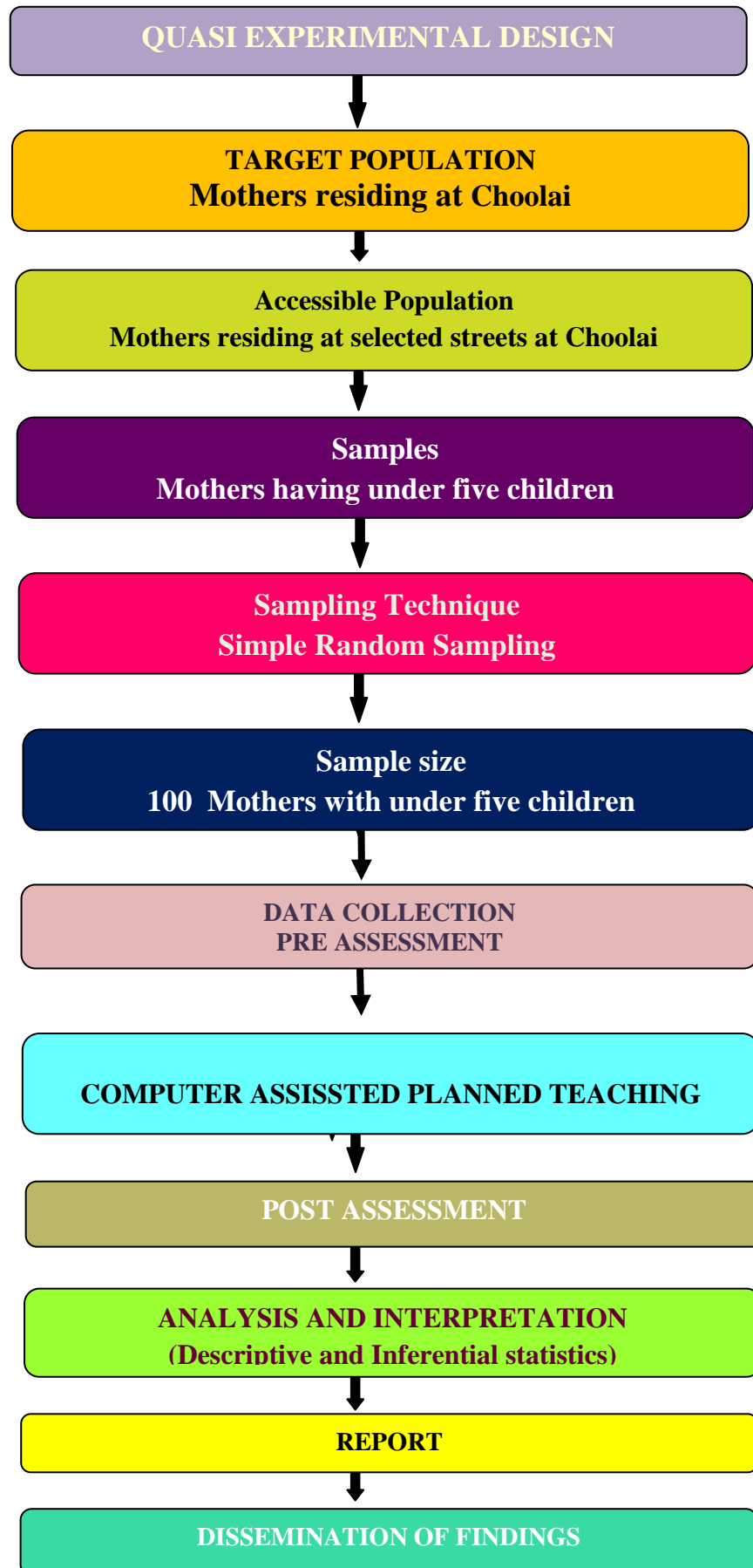
Based on the criteria 8-10 subjects were selected each day . The subjects were explained about the purpose of the study and were assured of confidentiality of the data collected.

### **3.15 Plan for data analysis**

After the data collection, the collected data were organized, tabulated, summarized and analysed. The data were analyzed according to objectives of the study using descriptive and inferential statistics

- a) Frequencies and percentage are used to summarize the sample characteristics
- b) Mean ,Standard Deviation and Paired T-Test are used to calculate the effectiveness of Planned Teaching
- c) Chi-square will be computed to find out the relationship between knowledge and selected variables.

**FIG 2- SCHEMATIC REPRESENTATION OF RESEARCH METHODOLOGY**



## **CHAPTER –IV**

### **DATA ANALYSIS AND INTERPRETATION**

**“The ultimate authority must always rest with the individual's own reason and critical analysis”.**

**Dalai Lama**

Analysis is the appraisal of the data and interpretation of the data consisting of relation between the findings of the study to the research problem and theoretical framework of the study. An important function of the process of interpretation is to link the findings of the study to the main stream of scientific knowledge in the field.

This chapter deals with the analysis and interpretation of data collected from Mothers of under five children in choolai – Chennai.

The data collected from 100 samples of mothers with under five age child are being analyzed, classified and tabulated on the basis of the objectives of the study.

#### **STATISTICAL ANALYSIS:**

- Demographic variables in categories were given in frequencies with their percentages.
- Knowledge score were given in mean and standard deviation.
- Association between demographic variables and level of knowledge gain score were analysed using chisquare test
- Knowledge score in pre assessmentt and post assessment were compared using student’s paired t-test.
- Proportion test was used to compare Pre test and posttest

- Differences between pre assessment and postassessment score was analysed using proportion with 95% CI and mean difference with 95% CI.
- Simple bar diagram, Multiple bar diagram, Pie diagram, Doughnut diagram, and Box plot were used to represent the data .
- $P < 0.05$  was considered statistically significant. All statistical test are two tailed test.

### **Organization of Data:**

**Section A :** Distribution of the subjects according to their demographic profiles

**Section B :** Pre-test knowledge on water borne diseases and its prevention

**Section C :** Post-test knowledge on water borne diseases and its prevention

**Section D:** Comparison of pretest and post test knowledge

**Section E :** Effectiveness of Computer assisted planned teaching

**Section F :** Association between level of knowledge gain and mothers demographic Variables

**SECTION A - DISTRIBUTION OF SUBJECTS ACCORDING TO  
DEMOGRAPHIC PROFILE**

**Table 2: DEMOGRAPHIC PROFILE**

Demographic variables		No. of mothers	Percentage %
Age of the mother	20 -25 yrs	50	50.0%
	26 -30 yrs	26	26.0%
	31 -35 yrs	16	16.0%
	>36 yrs	8	8.0%
Education	1 – 5 <sup>th</sup> std	13	13.0%
	6 – 8 <sup>th</sup> std	30	30.0%
	9 – 12 <sup>th</sup> std	44	44.0%
	Degree/Diploma	13	13.0%
Occupation	Housewife	86	86.0%
	Government job	3	3.0%
	Business	6	6.0%
	Private job	5	5.0%
Family income	< Rs.1589	8	8.0%
	Rs.1590 -4726	25	25.0%
	Rs.4727 -7877	43	43.0%
	Rs.7878 -11816	24	24.0%
Food practice	Vegetarian	10	10.0%
	Non Vegetarian	0	0%
	Mixed	90	90.0%
Water facility	Well water	9	9.0%
	Corporation tap water	72	72.0%
	Bore well water	8	8.0%
	Commercially available Can water	11	11.0%
Drainage facility	Closed drainage	85	85.0%
	Open drainage	15	15.0%
Toilet facility	Common Latrine	80	80.0%
	Separate Latrine	20	20.0%

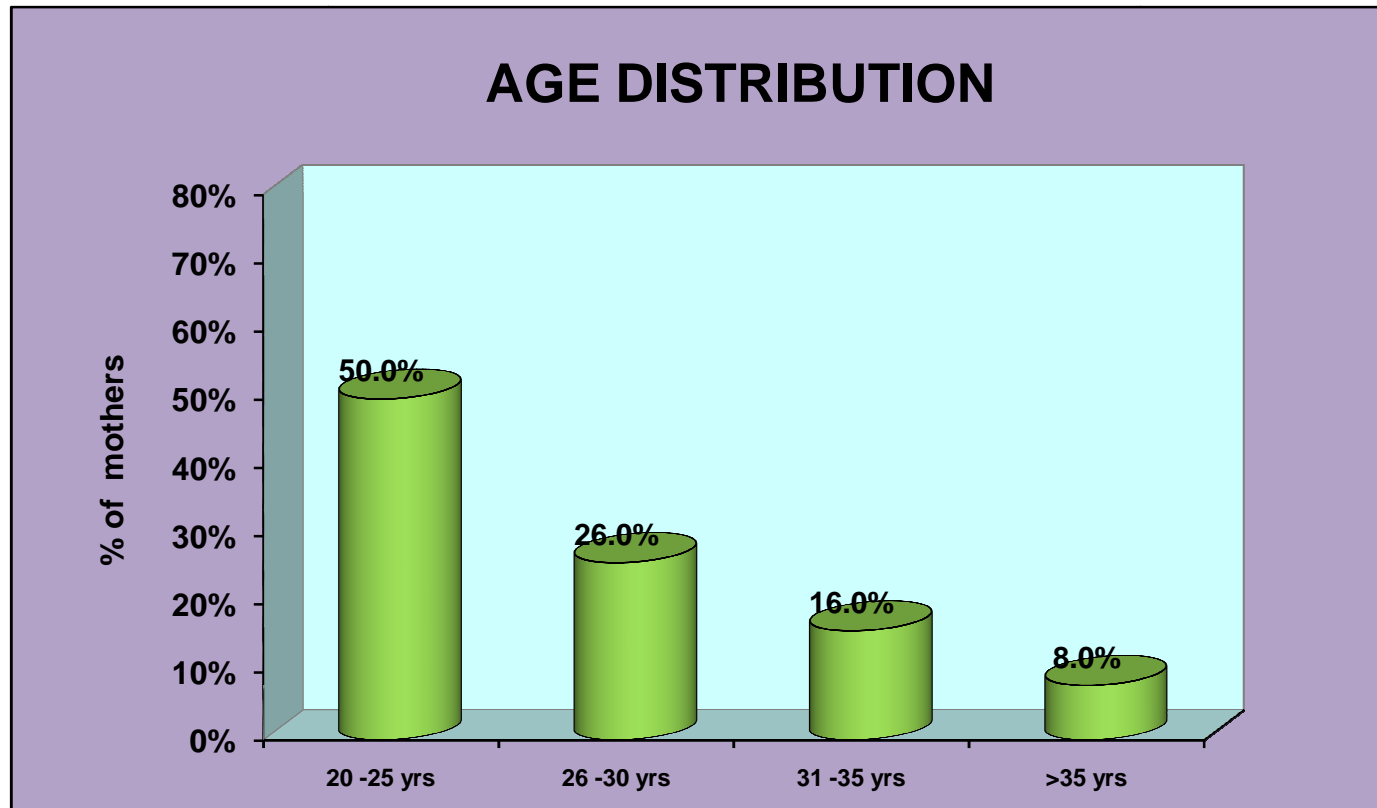
The above Table 2 reveals about the demographic information of mothers of under five years children those who are participated in this study. Among the participants half of them (50%) are between 20-25yrs, about (26%) of mothers between 26-30yrs, and a very minimal (8%) of mothers are above 36years of age.

According to the educational status the higher proportion (44%) of mothers had completed their Higher Secondary education(9<sup>th</sup> – 12<sup>th</sup> std), around one third of participants of mothers completed their Secondary education (6<sup>th</sup> – 8<sup>th</sup>) and equal number of participants (13%) had either Primary Education or Degree/Diploma.

As far as the occupational status the higher proportion (86%) of the mothers are House wives, and among the participants around 5% are in Private job, 6% are in Government job and 3% are doing Business. Regarding the family income the higher proportion(43%) of participants are having family income around Rs 4727-7877, and lower proportion of mothers (8%) are below Rs 1589, 25 % of participant's family income lies between Rs1590-4726, and 24% of participant's family income lies between Rs 7878-11816.

Among the study participants the higher proportion(90%) of mothers belongs to mixed group (Vegetarian and Non-vegetarian) food practice , and very lower (10%) proportion of mothers belongs to Vegetarian food practices. The water facility used by the participants are Corporation tap water 72%, Commercially available can water (11%) , Well water (9%), and Bore well water (8%). Regarding Drainage facility the higher proportion of the participants (85%) are having Closed drainage system and a very lower proportion (15%) of study population are having a very open drainage system . Among the study participants around (80%) of Mothers are using Common latrine and (20%) of people are using Separate Latrine.





**Figure 3 shows about the age distribution of the participants**

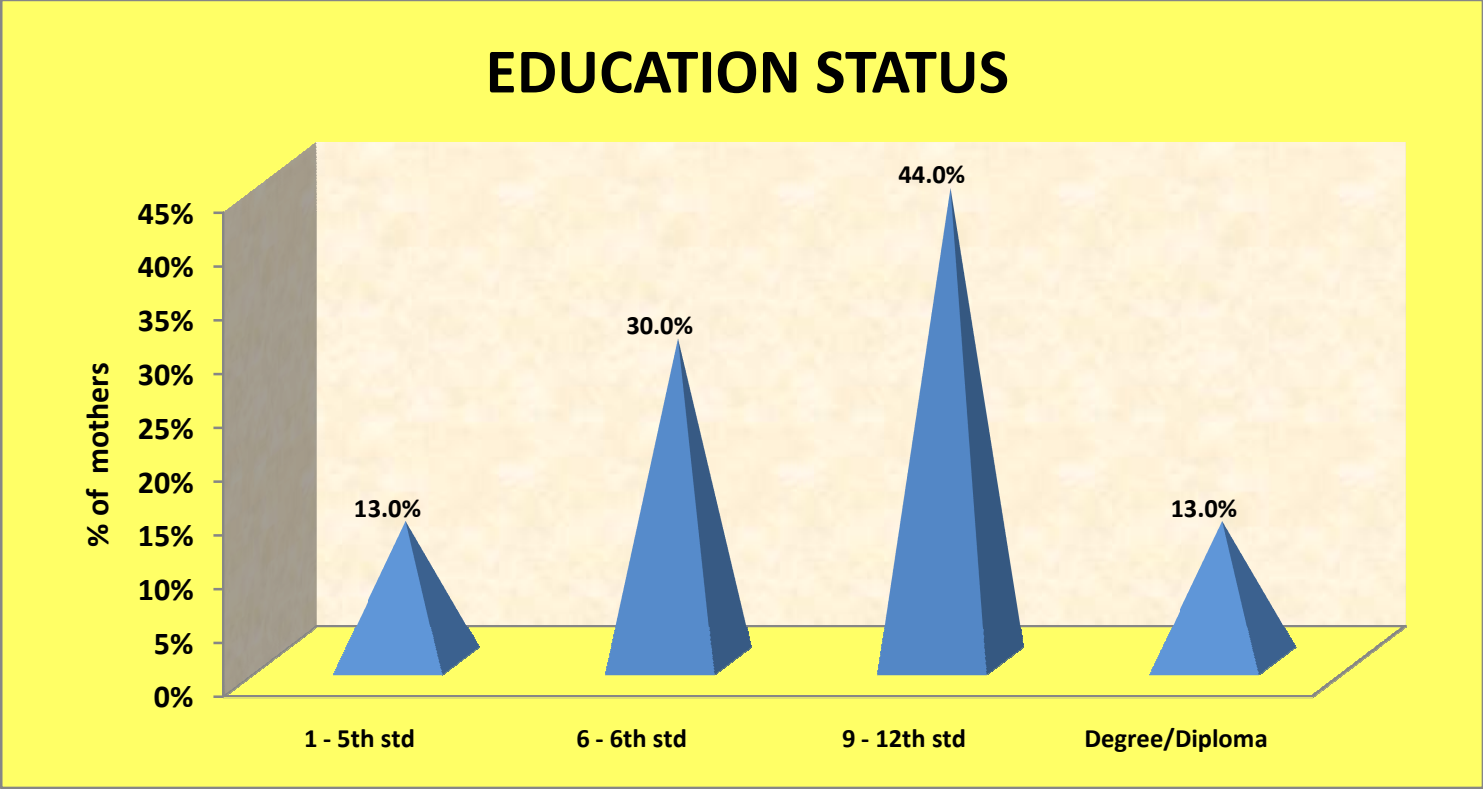
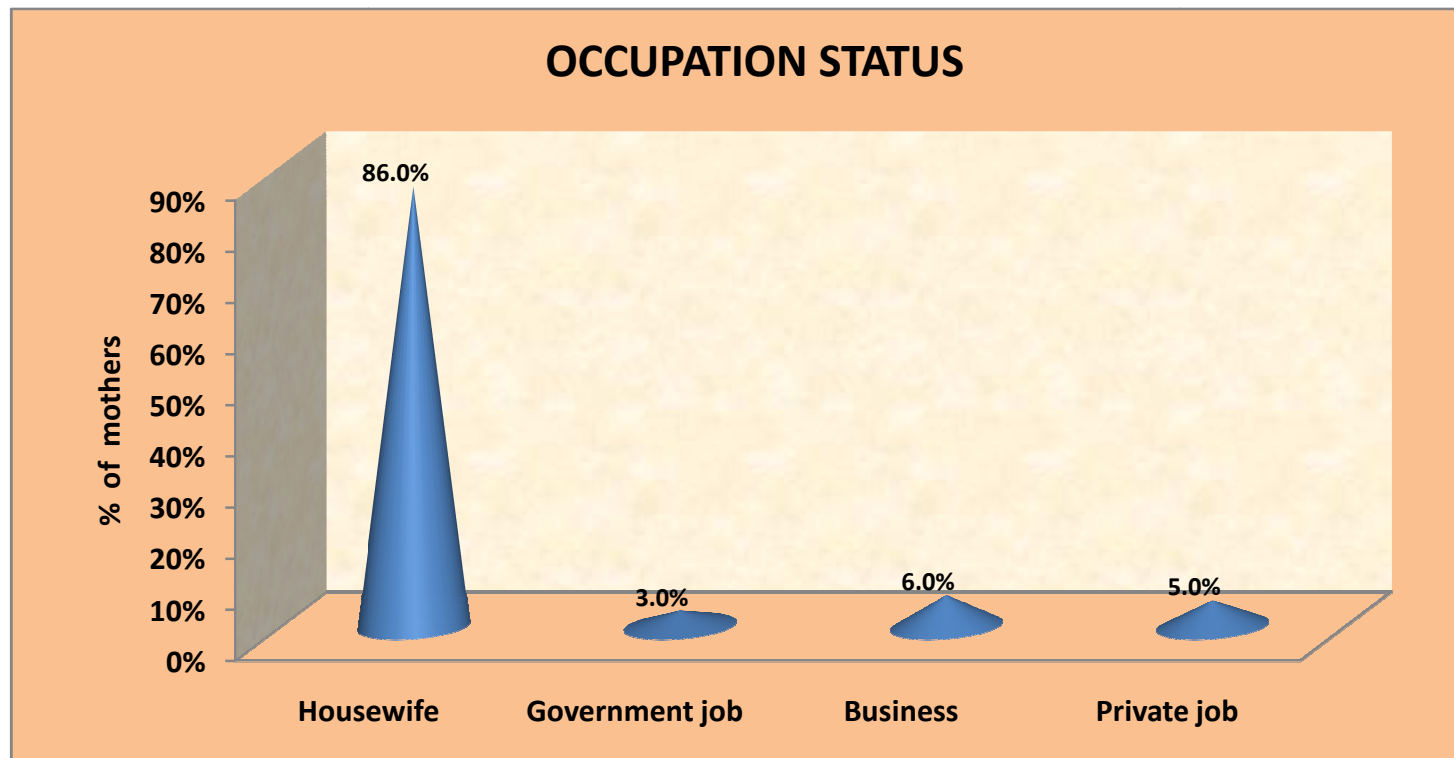


Figure 4 depicts about the distribution of education status



**Figure 5 : showed about the distribution of occupational status**

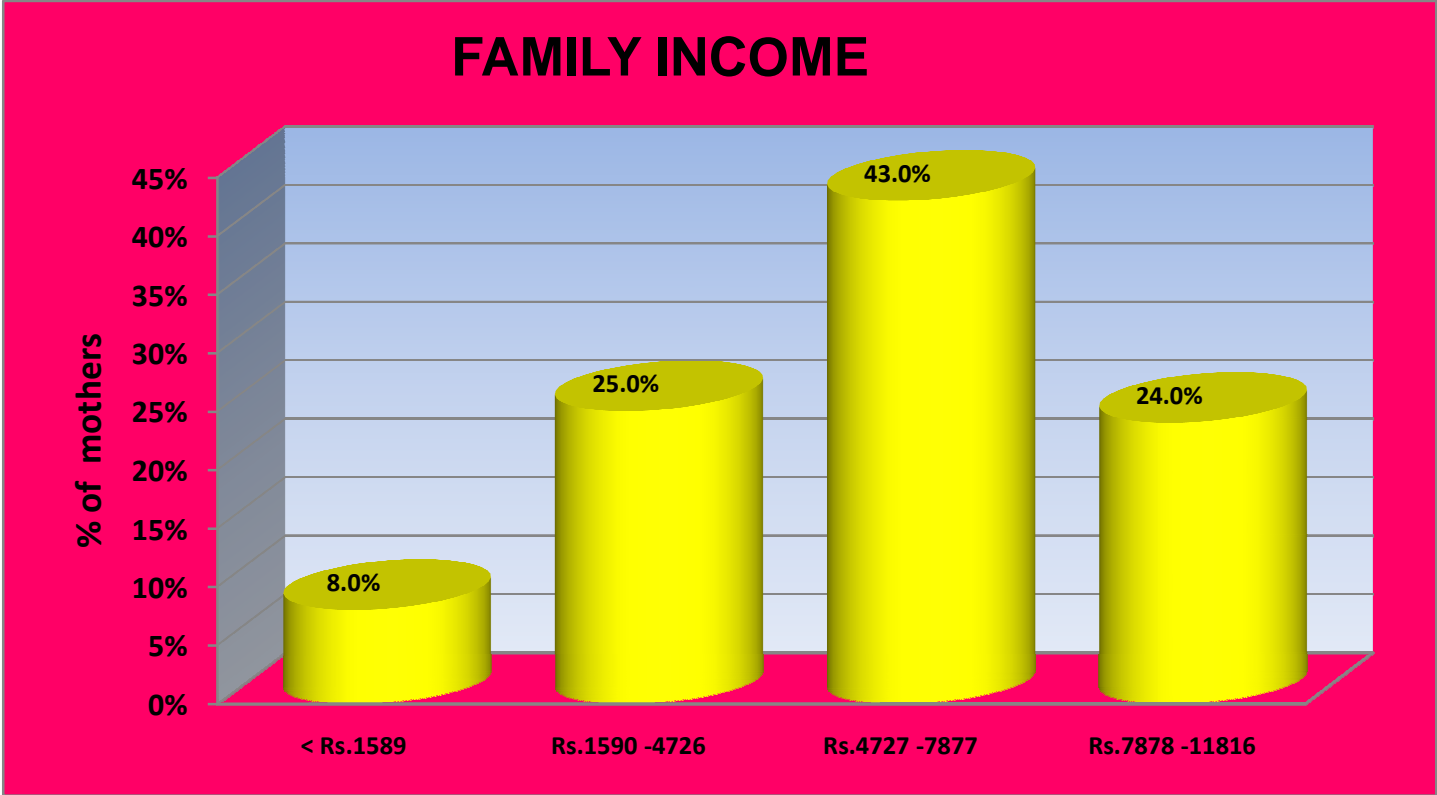


Figure 6 depicts about the distribution of family income status

## DIETARY PATTERN

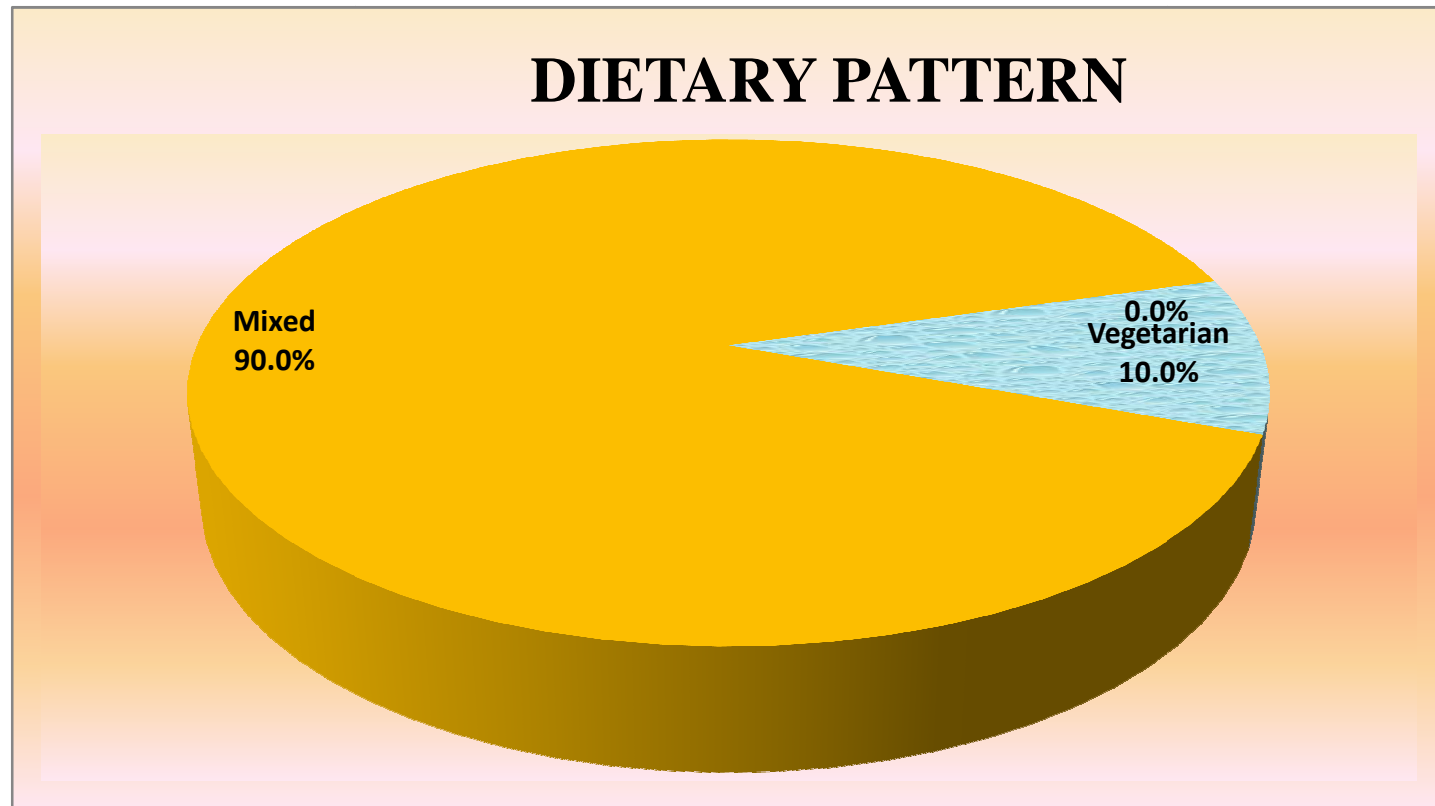
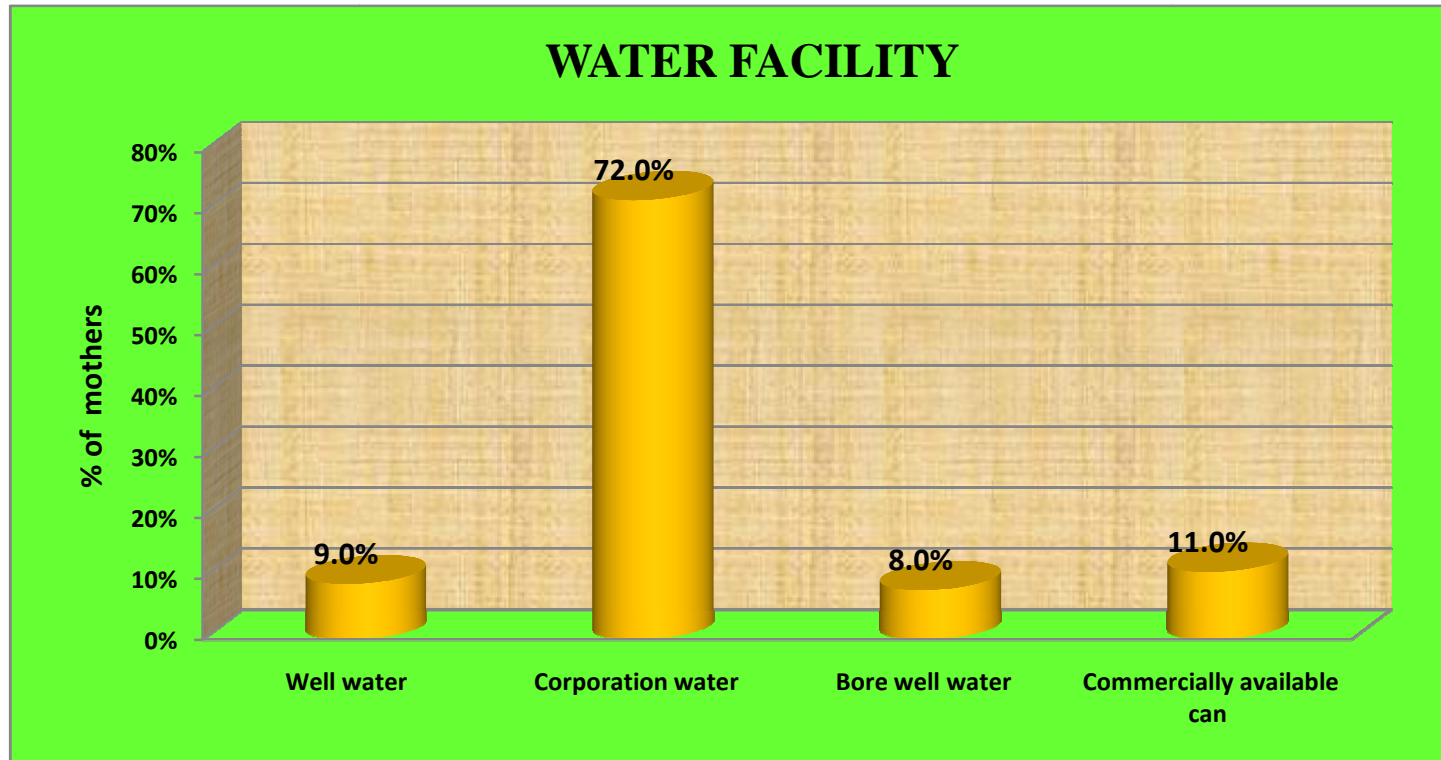
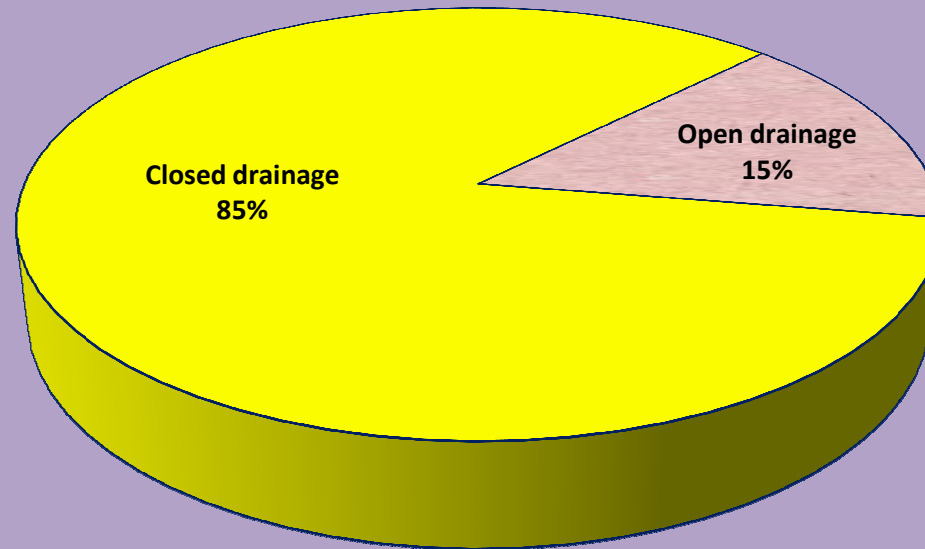


Figure 7 shows about the distribution of Dietary Pattern

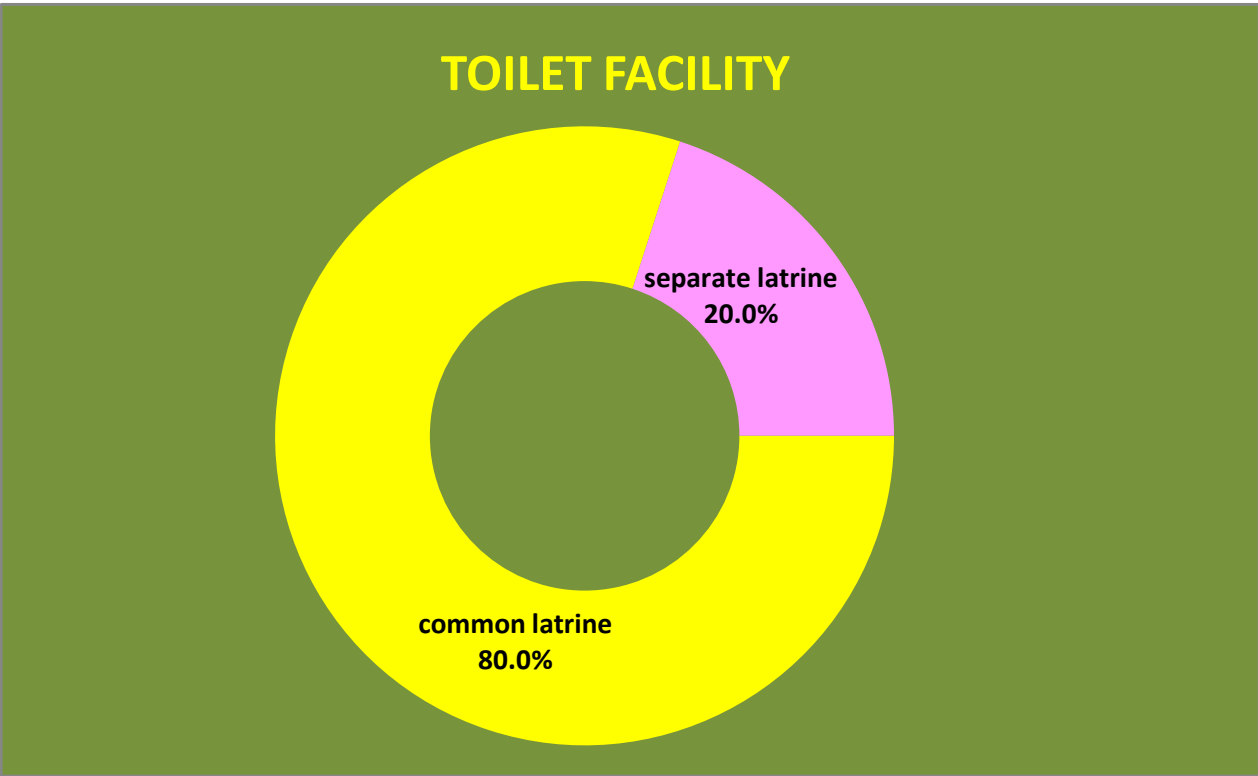


**Figure 8 shows about the distribution of water facility**

# DRAINAGE FACILITY



**Figure 9 reveals about the distribution of drainage facility**



**Figure 10 showed about the distribution of latrine facility.**



**SECTION B PRE-TEST KNOWLEDGE ON WATER BORNE  
DISEASES AND ITS PREVENTION**

**Table 3: QUESTION WISE PRE-TEST KNOWLEDGE ON WATER  
BORNE DISEASES AND ITS PREVENTION**

Knowledge on	Correct		Not correct	
	N	%	n	%
Water borne disease means	65	65.0%	35	35.0%
The common water borne disease you know are	20	20.0%	80	80.0%
One of the right method to purify the drinking water is	54	54.0%	46	46.0%
The vessels in which the water is stored should be washed	54	54.0%	46	46.0%
The right method to prevent the water from contamination are	43	43.0%	57	57.0%
Water borne diseases can be prevented by	49	49.0%	51	51.0%
Cholera means	50	50.0%	50	50.0%
cholera spreads through	53	53.0%	47	47.0%
The signs and symptoms of cholera includes	39	39.0%	61	61.0%
Typhoid fever means	69	69.0%	31	31.0%
Typhoid fever may come to	63	63.0%	37	37.0%
The peak incidence of Typhoid is	61	61.0%	39	39.0%
Viral Hepatitis means	57	57.0%	43	43.0%
We can prevent jaundice by	61	61.0%	39	39.0%

Table 3 reveals about the question wise percentage of knowledge on water borne disease and its prevention among of under five children before Computer assisted planned teaching . This table shows that most of the mothers are unaware about the knowledge on Water borne diseases and its Preventive measures.

**Table 4: PRE-TEST LEVEL OF KNOWLEDGE ON WATER BORNE DISEASES AND ITS PREVENTION**

Level of knowledge	Pretest	
	No. of mothers	%
Inadequate	41	41.0%
Moderate	59	59.0%
Adequate	0	0.0%
Total	100	100.0%

Table 4 assess the pre-test knowledge on selected water borne diseases and its prevention among mothers of under five children. In pretest 41.0% of the mothers had inadequate knowledge , 59.0% of them had moderately adequate knowledge and none of them had adequate knowledge .

**TABLE 5: SCORE INTERPRETATION**

S.No	Grade	Score	%
1.	Inadequate	$\leq 7$	< 50%
2	Moderately adequate	7.1-10.5	51%-75%
3.	Adequate	10.6-14.0	76%-100%

**(Minimum score = 0 ,Maximum score =1 , questions= 14 .Total score=14)**

Table 5 showed the score interpretation used to assess the level of knowledge among the mother who participated in this study

**SECTION C -POST-TEST KNOWLEDGE ON WATER BORNE DISEASES AND ITS PREVENTION**

**Table 6 : QUESTION WISE POST-TEST KNOWLEDGE ON WATER BORNE DISEASES AND ITS PREVENTION**

Knowledge on	Correct		Not correct	
	N	%	n	%
Water borne disease means	92	92.0%	8	8.0%
The common water borne disease you know are	76	76.0%	24	24.0%
One of the right method to purify the drinking water is	88	88.0%	12	12.0%
The vessels in which the water is stored should be washed	81	98.0%	19	19.0%
The right method to prevent the water from contamination are	90	90.0%	10	10.0%
Water borne diseases can be prevented by	86	86.0%	14	14.0%
Cholera means	88	88.0%	12	12.0%
cholera spreads through	88	88.0%	12	12.0%
The signs and symptoms of cholera includes	75	75.0%	25	25.0%
Typhoid fever means	81	81.0%	19	19.0%
Typhoid fever may come to	87	87.0%	13	13.0%
The peak incidence of Typhoid is	88	88.0%	12	12.0%
Viral Hepatitis means	83	83.0%	17	17.0%
We can prevent jaundice by	81	81.0%	19	19.0%

Table 6 showed the each question wise posttest knowledge on water borne disease and its prevention among mothers of under five children after the Computer assisted Planned teaching programme. The table shows there is higher proportion of mothers who answered correctly to the question when compared to the pretest.

**Table 7: POST-TEST LEVEL OF KNOWLEDGE ON WATER BORNE DISEASES AND ITS PREVENTION**

Level of knowledge	Posttest	
	No. of mothers	%
Inadequate	0	0.0%
Moderate	22	22.0%
Adequate	78	78.0%
Total	100	100.0%

Table 7 depicts the post-test knowledge of participants, In posttest none of the mothers had inadequate knowledge, 22.0% of them had moderate knowledge and 78% of them had adequate knowledge.

**SECTION D- COMPARISON OF PRETEST AND POST TEST KNOWLEDGE**

**Table -8 :COMPARISON OF QUESTION WISE MOTHRE'S RESPONSE.**

Knowledge Item	Pre test [Correct response]		Post test [Correct response]		Proportion test
	N	%	N	%	
Water borne disease means	65	65.0%	92	92.0%	Z=4.64p=0.001***
The common water borne disease you know are	20	20.0%	76	76.0%	Z=7.93 p=0.001***
One of the right method to purify the drinking water is	54	54.0%	88	88.0%	Z=5.29 p=0.001***
The vessels in which the water is stored should be washed	54	54.0%	81	98.0%	Z=4.07 p=0.001***
The right method to prevent the water from contamination are	43	43.0%	90	90.0%	Z=7.03 p=0.001***
Water borne diseases can be prevented by	49	49.0%	86	86.0%	Z=5.58 p=0.001***
Cholera means	50	50.0%	88	88.0%	Z=5.81 p=0.001***
cholera spreads through	53	53.0%	88	88.0%	Z=5.42 p=0.001***
The signs and symptoms of cholera includes	39	39.0%	75	75.0%	Z=5.14 p=0.001***
Typhoid fever means	69	69.0%	81	81.0%	Z=1.96 p=0.05*
Typhoid fever may come to	63	63.0%	87	87.0%	Z=3.91 p=0.01***
The peak incidence of Typhoid is	61	61.0%	88	88.0%	Z=4.38 p=0.001***
Viral Hepatitis means	57	57.0%	83	83.0%	Z=4.01 p=0.001***
We can prevent jaundice by	61	61.0%	81	81.0%	Z=3.11 p=0.001***

Table 8 compares pretest and posttest knowledge on selected water borne diseases and its prevention among mothers of under five children. Statistical significance was calculated by using proportion test.

**Table 9: COMPARISON OF OVERALL KNOWLEDGE SCORE**

	No. of women	Mean $\pm$ SD	Student's paired t-test
Pretest	100	7.38 $\pm$ 2.15	t=23.16 P=0.001***
posttest	100	11.84 $\pm$ 1.57	Significant

\* significant at  $P \leq 0.05$  \*\* highly significant at  $P \leq 0.01$  \*\*\* very high significant at  $P \leq 0.001$

Table 9 depicted the comparison of overall knowledge score between pretest and posttest. On an average, in pretest, mothers are having 7.38 score and in posttest, mothers are having 11.84 score. Difference is 4.46 score. The difference between pretest and posttest knowledge score is large and it is statistically significant ( $P \leq 0.001$ ) in student's paired t-test.

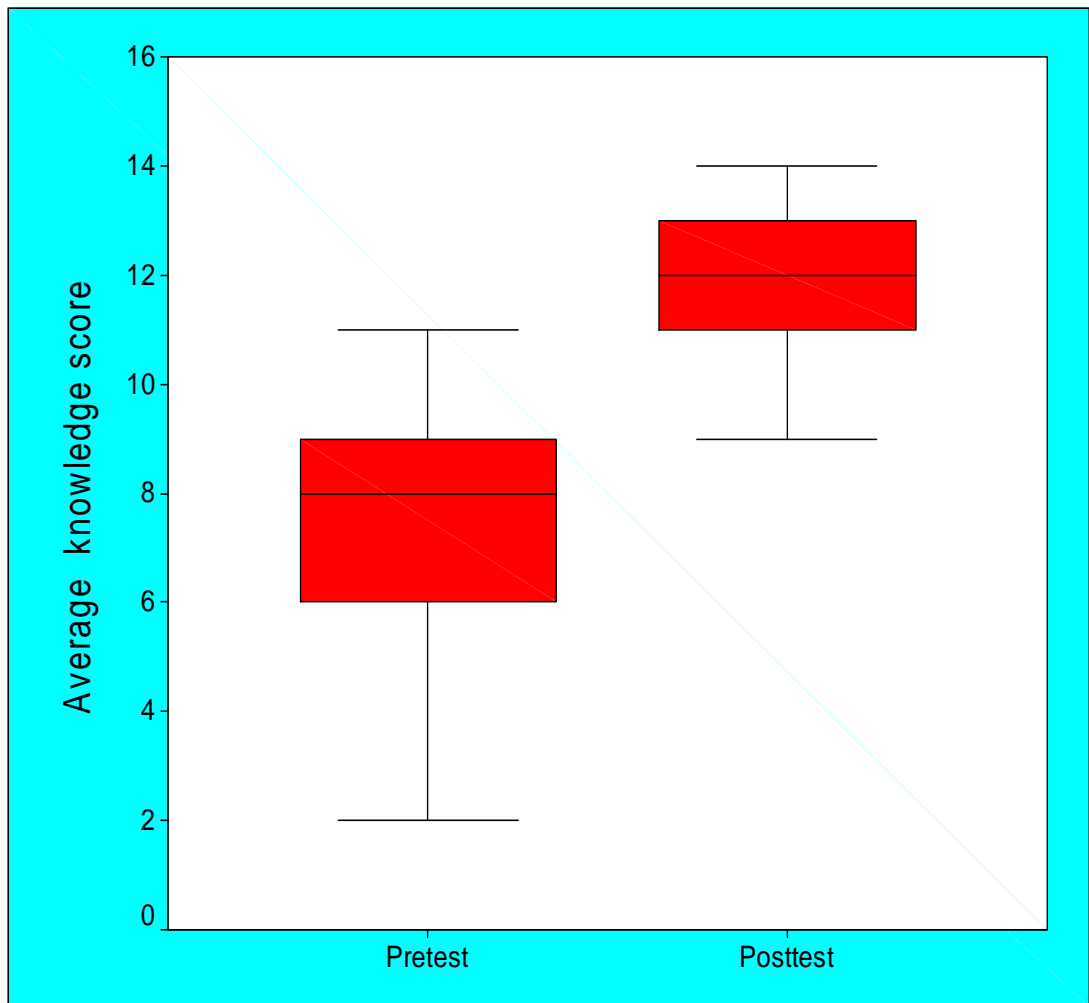


Fig 11 : Box-Plot Compares the pre-test and post-test knowledge score selected water borne diseases and its prevention among mothers of under five children

**Table 10: COMPARISON OF PRETEST AND POSTTEST  
LEVEL OF KNOWLEDGE**

Level of knowledge	Pretest		Post test		Chisquare test
	No. of mothers	%	No. of mothers	%	
Inadequate	41	41.0%	0	0.0%	$\chi^2=88.46$ P=0.001*** Significant
Moderate	59	59.0%	22	22.0%	
Adequate	0	0.0%	78	78.0%	
Total	100	100.0%	100	100.0%	

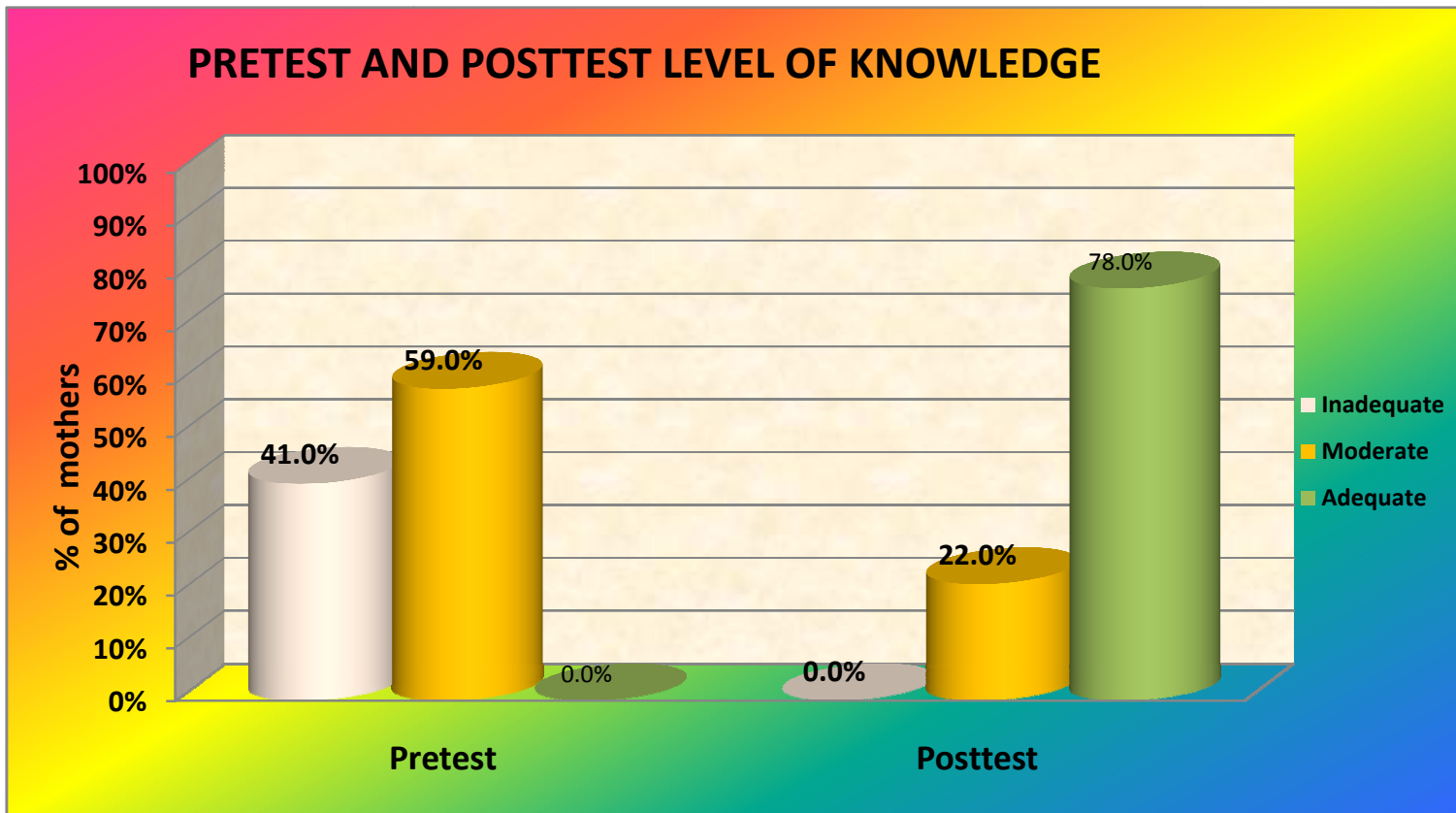
\* significant at  $P \leq 0.05$  ,\*\* highly significant at  $P \leq 0.01$  ,\*\*\* very high significant at  $P \leq 0.001$

Table 10 shows the comparison of Pre-test and Posttest knowledge regarding selected water borne diseases and its prevention among mothers of under five children .In pretest before Computer assisted planned teaching 41.0% of the mothers had inadequate knowledge , 59.0% of them had moderately adequate knowledge and none of them had adequate knowledge. In posttest none of the mothers had inadequate knowledge , 22.0% of them had moderately adequate knowledge and 78% of them had adequate knowledge .which should highly significant ( $P \leq 0.001$  ) and it was analysed by using chi square test.

**Table 11: OVERALL KNOWLEDGE GAIN SCORE**

	Maximum score	Mean knowledge score	Mean Difference in knowledge with 95% Confidence interval	Percentage of knowledge gain with 95% Confidence interval
Pretest	14	7.38	4.46(4.08 – 4.84)	31.9%(29.1% –34.6%)
Posttest	14	11.84		

Table 11 shows the comparison of overall knowledge score between pretest and post test. In pretest the mean knowledge score is 7.38, In post test the mean knowledge score is 11.84. On an average, After Computer Assisted Planned Teaching , mothers are gained 31.9% of the knowledge than pretest.. Differences between pretest and posttest score was analysed using proportion with 95% CI and mean difference with 95% CI.



**Figure 12: Comparison of Pre test knowledge level and Post test knowledge level.**



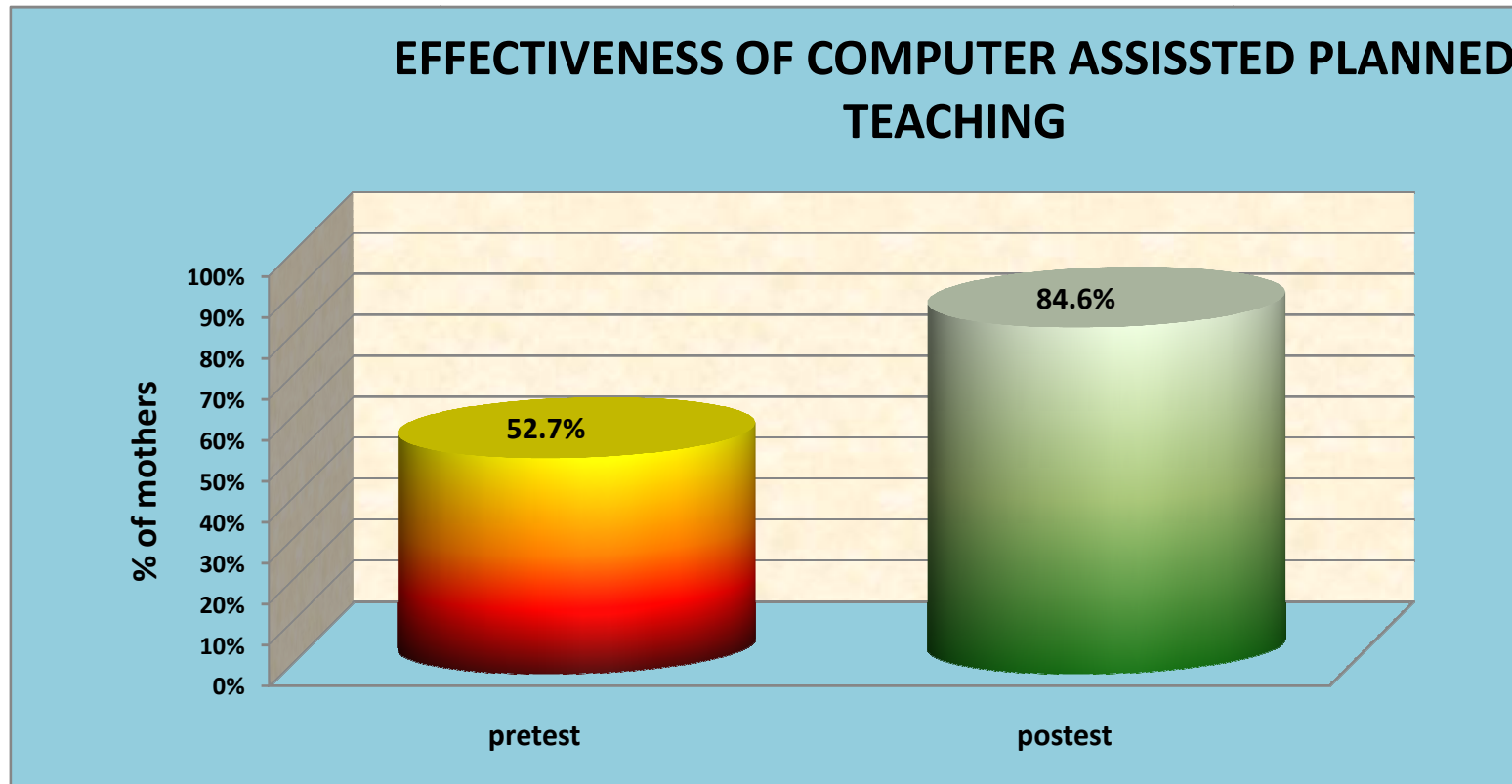
## SECTION E- EFFECTIVENESS OF COMPUTER ASSISTED PLANNED TEACHING

**Table 12 : EFFECTIVENESS OF COMPUTER ASSISTED PLANNED TEACHING**

	Maximum score	Mean knowledge score	% of score	Gain score
Pretest	14	7.38	52.7%	31.9%
Posttest	14	11.84	84.6%	

Table 12 evaluate the effectiveness of Computer assisted teaching regarding knowledge of Water borne disease and its prevention among mothers of under five children.

On an average, After Computer Assisted Planned Teaching, mothers are gained 31.9% of the knowledge than pretest. ***This is net benefit of Computer assisted planned teaching programme.***



**Figure 13 : Effectiveness of Computer assisted Planned teaching**

**SECTION F- ASSOCIATION BETWEEN LEVEL OF KNOWLEDGE GAIN AND MOTHERS DEMOGRAPHIC VARIABLES**

**Table 13 – Association between demographic variables and gain in knowledge level**

Demographic Profile		Level of knowledge gain				Total	Chi square test
		Below average(<4.5)		Above average(>4.5)			
		n	%	n	%		
Age of the mother	20 -25 yrs	31	62.0%	19	38.0%	50	$\chi^2=8.53P=0.04^*$ Significant
	25 -30 yrs	12	46.1%	14	53.9%	26	
	31 -35 yrs	6	37.5%	10	62.5%	16	
	>35 yrs	1	12.5%	7	87.5%	8	
Education	1 - 5th std	10	76.9%	3	23.1%	13	$\chi^2=7.76P=0.05^*$ Significant
	6 - 6th std	14	46.7%	16	53.3%	30	
	9 - 12th std	21	47.7%	23	52.3%	44	
	Degree/Diploma	3	23.1%	10	76.9%	13	
Occupation	Housewife	45	52.3%	41	47.7%	86	$\chi^2=3.38P=0.33$ Not Significant
	Government job	2	66.7%	1	33.3%	3	
	Business	1	16.7%	5	83.3%	6	
	Private job	2	40.0%	3	60.0%	5	
Family income	< Rs.1589	7	87.5%	1	12.5%	8	$\chi^2=9.71P=0.02^*$ Significant
	Rs.1590 -4726	16	64.0%	9	36.0%	25	
	Rs.4727 -7877	19	44.2%	24	55.8%	43	
	Rs.7878 -11816	8	33.3%	16	66.7%	24	
Food practice	Vegetarian	3	30.0%	7	70.0%	10	$\chi^2=2.22P=0.32$ Not Significant
	Non Vegetarian	1	33.3%	2	66.7%	3	
	Mixed	46	52.9%	41	47.1%	87	
Water facility	Well water	4	44.4%	5	55.6%	9	$\chi^2=2.25P=0.52$ Not Significant
	Corporation tap water	35	48.6%	37	51.4%	72	
	Bore well water	6	75.0%	2	25.0%	8	
	Commercially available	5	45.5%	6	54.5%	11	
Drainage facility	Closed drainage	45	52.9%	40	47.1%	85	$\chi^2=1.96P=0.16$ Not Significant
	Open drainage	5	33.3%	10	66.7%	15	
Toilet facility	Open field defecation	40	50.0%	40	50.0%	80	$\chi^2=0.00P=1.00$ Not Significant
	Common Latrine	10	50.0%	10	50.0%	20	

\* significant at  $P \leq 0.05$  \*\* highly significant at  $P \leq 0.01$  \*\*\* very high significant at  $P \leq 0.001$

Table no 13 reveals the association between level of knowledge gain and their demographic variables. As far as the table it highlights that post test knowledge score has significant association with the age of the mother ( $\chi^2=8.53$ ) ( $P=0.04$ ), Family income ( $\chi^2=7.76$ ) ( $P=0.05$ ) and Educational status ( $\chi^2=9.71$ ) ( $P=0.02$ ). Statistical significance was calculated using chi square test.

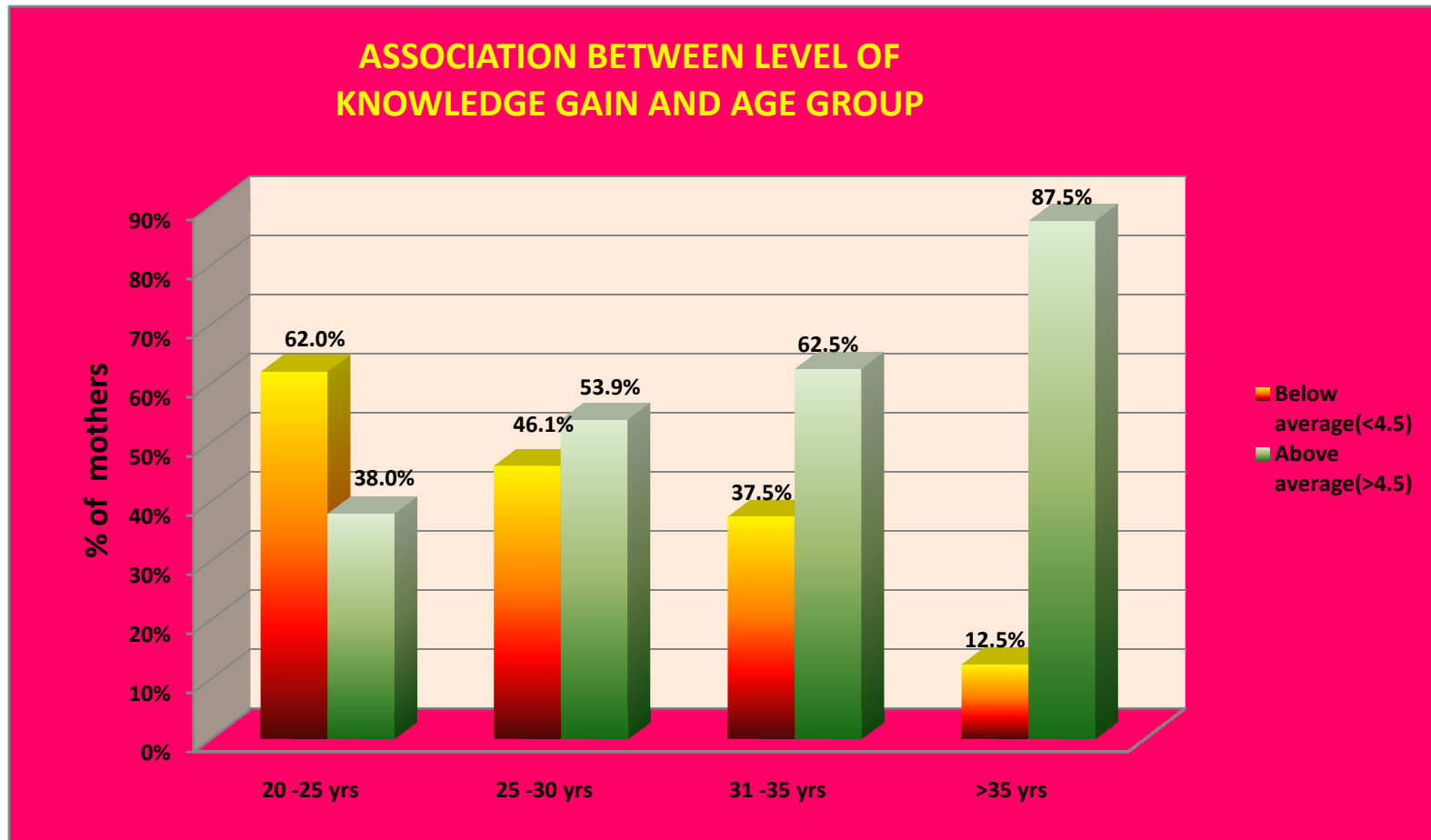
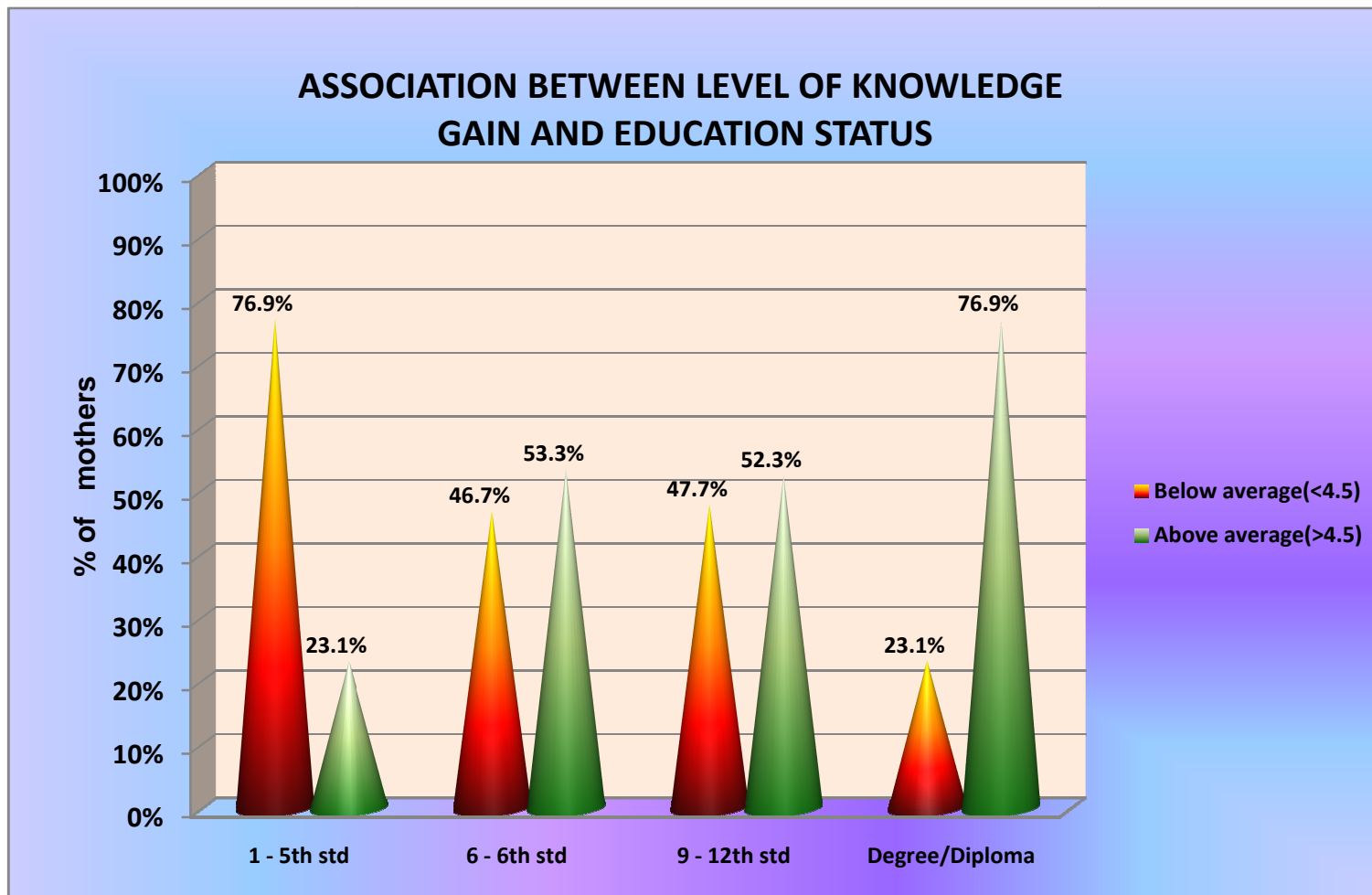


Figure 14 shows the association between level of knowledge gain and age group



**Figure 15 shows the association between level of knowledge gain and Educational status**

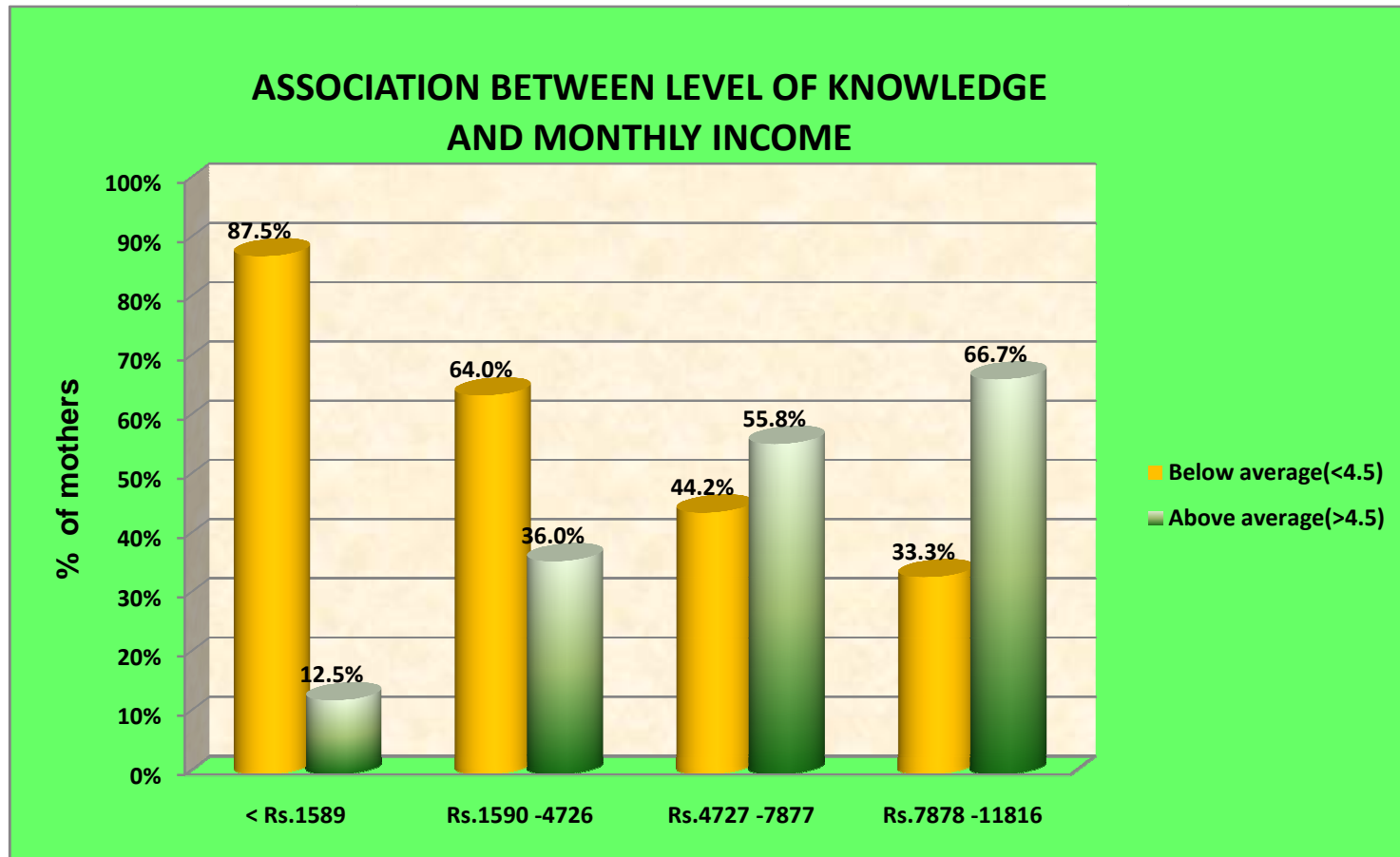


Figure 14 shows the association between level of knowledge gain and monthly income

## **CHAPTER - V**

### **DISCUSSION**

The World Health Organization says that every year more than 3.4 million people die as a result of water related diseases, making it the leading cause of disease and death around the world. Most of the victims are young children, the vast majority of whom die of illnesses caused by organisms that thrive in water sources contaminated by raw sewage. To minimize the incidence level and improve the knowledge among the mothers regarding water borne disease among mothers of under five children this pre experimental study was done. The present study was focused to assess the effectiveness of Computer assisted planned teaching programme on knowledge regarding water borne diseases and its preventive measures among mothers of under five children.

The study sample consisted of 100 mothers of under five children selected randomly .The investigator found that the mothers were cooperative in the study .The conceptual frame work of this study was based on Imogene King's Conceptual System and Theory of Goal Attainment and Transactional Process. Descriptive statistics and inferential statistics were used to analyses the data and to test the hypothesis .

The discussion about the study findings is presented in this chapter to arrive at a conclusion based on the objectives, the related literatures and hypothesis.

**The first objective was to assess the pre-test knowledge on selected water borne diseases and its prevention among mothers of under five children**

In assessing the pre-test level of knowledge on water borne diseases among mothers of under five children (41.0%) of the mothers had inadequate knowledge , ( 59.0%) of them had moderately adequate knowledge and none of them had adequate knowledge .

This study was also supported by **Kanimozhi .D (2005)** who has conducted a study to assess the knowledge of mothers of under five children regarding selected water borne diseases. The results of this study revealed that 60% of mothers were in the age group of 23-30 years .the study reveals many of the mothers are had less knowledge in pre test and gain around 43.4% of knowledge in post test

**The second objective was to assess the post-test knowledge on selected water borne diseases and its prevention among mothers of under five children.**

In assessing the post test level of knowledge none of the mothers had inadequate knowledge (22.0%) of them had moderate knowledge and (78%) of them had adequate knowledge .

This study was supported by **Rahul Malhotra.(2008)**,who conducted study on 136 food handlers, and assessed change in knowledge, attitudes and self reported hand washing practices after providing them 3 months health education using posters and interactive sessions using flip chart. Significant increase in knowledge about hand hygiene measures namely, washing hands before handling food were 23.5%, keeping nails cut and clean were found to be 8.1%. Findings highlight the importance of health education in personal hygiene which will prevent water borne diseases.



**The third objective was to evaluate the effectiveness of Computer assisted teaching regarding knowledge of Water borne disease and its prevention among mothers of under five children.**

It shows that there is significant improvement in the level of knowledge, after the computer assisted teaching programme, The pretest mean knowledge score is (52.7%) and post test mean knowledge score is (84.6%) On an average, mothers are gained 31.9% of the knowledge than pretest.

This study was supported by **WH. Au, L.K.P suen, Y. Kwok. Health education. 2010**, who conducted a study on Hand washing programmes in kindergarten shows the effectiveness of structured programme on hand washing which has taken into account of the developmental stage of children. Study shows significant improvement in hand washing practice was observed in intervention groups

**The fourth objective was to find the association between the level of knowledge with selected demographic variables.**

After Computer Assisted Planned Teaching , mothers are gained 31.9% of the knowledge than pretest.. Differences between pretest and posttest score was analysed using proportion with 95% CI and mean difference with 95% CI. According to the association between level of knowledge gain and their demographic variables the table (14) highlights that post test knowledge score has significant association with the age of the mother ( $\chi^2=8.53$ ) ( $P=0.04$ ), Family income ( $\chi^2=7.76$ ) ( $P=0.05$ ) and Educational status ( $\chi^2=9.71$ ) ( $P=0.02$ ).Statistical significance was calculated using chi square test

This study supported the conceptual frame work based on Imogene King's Conceptual System and Theory of Goal Attainment and Transactional Process which is showed in Figure 1. The computer assisted planned teaching

create an awareness among the mothers of under five age children regarding water borne diseases and its preventive measures and thereby there is an increase level of knowledge among the mothers which is statistically significant ( $t=23.16$   $P=0.001$ ).

Thus the investigator found that there should be a comprehensive mass education programme to the mothers of under five children to know more about preventive measures of water borne diseases.

## CHAPTER VI

### SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

*“Summarizing is condensing a source's main ideas into your own words”*

This chapter deals with the summary of the study, implications for nursing practice, education, nursing research, administration and recommendations for future research.

#### **6.1. SUMMARY OF THE STUDY**

The study was conducted to ascertain the effectiveness of computer assisted planned teaching programme on water borne diseases among mothers of under five children at choolai, Chennai.

It was quantitative approach. The main objective of the study is to assess the level of knowledge with one group pre test and post test design. 100 mothers of under five children's were included in the study based on the inclusion criteria. Self administered questionnaire, was used to determine the level of knowledge .

Every week from Monday to Saturday, the data was collected. Formal permission was obtained from the Head of the department of preventive and social medicine, and corporation of Chennai

The objective of the study was explained to the Medical Officer of the Health Post and the participants before starting the data collection to get their cooperation during data collection.

The review of literature provided the base to construct the tools to select the methodology. The conceptual frame work provided comprehensive frame work for evaluation of the computer assisted teaching programme. A teaching plan on water borne diseases was developed. All

these tools were also translated in Tamil language. The content validity of tools was obtained from experts. The reliability was tested by test retest method and by conducting pilot study.

Simple random sampling technique was used and the samples that fulfilled the inclusion criteria were finally included in the study and it was 100 samples. Descriptive and inferential statistics were used in data analysis.

## **6.2. MAJOR FINDINGS OF THE STUDY**

- 100 Mothers of under five years children were participated in this study . Among the participants half of them (50%) are between 20-25yrs, about (26%) of mothers are between 26-30yrs, and a very minimal (8%) of mothers are above 36 years age.
- On the basis of the educational status the higher proportion (44%) of mothers had completed their Higher Secondary education(9<sup>th</sup> – 12<sup>th</sup> std), around one third of participants of mothers completed their Secondary education (6<sup>th</sup> – 8<sup>th</sup>) and equal number of participants (13%) had either Primary Education or Degree/Diploma
- On the basis of the occupational status the higher proportion (86%) of the mothers are House wives, and among the participants around 5% are in Private job, 6% are in Government job and 3% are doing Business.
- Regarding the family income the higher proportion(43%) of participants are having family income around Rs 4727-7877, and lower proportion of mothers (8%) are below Rs 1589, 25 % of participant's family income lies between Rs1590-4726, and 24% of participant's family income lies between Rs 7878-11816.
- Among the study participants the higher proportion(90%) of mother are belongs to mixed (Vegetarian and Non-vegetarian) food practice , and very lower (10%) proportion of mothers belongs to Vegetarian food practices
- The water facility used by the participants are Corporation tap water (72%), Commercially available can water (11%) , Well water (9%), and Bore well water (8%)

- Regarding Drainage facility the higher proportion of the participants (85%) are having Closed drainage system and a very lower proportion (15%) of study population are having a very open drainage system
- On the basis of latrine facility of the study participants around (80%) of Mothers are using Common latrine and (20%) of people are using Separate Latrine
- On assessing the pre-test knowledge on selected water borne diseases and its prevention among mothers of under five children. In pretest 41.0% of the mothers had inadequate knowledge , 59.0% of them had moderate knowledge and none of them had adequate knowledge
- In posttest none of the mothers had inadequate knowledge , 22.0% of them had moderate knowledge and 78% of them had adequate knowledge .
- When comparing of overall knowledge score between pretest and posttest. On an average, in pretest, mothers are having 7.38 score and in posttest, mothers are having 11.84 score. Difference is 4.46 score. The difference between pretest and posttest knowledge score is large and it is statistically significant ( $P \leq 0.001$ ) in student's paired t-test
- After Computer Assisted Planned Teaching, mothers are gained 31.9% of the knowledge than pretest. *This is net benefit of Computer assisted planned teaching programme.*

### **6.3.IMPLICATIONS OF THE STUDY**

The findings of the study have implication for the nursing profession. The implications drawn from the study were of vital concern for community nursing practice, nursing education, nursing research and nursing administration.

## **NURSING PRACTICE**

The study findings revealed that there is a significant relationship between the gain of knowledge level and the demographic variables on prevention of water borne diseases among the Mothers of under five children.

- The community health nurse can be resource a personnel for the mothers and they can also educate them at the gross root level in imparting knowledge regarding water borne diseases and its preventive measures.
- The community health nurse has to educate the mothers of under five children regarding water borne diseases ad its preventive measures both in urban and rural areas.
- Health education regarding importance of water hygiene should be provided to the mothers of under five children with a power point presentation.
- Training and education to the mothers to practice good hygienic measures and proper hand washing technique at the home.
- Computer assisted teaching can be explained on the importance of the water hygiene and preventive measures of water borne diseases.
- Not only nurses but all the health care providers such as auxiliary nurses and midwives, village health guides, nurses working in community centre should provide in-service education regarding Personal hygiene, prevention of water related diseases , food hygiene and good environmental hygiene.

## **NURSING EDUCATION**

The study clearly concluded that the knowledge of the mothers regarding Prevention of water borne diseases is inadequate.

- To provide knowledge, the nursing personnel need to be equipped with adequate knowledge and conduct mass health education programme on prevention of water borne diseases especially in under five children who are at high risk.

- The community health nursing curriculum needs to be strengthened and should include more content towards diseases caused by contaminated water and unhygienic practices which commonly affects the under five children in our state
- The female health workers curriculum needs to be strengthened and should include more content regarding prevention of water related diseases, personal hygiene, food hygiene and environmental sanitation .
- The study also emphasizes the special needs for preparation of health education material among nursing students who were engaged in community health services

### **NURSING ADMINISTRATION**

- The health administration of nursing at the national, state, district, institutional and local level should focus their attention on making the public awareness to improve the high quality water hygiene, environmental sanitation, and personnel hygiene ,preventive health services among the mothers.
- The nurse administrator should arrange the training and appropriate teaching material regarding drinking water hygiene and proper hand washing technique for the mothers of under five children.
- Administrator can organise educational programmes in schools and community areas to provide knowledge regarding importance of water hygiene and prevention of water borne diseases.
- The nurse administrator should motivate the mothers and make arrangements for periodic health education to the mothers of under five children regarding prevention of water borne diseases.
- The nurse administrator should recommend to the superior for the supply of suitable posters, pictures related to prevention of water borne diseases and personal hygiene which can be displayed in the health post premises.

## **IMPLICATIONS IN NURSING RESEARCH**

- The findings of the study help the professional nurses and the mothers to develop inquiry by providing a base
- The study provides baseline for conducting similar studies in different settings.

### **6.4. RECOMMENDATIONS FOR FURTHER STUDY**

On the basis of the present study the following recommendations have been made for further study.

- The study can be repeated on the large scale sample to validate and for better generalization of the findings.
- Descriptive study can be conducted to assess knowledge, attitude and practice of mothers of under five children regarding water hygiene, personal hygiene, sterilization of bottles used for children and environmental hygiene
- Comparative study may be conducted to find out the similarities or differences between the knowledge and practices of urban and rural mothers.
- Mass health education programme can be arranged to educate the public on safe drinking water, water borne diseases and its prevention.

### **6.5. CONCLUSION**

Mothers of under five children's are having decreased level of knowledge, regarding water borne diseases , its causes, and its preventive measures and also they don't know the effective way of maintaining their water hygiene and practices regarding good toileting and environmental sanitation. This study shows a significant knowledge gain among the mothers of under five children regarding computer assisted planned teaching on water borne diseases.



# STRUCTURED QUESTIONNAIRE

**PURPOSE:**

*This knowledge questionnaire is used to assess the level of knowledge of the mothers regarding selected water borne diseases.*

**INSTRUCTIONS:**

*Please put a tick mark in the space provided in the side of each question which you feel as appropriate option. The response will be kept confidential*

**S.No** :

**Name of the Participant:**

**Address** :

## PART A

### DEMOGRAPHIC DATA

1. Age of the Mother

a) 20-25 years

b) 26-30 years

c) 31-35 years

d) Above 36 years

2. Mother's Education

a) 1-5<sup>th</sup> std

b) 6-8<sup>th</sup> std

c) 9-12<sup>th</sup> std

d) Degree/ Diploma

3. Occupation

a) House wife

b) Government job

c) Business

d) Private job

4. Monthly Family income

a) < Rs. 1589

b) Rs. 1590 -4726

c) Rs.4727-7877

d) Rs. 7878- 11,816

5. Dietary Pattern

a) Vegetarian

b) Non Vegetarian

c) Mixed

6. Type of drinking water facility available in the house

- a) Well water       b) Corporation tap water   
c) Bore well water       d) Commercially available can   
e) Others

7. Type of Drainage system available in the house

- a. Closed drainage       b) Open drainage

8. Type of Latrine facilities

- a) Open field defecation       b) Common Latrine   
b) Separate Latrine

## PART B

### KNOWLEDGE RELATED TO WATER BORNE DISEASES AND ITS PREVENTIVE MEASURES

9. Water borne disease means

- a) Infection spread through unpurified, unsafe drinking water   
b) Infection spread through mosquitoes   
c) Infection spread through polluted air   
d) Don't know

10. The common water borne disease you know are

- a) Cholera       b) typhoid   
c) Jaundice       d) All of the above

11. One of the right method to purify the drinking water is

- a) Cooling       b) Boiling   
c) Not doing anything       d) Don't know

12. The vessels in which the water is stored should be washed

- a) Daily       b) Once in a week   
c) Once in a month       d) Don't know

13. The right method to prevent the water from contamination are

- a) by using clean tumbler without dipping our hands inside water   
b) by avoiding dipping dirty mug directly in to water   
c) not allowing children to put their hands in to the water   
d) All of the above

14. Water borne diseases can be prevented by

- a) Personal Hygiene       b) safe water   
c) environment sanitation       d) All of the above

15. Cholera means

- a) Passing loose stools once a day       b) Passing normal stools   
c) Passing loose stools more than three times a day.   
d) Don't know

16. cholera spreads through

- a) Unsafe, contaminated water       b) Un hygienic food   
c) Contaminated hands       d) All of the above

17. The signs and symptoms of cholera includes

- a) Watery stools   
b) vomiting   
c) dry mouth   
d) Don't know

18. Typhoid fever means

- a) Continuous fever more than a week with chills
- b) Passing loose stools
- c) Jaundice
- d) Don't know

19. Typhoid fever may come to

- a) All ages
- b) Old People
- c) children
- d) Don't know

20. The peak incidence of Typhoid is

- a) Rainy season
- b) Summer season
- c) Winter season
- d) Don't know

21. Viral Hepatitis means

- a) fever
- b) b) Fever with yellowish discoloration of eyes
- c) Joint pain with fever
- d) Don't know

22. We can prevent jaundice by

- a) drinking safe water
- b) wash vegetables and utensils in safe water
- c) avoid consuming contaminated food
- d) all of the above

### SCORING KEY

- 1) Less than 50% - Inadequate Knowledge
- 2) 51 – 75% - Moderate Knowledge
- 3) More Than 75% - Adequate Knowledge

## திட்டமிட்ட நேர்க்காணல்

குறிப்பு:

- கேள்விகளை கவனமாக படித்தபின் சரியான பதிலை அதற்குரிய கட்டத்தில் மட்டும் குறிக்கவும் ,தங்களது பதில்கள் ஆறாய்ச்சிக்கு மட்டுமே பயன்படுத்தப்படும்

வ.எண் :

பகுதி -அ

சமுதய குடும்ப காரணிகள்

1. அம்மாவின் வயது

அ) 20-25 வயது

ஆ) 26-30 வயது

இ) 31- 35 வயது

ஈ) 36 வயதிற்குமேல்

2. அம்மாவின் கல்வித்தகுதி

அ) 1-5 ஆம் வகுப்பு

ஆ) 6-8ஆம் வகுப்பு

இ) 9-12 ஆம் வகுப்பு

ஈ) பட்டப்படிப்பு

உ)பட்டயப்படிப்பு

3. தொழில்

அ) இல்லத்தரசி

ஆ) அரசுப்பணி

இ) சுயதொழில்

ஈ) தனியார் பணி

4. குடும்பத்தின் மாத வருமானம்

அ) ரூ1589 க்கும் கீழ்

ஆ) ரூ. 1590 -4726

இ) ரூ. 4727 - 7877

ஈ) ரூ 7878 – 11,816

5 . உணவு முறை

அ) சைவம்

ஆ) அசைவம்

இ) இரண்டும் கலந்த உணவுமுறை

6. குடிநீர் எங்கிருந்து பெறப்படுகிறது

அ) கிணற்று நீர்

ஆ) மாநகராட்சி குழாய் நீர்

இ) நிலத்தடி நீர்

ஈ) குடுவையில் அடைக்கப்பட்ட நீர்

உ) மற்றவை

7. வீட்டின் கழிவு நீர் வசதி

அ) மூடப்பட்ட கழிவு நீர் வசதி

ஆ) திறந்த வகை கழிவு நீர் வசதி

8. வீட்டின் கழிப்பிட வசதி

அ) திறந்தவெளியில் மலம் கழித்தல்

ஆ) பொது கழிப்பறை

இ) தனி கழிப்பறை

பகுதி -ஆ

நீரினால் பரவும் நோய்கள் மற்றும் அதனை தடுக்கும் முறைகள்  
பற்றிய திறனாய்வு

9. நீரினால் பரவும் நோய்கள் என்பது

அ) நோய்கிருமிகள் அசுத்த நீர் மூலம் பரவுவதால் உண்டாவது

ஆ) நோய்கிருமிகள் கொசுவின் மூலம் பரவுவதால் உண்டாவது

இ) நோய்கிருமிகள் அசுத்த காற்றின் மூலம் பரவுவதால் உண்டாவது

ஈ) தெரியாது

10. தங்களுக்கு தெரிந்த நீரினால் பரவும் நோய்கள்

அ) காலரா

ஆ) டைஃபாய்டு

இ) மஞ்சள்காமாலை

ஈ) இவையனைத்தும்

11. குடிநீரை சுத்தப்படுத்துவதற்கு பயன்படுத்தும் சரியான  
முறைகளில் ஒன்று

அ) குளிரவைத்தல்

ஆ) கொதிக்கவைத்தல்

இ) எதுவும் செய்யாதிருத்தல்

ஈ) தெரியாது

12. குடிநீரை சேகரிக்கும் பாத்திரத்தை எப்பொழுது சுத்தப்படுத்த வேண்டும்

- அ) தினமும்  ஆ) வாரம் ஒருமுறை   
இ) மாதம் ஒருமுறை  ஈ) தெரியாது

13. குடி நீர் மாசுபடுவதை தடுக்கும் முறை

- அ) நீரினுள் கைவிடாமல் சுத்தமான டம்ளர் மூலம் எடுத்தல்   
ஆ) அசுத்தமான பாத்திரத்தை பயன்படுத்துவதை தவிர்த்தல்   
இ) குழந்தைகளை நீரினுள் கைகளை விடாமல் தடுத்தல்   
ஈ) இவையனைத்தும்

14. நீரினால் பரவும் நோய்களை எவ்வாறு தடுக்கலாம்

- அ) தன் சுத்தம்  ஆ) பாதுகாப்பான குடிநீர்   
இ) சுற்றுப்புறத்தூய்மை,  ஈ) இவையனைத்தும்

15. காலரா என்பது

- அ) நாளொன்றுக்கு ஒருமுறை நீர்போன்ற மலம் கழித்தல்   
ஆ) நாளொன்றுக்கு ஒருமுறைமலம் கழித்தல்   
இ) நாளொன்றுக்கு மூன்று முறைக்கு மேல் நீர்போன்ற மலம்   
ஈ) தெரியாது

16. வயிற்றுபோக்கு பரவும் முறைகள்

- அ) பாதுகாப்பற்ற அசுத்தமான உணவு   
ஆ) அசுத்தமான உணவு   
இ) அசுத்தமான கைகள்   
ஈ) இவையனைத்தும்

17. காலராவின் அறிகுறிகள்

- அ) வயிற்றுபோக்கு  ஆ) வாந்தி   
இ) உலர்ந்த உதடுகள்  ஈ) இவையனைத்தும்

18. டைஃபாய்டு காய்ச்சல் என்பது  
 அ) குளிருடன் கூடிய தொடர் காய்ச்சல்  ஆ) வயிற்றுபோக்கு   
 இ) மஞ்சள் காமாலை  ஈ) தெரியாது
19. டைஃபாய்டு காய்ச்சல் யாருக்கு வரும்  
 அ) அனைத்து வயதினருக்கும்  ஆ) முதியவர்களுக்கு மட்டும்   
 இ) குழந்தைகளுக்கு மட்டும்  ஈ) தெரியாது
20. டைஃபாய்டு காய்ச்சல் எந்த பருவத்தில் அதிகமாக வரும்  
 அ) மழைக்காலத்தில்  ஆ) கோடைக்காலத்தில்   
 இ) குளிர்க்காலத்தில்  ஈ) தெரியாது
21. மஞ்சள் காமாலை நோய் என்பது  
 அ) காய்ச்சல்   
 ஆ) காய்ச்சல் மற்றும் விழிகளில் மஞ்சளான வெண்படலம்   
 இ) மூட்டு வலி மற்றும் காய்ச்சல்   
 ஈ) தெரியாது
22. நாம் மஞ்சள் காமாலை நோயினை இவ்வாறு தடுக்கலாம்  
 அ) தூய நீரை பருகுதல்   
 ஆ) காய்கறிகள் ,பாத்திரங்களை சுத்தமான நீரினால் கழுவுதல்   
 இ) அசுத்தமான உணவுகளை தவிர்த்தல்   
 ஈ) இவை அனைத்தும்

மதிப்பீட்டு அளவுகோல்

- 1) 50% கும் குறைவு - குறைவான அறிவுத்திறன்
- 2) 51 - 75% - மிதமான அறிவுத்திறன்
- 3) 75% கும் மேல் - போதிய அறிவுத்திறன்



மதிப்பீட்டு அளவுகோல்

கேள்வி	பதில்கள்
9.	அ
10.	ஈ
11.	ஆ
12.	அ
13.	ஈ
14.	ஈ
15.	இ
16.	ஈ
17.	ஈ
18.	அ
19.	அ
20.	அ
21.	ஆ
22.	ஈ

## ANSWER KEY

<b>Question Number</b>	<b>Answer Key</b>
<b>9.</b>	<b>a</b>
<b>10.</b>	<b>d</b>
<b>11.</b>	<b>b</b>
<b>12.</b>	<b>a</b>
<b>13.</b>	<b>d</b>
<b>14.</b>	<b>d</b>
<b>15.</b>	<b>c</b>
<b>16.</b>	<b>d</b>
<b>17.</b>	<b>d</b>
<b>18.</b>	<b>a</b>
<b>19.</b>	<b>a</b>
<b>20.</b>	<b>a</b>
<b>21.</b>	<b>b</b>
<b>22.</b>	<b>d</b>

**INSTITUTIONAL ETHICS COMMITTEE**  
**MADRAS MEDICAL COLLEGE, CHENNAI -3**

EC RegNo.ECR/270/Inst./TN/2013

Telephone No : 044 25305301

Fax : 044 25363970

**CERTIFICATE OF APPROVAL**

To  
S.Vimala,  
M.Sc.,(N) II year,  
College of Nursing,  
Madras Medical College, Chennai-3.

Dear Vimala

The Institutional Ethics committee of Madras Medical College, reviewed and discussed your application for approval of the proposal entitled " A study of assess the effectiveness of Computer assisted planned teaching on knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban community, Chennai " No.31072013.

The following members of Ethics Committee were present in the meeting held on 06.07.2013 conducted at Madras Medical College, Chennai -3.

1. Dr.G.SivaKumar, MS FICS FAIS --- Chairperson
2. Prof. R. Nandhini MD -- Member Secretary  
Director, Instt. of Pharmacology ,MMC, Ch-3
3. Prof. Shyamraj MD -- Member  
Director i/c , Instt. of Biochemistry , MMC, Ch-3
4. Prof. P. Karkuzhali. MD -- Member  
Prof., Instt. of Pathology, MMC, Ch-3
5. Prof. Kalai Selvi -- Member  
Prof of Pharmacology, MMC, Ch-3
6. Prof. Siva Subramanian, -- Member  
Director, Instt. of Internal Medicine, MMC, Ch-3
7. Thiru. S. Govindsamy. BABL -- Lawyer
8. Tmt. Arnold Saulina MA MSW -- Social Scientist

We approve the proposal to be conducted in its presented form.

Sd/ Chairman & Other Members

The Institutional Ethics Committee expects to be informed about the progress of the study, and SAE occurring in the course of the study, any changes in the protocol and patients information / informed consent and asks to be provided a copy of the final report.

*R Nandini*

Member Secretary, Ethics Committee

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Mrs.S.Vimala, M.Sc. Nursing, II year of College of Nursing, Madras Medical College, Chennai-03 undertaking a research study on **“A study to assess the effectiveness of computer assisted planned teaching on knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban area at Choolai in Chennai”** has been validated by me and is found to be valid and up to date.

Signature:

*D. V. V. Anandharaman*  
21/9/13

Name:

*D. V. V. ANANDHARAMAN*

Designation:

Date:

Place:

Seal:

CHIEF CIVIL SURGEON  
ASSOCIATE PROFESSOR  
INSTITUTE OF COMMUNITY MEDICINE  
MADRAS MEDICAL COLLEGE  
CHENNAI-600 003

## CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Mrs.S.Vimala, M.Sc. Nursing, II year of College of Nursing, Madras Medical College, Chennai-03 undertaking a research study on "A study to assess the effectiveness of computer assisted planned teaching on knowledge regarding selected water borne diseases and its preventive measures among mothers of under five children in selected urban area at Choolai in Chennai" has been validated by me and is found to be valid and up to date.

Signature: V. Ebigolda Mary

Name: V. EBIGOLDA MARY

Designation: READER

Date: 17-08-13

Place: CHENNAI.

Seal: -



Dr.P.KUGANANTHAM.  
M.B.B.S., D.P.H., M.P.H.,  
WHO Fellow (Johns Hopkins, USA)  
D.T.M&H (LSTM& H-UK), F.I.S.C.D.  
CITY HEALTH OFFICER  
Public Health Department  
Corporation of Chennai



Off: 044 - 2538 3611

Res: 044 - 2550 5060

Mobile: 94451 90744

Fax: 044 -2538 3611

E-mail: [drkugan@yahoo.com](mailto:drkugan@yahoo.com)  
[/ho@chennaicorporation.gov.in](mailto:ho@chennaicorporation.gov.in)

HDC.No.C1/5150/2013

Date: 08.08.2013

Sir/Madam,

Sub: Corporation of Chennai – Public Health Department – Field study –  
Requisition for permission for the terms of research study at choilai  
Community area of Chennai assessing their health status – reg.

Ref: 1.Letter from the principal, Madras Medical College, Chennai  
Dated: 16.07.2013.

2. Orders of the Deputy Commissioner (Health), Dated: 29.07.2013

\*\*\*\*

As per the orders of the Deputy Commissioner (Health) in the reference second cited, 11 M.sc (Nursing) student of the Madras Medical College, Chennai is permitted to research study at choilai community area of Chennai and assessing their health status with the usual conditions as detailed below.

1. Corporations name in all publications and Corporation Health officials as Co-Author.
2. Reports should be well informed to official of Health Department.
3. No negative reporting about corporation to be made.

To  
Mrs.S.Vimala,  
Msc.,(Nursing) II Year,  
College of Nursing,  
Madras Medical College,  
Chennai – 600 003.

  
CITY HEALTH OFFICER

## **PLANNED TEACHING PROGRAMME ON WATER BORNE DISEASES AND ITS PREVENTIVE MEASURES**

### ***Introduction***

Men's health may be affected by the ingestion of contaminated water either for purpose of personal hygiene and recreation. Water can transmit disease when it is contaminated by pathogenic microbes and chemicals. Bacteria's, viruses and parasites can enter drinking water in many ways , polluted and contaminated water can cause water borne diseases like cholera, typhoid fever, malaria, amebiasis and dysentery.

### ***Definition***

“Disease acquired by drinking water contaminated at its sources or in the distribution system or by direct contact with environmental and recreational water”

“Water borne diseases are any illness caused by drinking water contaminated by human or animal faeces which contain pathogenic micro-organism”

“Water borne diseases include those where transmission occurs by drinking contaminated water , particularly contamination by pathogens transmitted from human excreta”

### ***Causes of water borne diseases***

- ❖ Bacteria, Viruses and Protozoa
- ❖ Contamination of water with chemicals
- ❖ Contamination of water in the household
- ❖ Contamination of food or beverages
- ❖ Lack of personal hygiene
- ❖ Inadequate and incompetent management of water resources

- ❖ Contamination of water storage facilities
- ❖ Consumption of water that was not intended for drinking

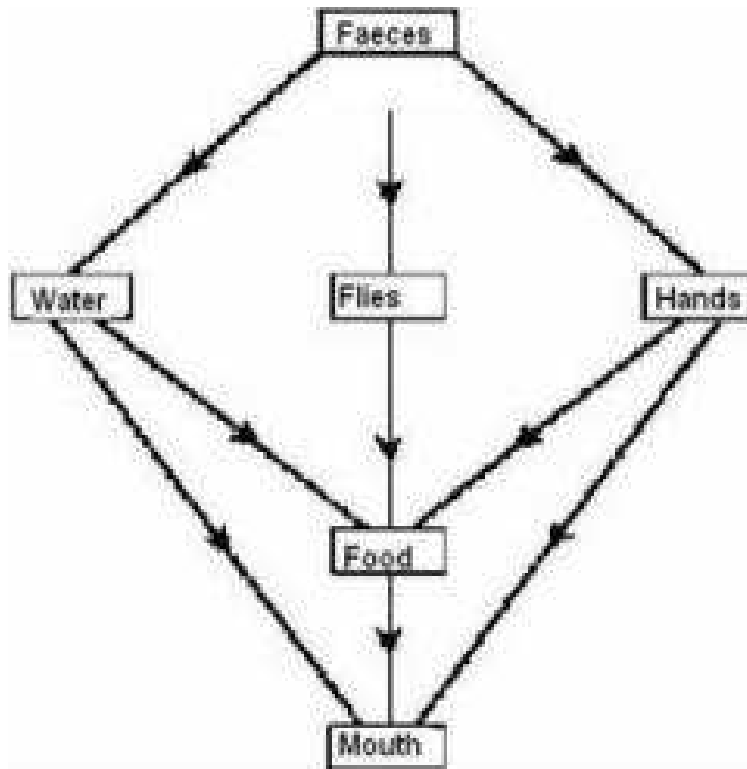
### ***Transmission***

Water borne diseases spread by contamination of drinking water systems with the urine and faeces of infected people or animal

### ***Water borne diseases transmitted through***

- ❖ Contaminated water
- ❖ Poor personal hygiene
- ❖ Poor environmental sanitation
- ❖ Contaminated food

### **Picture of Mode of transmission of Water borne diseases**



### **Common Waterborne Diseases:**

- ❖ Cholera
- ❖ Typhoid
- ❖ Hepatitis



## ***CHOLERA***

### ***Definition:***

Cholera is an acute intestinal infection which begins suddenly with painless watery diarrhea, nausea and vomiting.

“Severe” dehydration or death from acute watery diarrhoea in a patient aged 5 years or more

(Medical officer manual IDSP  
2006)

### ***Causative organism:***

Vibrio cholera

### ***Incubation period:***

Few hours to 5 days

### ***Mode of transmission:***

Contaminated water, faeco oral route

### ***Symptoms:***

- ❖ Nausea
- ❖ Vomiting
- ❖ Dry mucous membrane
- ❖ Rice water stool containing mucus, epithelial cells and bacteria,
- ❖ Rapid heart rate
- ❖ Low blood pressure
- ❖ Restlessness or irritability
- ❖ Loss of skin elasticity
- ❖ Profuse diarrhoea with abdominal cramps,
- ❖ Thirst
- ❖ Muscle cramps
- ❖ Dehydration

### ***Transmission:***

- ❖ Faeco – oral route
- ❖ Contaminated water
- ❖ Flood water contaminates water supplies with *Vibrio Cholerae*
- ❖ Eating raw or under cooked seafood
- ❖ Inadequate food safety and hygienic practices

### ***Home Treatment:***

- ❖ Drink boiled water
- ❖ Oral rehydration salt solution

### ***Complications:***

- ❖ Collapse due to dehydration
- ❖ Death

### ***Treatment:***

Treatment of cholera consists mainly in replacement of lost fluids and salts. The use of oral rehydration salts (ORS) is the quickest and most efficient way of doing this. If the infected person becomes severely dehydrated, intravenous fluids can be given

## **TYPHOID FEVER**

### ***Definition:***

“Typhoid fever is an acute communicable disease caused by *Salmonella Typhi*”

“Any patient with fever for more than one week and with any two of the following

- ❖ Toxic look, Coated tongue
- ❖ Relative bradycardia, Splenomegaly
- ❖ Exposure to confirm cases
- ❖ Clinical presentation with complications e.g. GI bleeding, perforation

**(Source: Medical Officers' Manual, IDSP, 2006)**

***Causative organism:***

Salmonella typhi and Salmonella Paratyphi

***Incubation period:***

7 to 28 days

***Transmission:***

- ❖ Faeco – oral route
- ❖ Contaminated water
- ❖ Urine oral route
- ❖ Contaminated food and close contact with an infected person

***Symptoms:***

- ❖ Diarrhoea
- ❖ Headache , malaise
- ❖ Nausea , vomiting, anorexia
- ❖ Rose colored spots on the chest
- ❖ Enlarged spleen and liver
- ❖ Fever as high as (39 - 40 C)
- ❖ Gastroenteritis

***Home treatment:***

- ❖ Prevention of faecal contamination
- ❖ Disinfection of clothing, linen and fomites
- ❖ Drink boiled and cooled water
- ❖ Proper disposal of faeces and urine

***Complications:***

Intestinal perforation

***Treatment:***

- ❖ Antibiotic treatment.
  - Chloramphenicol
  - Ciprofloxacin
  - Co-trimoxazole

- ❖ Oral fluids, bland diet
- ❖ Vaccine is available

## **HEPATITIS A**

### ***Definition:***

Acute illness typically including acute jaundice, dark urine, anorexia, malaise, extreme fatigue and right upper quadrant tenderness . The biological signs include increased urine urobilinogen and >2.5 times the upper limit of serum alanine aminotransferase

Hepatitis a broad term for inflammation of the liver, has a number of infectious and noninfectious causes.

### ***Causative organism:***

Hepatitis A virus

### ***Incubation period:***

15 to 50 days (usually 28 days)

### ***Transmission:***

- ❖ Faeco oral route
- ❖ Person to person contact
- ❖ Contaminated water and food
- ❖ Ready to eat foods, fruits and juice, milk products, shellfish, salads, vegetables
- ❖ Overcrowding and poor sanitation

### ***Symptoms:***

- ❖ High fever
- ❖ Fatigue
- ❖ Marked abdominal pain,
- ❖ Nausea, Vomiting

- ❖ Dark urine
- ❖ Jaundice
- ❖ Hepatic encephalopathy
- ❖ Loss of appetite
- ❖ General body weakness

***Home treatment:***

- ❖ Prevention of faecal contamination
- ❖ Boiled water

***Prevention of water borne disease:***

- ❖ Primary prevention
- ❖ Secondary prevention
- ❖ Tertiary prevention

***1. Primary prevention***

- Health education
- Water hygiene
  - Don't mix boiled water with un boiled water
  - Don't put unclean vessels or dirty hands to fetch drinking water
  - Drink and use safe water
    - ❖ Bottled water with unbroken seals and canned/bottled carbonated beverages are safe to drink and use.
    - ❖ Use safe water to brush your teeth, wash and prepare food.
    - ❖ Clean food preparation areas and kitchenware with soap and safe water and let dry completely before reuse.
  - To be sure water is safe to drink and use:
    - ❖ Boil it or treat it with a chlorine product or household bleach.
    - ❖ If boiling, bring your water to a complete boil for at least 1 minute.
    - ❖ Always store your treated water in a clean, covered container.

➤ Personal hygiene

- Daily bath, cut nails regularly
- Brush your teeth twice daily
- Wear slipper while going to the toilet
- Wash hands with often with soap and safe water
  - ❖ Before you eat or prepare food
  - ❖ Before feeding your children
  - ❖ After using the latrine or toilet
  - ❖ After cleaning your child's bottom
  - ❖ After taking care of someone ill with diarrhoea

➤ Environmental hygiene

- Clean surroundings
- Avoid open field defecation
- Prevent mixing of drainage water with drinking water
- Use latrines or bury your feces ; do not defecate in any body of water
  - ❖ Use latrines or other sanitation systems
  - ❖ Clean latrines and surfaces contaminated with feces using a solution of 1 part household bleach to 9 parts water.
- Cleanup safely—in the kitchen and in places where the family bathes and washes clothes
  - ❖ Wash yourself, your children, diapers, and clothes, 30 meters away from drinking water sources.

➤ Food hygiene

- Wash vegetables before cooking
- Wash fruits before eating
- Cover the cooked food

- Cook food well, keep it covered, eat it hot.
  - ❖ Eat Boiled and Cooked food
  - ❖ Be sure to cook shellfish (like crabs and crayfish) until they are very hot all the way through.
  - ❖ Avoid raw foods other than fruits and vegetables you have peeled yourself.
- Breast feeding (demand feeding) is very helpful in preventing water borne diseases.
  - Wash the bottles and sterilize that in boiling water for 5-10 minutes ( if the baby is in bottle feed)

***Secondary prevention:***

- ❖ Early diagnosis
- ❖ Complete treatment
- ❖ Intake of nutritious diet
- ❖ More fluid diet
- ❖ Should not drink unboiled water avoid fruit juice from unhygienic shops
- ❖ Proper disposal of vomitus, faeces of infected person

***Tertiary prevention:***

The affected person should be hospitalized immediately for further treatment.

**COMMUNITY LEVEL SHORT TERM MEASURES**

***HEALTH EDUCATION:***

- ❖ Providing education on good sanitation
- ❖ Higher education and training in personal hygiene, especially hand-washing Improvement in Habitation and Changing water related issues

- ❖ Education regarding causes of waterborne diseases hygiene behavior and mode of spread of diseases

### ***HOUSEHOLD HYGIENE AND DISINFECTION :***

- ❖ At home, the water should Filtered, and Boiled, that it is free from Microorganisms

### ***ADEQUATE AND CLEANWATER SUPPLY***

- ❖ Improving the quality of drinking water at the source, at the tap, or in the storage vessel
- ❖ Increasing the quantity of water available. This allows better hygiene and can thus prevent disease transmission from contaminated hands, food, or household utensils.
- ❖ Ensuring uninterrupted provision of safe drinking water is the most important preventive measure to be implemented, in order to reduce the risk of outbreaks of waterborne diseases.

### ***WASTE DISPOSAL***

- ❖ Proper Disposal of human feces will reduce the risk of breeding of flies
- ❖ Proper Disposal Of Infected individuals (and domestic animals) waste should reduce number of risks
- ❖ Waste Water should be treated with medicine to reduce disease transmission. Collection and Treatment of waste water is must

### ***SAFE FOOD PREPARATION AND STORAGE***

- ❖ Good food
- ❖ Cooking food for long enough at a sufficiently Protecting high temperature are both important to kill harmful bacteria.
- ❖ Washing of food prior to cooking
- ❖ Store food in clean container, pre heat the food taken from refrigerator before consuming it



## **VACCINATION :**

The use vaccines for water borne diseases for mass immunization is not recommended. In case of an outbreak, consider immunization of contacts e.g. Hepatitis A outbreaks. Vaccination of high-risk groups, such as persons involved in the management of drinking water, wastewater or sewage might be considered.

## **COMMUNITY LEVEL LONG TERM MEASURES**

- ❖ Improve water Disaster-Preparedness Programs and Early Warning Systems.
- ❖ Keep infectious disease control programs treatment and sanitation.
- ❖ Promote tap-water quality regulation active and efficient. Improve surveillance on a local, national, international and monitoring.
- ❖ Notification of outbreaks is correctly done by doctors Prevention and control measures to that particular locality can be suggested by health workers
- ❖ Sanitary well
- ❖ Water borne diseases and their prevention measures
- ❖ Purification of water on large scale and small scale
- ❖ Chlorination of water
- ❖ Bacteriological standards of drinking water
- ❖ Safe and wholesome water supply
- ❖ Training for doctors and other health workers in treating in waterborne disease outbreaks
- ❖ NGO's participation in the control of water borne diseases
- ❖ Information directed at the community at large is best achieved through the mass media, such as television, radio and newspapers
- ❖ Promoting community participation and implementing environmental management of waterborne diseases

## ***Personal Hygiene***

- Hand washing — this is the most vital component of personal hygiene in disease prevention
- Avoid contacting soil that may be contaminated with human feces.
- Do not defecate outdoors.
- Dispose diapers properly
- When traveling to countries where sanitation and hygiene are poor, avoid water or food that may be contaminated.
- Wash, peel or cook all raw vegetables and fruits before eating.  
Hands should be washed with soap after defecation and after cleaning and disposing of an infant's feces or after handling any contaminated material
- Infected individuals (and domestic animals) should be treated with medicine to reduce disease transmission.

## ***Control measures:***

To prevent the spread of cholera, the following four interventions are essential:

- ❖ Provision of adequate safe drinking-water
- ❖ Proper personal hygiene
- ❖ Proper food hygiene
- ❖ Hygienic disposal of human excreta.
- ❖ Health education
- ❖ Vaccination
- ❖ Disinfection
- ❖ Breast feeding
- ❖ Isolation of cases and disinfection of fomites & faeces

# நீரினால் பரவும் நோய்கள்

## முன்னுரை:-

- வாழ்கைக்கு நீர் மிகவும் இன்றியமையாததாகும் மனிதனின் இன்றியமையாத தேவைகளில் நீருக்கு இரண்டாம் இடம். இந்த நீர் மசுபடுவதால் மனிதர்களுக்கும், விலங்குகளுக்கும், தாவரங்களுக்கும் பல வகையான தீங்கினை விளைவிக்கிறது. மனிதன் அசுத்தமான நீரினை பருகுவதனாலும், அசுத்தமான நீரினால் மாசுபட்ட உணவினை உண்ணுவதாலும் பலவிதமான நோய்கள் பரவுகின்றன

## விளக்கவுரை:

- மனித மற்றும் விலங்கு கழிவுகளால் அசுத்தமடைந்த நீரினை உட்கொள்வதன்மூலம் உண்டாகும் நோய்களுக்கு நீரினால் பரவும் நோய்கள் என்று பெயர், இந்த மாசுபடிந்த நீரில் அதிக அளவில் நுண்கிருமிகள் காணப்படும்.

## நீர் மாசுபடுவதற்கான காரணங்கள்

கீழ்க்கண்ட முறைகளில் நீர் மாசடைகிறது:

- பாக்டீரியாக்கள், வைரஸ்கள், மற்றும் புரோட்டோசோவாக்கள்.
- வீட்டுக்கழிவுகள் நீர் நிலைகளில் கலப்பதினால்.
- தொழிற்சாலைகளின் கழிவுகள் நீர் நிலைகளில் கலப்பதினால்
- அசுத்தமான கைகளினால் நீரிணுள் விடுதல் அல்லது அசுத்தமான பாத்திரத்தினால் நீரினை எடுத்தல் .
- குடி நீர் அல்லாத நீரினை பருகுதல்
- மலக் களிவுகள் நீர் நிலைகளில் கலத்தல் .
- வெதியியல் களிவுகள் குடிநீர் நிலைகளில் கலத்தல்
- தன்சுத்தமின்மை

## நோய்கள் பரவும் முறை

- மாசடைந்த நீர்
- அசுத்தமான சுற்றுப்புறம்
- தன்சுத்தமின்மை
- மாசடைந்த உணவுகள்

## மாசடைந்த நீர்

- அசுத்தமாண பாத்திரத்தில் நீரினை சேகரித்தல்
- திறந்த தொட்டியில் நீரினை சேமித்தல்
- குடி நீர் பிறக்களிவுகளால் மாசடைதல்
- சுத்திகரிக்கப்படாத நீரினை பருகுதல்
- அசுத்தமாண கைகளை நீரினில் விடுதல்
- நீர் நிலைகளுக்கு அருகில் மலம் கழித்தல்

### சுற்றுச்சூழல் சுகாதாரமின்மை :-

- ❖ நீர் நிலைகளுக்கு அருகில் அசுத்த நீர் தேங்குதல்.
- ❖ சுற்றுப்புறத்தை தூய்மையாக வைக்காதிருத்தல்.
- ❖ குப்பைகள் மற்றும் கழிவுநீர் நீர்நிலைகளில் கலத்தல்.
- ❖ திறந்தவெளியில் மலம் கழித்தல்.

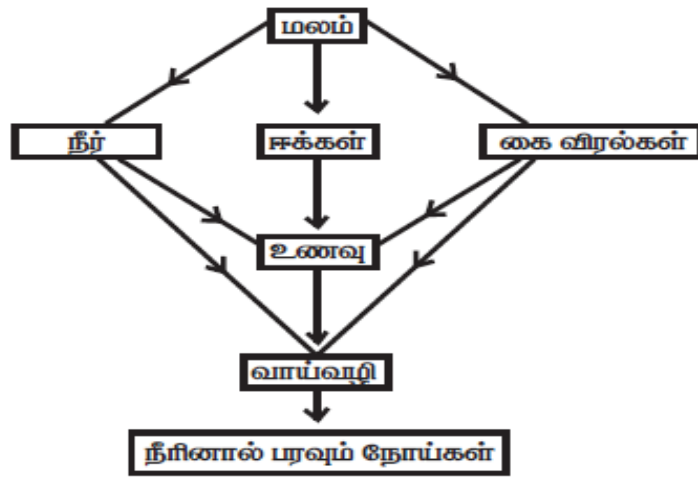
### தன் சுத்தமின்மை :-

- ❖ மண்ணில் விளையாடிய பின்பு கைகளை சுத்தமாக கழுவாதிருத்தல்
- ❖ நகம் வெட்டமை
- ❖ கழிவுறைகளுக்கு செல்லும் போது காலனிகளை அணியாமல் இருத்தல்
- ❖ மலம் கழித்த பின்னும், சாப்பிடும் முன்னும் கைகளை சோப்பினை உபயோகித்து கழுவாதிருத்தல்.
- ❖ தினமும் குளிக்காதிருத்தல்.

### அசுத்தமான உணவு :-

- ❖ காய்கறிகளை கழுவாமல் சமைத்தல்.
- ❖ பழங்ககளை உண்ணும் முன்பு சுத்தமான நீரில் கழுவாமல் உண்ணுதல்.
- ❖ சமைத்த உணவுப் பொருட்களை மூடாதிருத்தல்.
- ❖ தெருக்களில் ஈ வொய்க்கும் பண்டங்களை உண்ணுதல்.
- ❖ சரியாக சமைக்காத உணவு மற்றும் காயவைக்காத பாலை அருந்துதல்

### விளக்கப்படம்



## காலரா

காலரா என்பது மிக மோசமான குடல் சம்பந்தமான நோய் ஆகும். இது தீவிர வலியற்ற தொடர்ச்சியான அரிசி கஞ்சியை போன்ற மலமும் மற்றும் வாந்தியையும் ஏற்படுத்தும்.

காரணி :-

விப்ரியோ காலரா



## அறிகுறிகள் :-

- ❖ வாந்தி
- ❖ குமட்டல்
- ❖ உலர்ந்த உதடுகள்
- ❖ அரிசி கஞ்சி போன்ற மலம்
- ❖ குறைந்த இரத்த அழுத்தம்
- ❖ அமைதியின்மை
- ❖ தோல் நெகிழ்ச்சி மற்றும் வறட்சி
- ❖ அடிவயிற்றுப்பிடிப்பு
- ❖ தாகம்
- ❖ நீரிழிப்பு



### வீட்டு மருத்துவம் :-

கொதிக்க வைத்து ஆறிய குடிநீர் அல்லது உப்பு சர்க்கரை கரைசலை அதிகம் அருந்துதல்.

### விளைவுகள் :-

- ❖ நீர் பற்றாக்குறையினால் ஏற்படும் அதிர்ச்சி.
- ❖ இறப்பு.

### டையாய்டு காய்ச்சல்

டையாய்டு காய்ச்சல் என்பது வளர்ந்துவரும் நாடுகளில் பரவிவரும் முக்கிய தாற்றுநோயாகும். இதற்கு எண்டோடிக் காய்ச்சல் என்ற வேறுபயரும் உள்ளது. இது தாடர்ச்சியாக ஒரு வாரத்திற்கும் மேல் இருக்கக்கூடிய காய்ச்சலாகும்.

### நாய் பரவும் காரணி :-

சால்மோனல்லா டைஃபி

### அறிகுறிகள் :-

- ❖ ஒரு வாரத்திற்கும் மேல் தொடர்ச்சியாக ( 103 °Fக்கும் மேல்)
- ❖ தலைவலி
- ❖ சோர்வு
- ❖ குறைவான இதய துடிப்பு
- ❖ வாந்தி, பசியின்மை
- ❖ வயிற்றுப்போக்கு
- ❖ நெஞ்சப்பகுதியில் இளஞ்சிவப்பு நிற புள்ளிகள்

### வீட்டு மருத்துவம் :-

- ❖ கொதிக்க வைத்து ஆறவைத்து குடிநீர் அல்லது உப்பு-சர்க்கரைக் கரைசலை அதிகம் அருந்துதல்.
- ❖ மனிதக் கழிவுகளை முறையாக அப்புறப்படுத்துதல்.
- ❖ நோயினால் பாதிக்கப்பட்டவரின் உடைகள் மற்றும் பொருட்களை கிருமிநாசினியை உபயோகித்து சுத்தப்படுத்துதல்.

### விளைவுகள் :-

- ❖ சிறுகுடலில் இரத்த கசிவு மற்றும் துவாரம் ஏற்படுதல்.

### ஹெபடைடிஸ் - ஏ

ஹெபடைடிஸ் என்பது பொதுவாக கல்லீரலில் ஏற்படும் நோய் தொற்றினைக் குறிப்பதாகும். இந்நோய் பல அறிகுறிகளான மஞ்சள் காமாலை, மஞ்சள் நிற நிறுநீர், பசியின்மை, சோர்வு, மயக்கம், வலப்புற வயிற்றுப்பகுதியில் வீக்கம் ஆகியவற்றை உள்ளடக்கியதாகும்.

காரணி :-

ஹெபடைடிஸ் "ஏ" வைரஸ்

பரவும் முறை :-

- ❖ அசுத்தமான நீர்
- ❖ சுற்றுப்புறத் தூய்மையின்மை ஜனத்தொகை நெருக்கம்
- ❖ தயார் நிலையில் உள்ள உணவும் பண்டங்களை உட்கொள்ளுதல் (எ.கா) பாட்டிலில் அடைக்கப்பட்ட பழச்சாறு பால் பொருட்கள், காய்கறிகள் மற்றும் பல.

அறிகுறிகள் :-

- ❖ அதிக காய்ச்சல்
- ❖ மயக்கம்
- ❖ வயிற்றுவலி
- ❖ வாந்தி
- ❖ ஆடர் மஞ்சள் நிற சிறுநீர்
- ❖ மஞ்சள் காமாலை
- ❖ பசியின்மை
- ❖ சோர்வு

### நீரினால் பரவும் நோய்களை தடுக்கும் முறைகள்

நீரினால் பரவும் நோய்களை வராமலே தடுத்துக் கொள்ளலாம்.

- ❖ முதலாம் நிலை தடுப்பு
- ❖ இரண்டாம் நிலை தடுப்பு
- ❖ மூன்றாம் நிலை தடுப்பு

#### முதலாம் நிலை தடுப்பு முறைகள் :-

ஆரோக்கியத்தை வளர்க்கும் நடவடிக்கைகள்

#### 1. நலக்கல்வி :

நீரின் மூலம் நோய்கள் பரவும் முறையை பற்றி நலக்கல்வியை கொடுத்தல். கீழ்க்கண்டவைகளை பற்றி நலக்கல்வியை கொடுக்க வேண்டும்.

- ❖ குடிநீர் சுத்தம்
- ❖ தன் சுத்தம்
- ❖ சுற்றுப்புற சுத்தம் மற்றும் உணவு சுத்தம்

#### குடிநீர் சுத்தம் :-

- ❖ பாதுகாக்கப்பட்ட குடிநீர் என்பது நுண் கிருமிகளிலிருந்து விடுபட்டது.
- ❖ குளோரினை கலந்து குடிநீரை சுத்தம் செய்யலாம்.
- ❖ ஷீட்டில் குடிநீரை சுத்தம் செய்ய 5 முதல் 10 நிமிடங்கள் வரை கொதிக்க வைக்க வேண்டும்.
- ❖ கொதிக்க வைத்த கூடான நீருடன் கொதிக்க வைக்காத நீரை கலக்கவடாது. ஏனெனில் பலவகை நோய்கள் பரவ இது முக்கிய காரணமாகிறது.
- ❖ குடிப்பதற்கு முன்பு நீரை சுத்தமான பருத்தி துணிகளாலோ அல்லது நவீன சல்லடைகளாலோ வடிக்கட்ட வேண்டும்.
- ❖ குடிநீரை சுத்தமான பாத்திரத்தில் மூடி வைக்க வேண்டும் மேலும் குடிநீர் பாத்திரத்தை தினமும் சுத்தம் செய்ய வேண்டும்.
- ❖ அசுத்தமான கைகளையோ, சுத்தப்படுத்தப்படாத டம்பளர்களையோ குடிநீருக்குள் நேரடியாக விட கூடாது.
- ❖ நீர் குழாய்களில் இருந்து நேரடியாக வரும் நீரை குடிக்க கூடாது.

### நீர் மாசு அடைதலை தவிர்க்கும் முறைகள் :-

- ❖ ஆலை கழிவுகள் மற்றும் ஊர் கழிவுகள் நீர் நிலைகளில் கலக்காமல் தடுத்தல்.
- ❖ மலகழிவுகளை நீர்நிலைகளில் கலக்காமல் தடுத்தல்
- ❖ குடிநீரை சுத்தமான மற்றும் முடிய பாத்திரத்தில் விட சூடாது மற்றும் சுத்தமற்ற டம்பளரை நீர் எடுக்க பயன்படுத்த சூடாது.

### தன்சுத்தம் :-

- ❖ தினமும் குளிக்க வேண்டும்
- ❖ தினமும் இரண்டு முறை பந்துலக்க வேண்டும்
- ❖ வாரம் ஒருமுறை நகம் வொட்ட வேண்டும்.
- ❖ கழிவறைகளுக்கு செல்லும்போது காலணிகளை அணிய வேண்டும்.
- ❖ கைகளை நன்றாக சோப்பு நீர்கொண்டு மலம் கழித்த பின்பு கழுவ வேண்டும்
- ❖ மலம் கழிப்பதற்கு முன்பும், கழித்த பின்பும் நீரை கழிவறையில் ஊற்றி சுத்தம் செய்ய வேண்டும்.
- ❖ விளையாடிய பின்பு கை, கால்களை சுத்தமாக கழுவ வேண்டும்.

### சுற்றுப்புற சுத்தம் :-

- ❖ சுற்றுப்புறத்தை தூய்மையாக வைத்தல்
- ❖ மலம் கழிக்க சுகாதார கழிவறைகளை பயன்படுத்துதல்
- ❖ மலம் கழித்த மின்பு சோப்பு நீரை கொண்டு கைகளை கழுவுதல்
- ❖ திறந்த வெளியில் மலம் கழித்தலை தவிர்த்தல்
- ❖ நீர் நிலைகளுக்கு அருகில் நீர் தேங்காமல் பார்த்துக் கொள்ளுதல்
- ❖ நீர் நிலைகளை சுத்தமாக வைத்தல்

### குறிப்பிட்ட தடுப்பு முறைகள்

தடுப்பூசி போடுவதின் மூலம் டைபாய்டு காய்ச்சல் மஞ்சள் காமாலை மற்றும் காலரா வராமல் தடுக்கலாம்.

### இரண்டாம் நிலை தடுப்பு முறைகள்

- ❖ விரைவில் நோயை கண்டறிதல்
- ❖ முழுமையான சிகிச்சை அளித்தல்
- ❖ அதிக நீர் ஆகாரங்கள் கொடுத்தல் (கொதிக்க வைத்து ஆரிய நீர்)
- ❖ கொதிக்கவைக்காத நீரை குடிக்கவாது மற்றும் பழுச்சாறுகளை கடைகளில் குடிக்க வாது.
- ❖ கைகழுவும் முறைகளை கடைபித்தல்
- ❖ நோயுற்றவரின் வாந்தி மற்றும் மலத்தை தொட்டின் கைகளை நன்றாக சுத்தம் செய்ய வேண்டும் மற்றும் அந்த கழுவுகளை நீர் நிலைகளுக்கு அருகில் அப்புறப்படுத்த வாது. அது கண்டிப்பாக கழிவறையில் மட்டுமே அப்புறப்படுத்த வேண்டும்.

### மூன்றாம் நிலை தடுப்பு முறைகள்

நோயினால் பாதிக்கப்பட்டவருக்கு உடனடியாக சிகிச்சை அளிக்காமல் இருந்தால் மிகவும் பயங்கரமான விளைவுகள் உருவாக்கும் அந்த விளைவுகளை தடுக்க மருத்துவரை அணுகி உடனடியாக சிகிச்சை பெறுதல்.

### கருக்கம்

இதுவரை நீரினால் பரவும் நோய்கள் எவ்வாறு பரவுகின்றன அந்த நோய்களை பரவாமல் தடுக்க எந்த எந்த முறைகளை பின்பற்ற வேண்டும் என்று பார்த்தோம். இந்தமுறைகளை பின்பற்றி தண்ணீரினால் பரவும் நோய்களை ஒழிப்போம்.

### முடிவுரை

குடிநீர் சுத்தமாக வைத்துக்கொள்வதன் மூலம் பலவித நோய்கள் பரவுவதை நாம் தடுக்கலாம். நீரினால் பரவும் நோய்களை தடுக்கும் முறைகளை கடைப்பிடித்து சமுதாயத்தை நீரினால் பரவும் நோய்களிலிருந்து காப்பாற்றுவோம்.

## நீரினால் பரவும் நோய்கள்

### முன்னுரை :

வாழ்க்கைக்கு நீர் மிகவும் இன்றியமையாததாகும். இந்த நீர் மாசுபடுவதனால் மனிதர்கள், விலங்குகள் மற்றும் தாவரங்களில் பல விதமான தீங்குகளை விளைவிக்கிறது. மனிதன் அசுத்தமான நீரையோ அல்லது அசுத்தமான நீரினால் மாசுபட்ட உணவினை உண்பதால் பல விதமான நோய்கள் பரவுகின்றன.

### விளக்கம் :

மனித மற்றும் விலங்கு கழிவுகளால் அசுத்தமடைந்த நீரை உட்கொள்வதன் மூலம் பரவும் நோய்களுக்கு நீரினால் பரவும் நோய்கள் என்று பெயர். இந்த மாசுடைந்த நீரில் அதிக அளவில் நுண்கிருமிகள் இருக்கும்.

நீர் அதன் ஆதாரங்களில் அல்லது விநியோக முறை அல்லது சுற்றுச்சூழல் மற்றும் பொழுதுபோக்கு காரணங்களினால் அசுத்தமடைகிறது. இந்த அசுத்தமடைந்த நீரினால் ஏற்படும் நோய்கள் நீரினால் பரவும் நோய்கள் எனப்படும்.

### காரணங்கள் :-

கீழ்க்கண்ட காரணங்களினால் நீரினால் பரவும் நோய்கள் உண்டாகிறது.

1. பாக்டீரியா, வைரஸ்கள், புரோட்டோ சோவாக்கள்
2. இரசாயனங்கள் மூலம் நீர் மாசுபடுதல்
3. வீட்டு கழிவுகளினால் நீர் மாசுபடுதல்
4. மாசுடைந்த உணவு வகைகள்
5. நீர் தேக்கம் மற்றும் விநியோக முறைகளில் தூய்மைக்கேடு
6. தன் சுத்தமின்மை
7. குடிநீர் அல்லாத நீரினை பருக்தல்

### பரவும் முறை :-

அசுத்தமான நீர்

- ❖ நீர்நிலைகளில் மனித மற்றும் விலங்கு கழிவுகள் கலத்தல்
- ❖ அசுத்தமான கைகளை குடிநீரின்னுள் விடுதல் மற்றும் அசுத்தமான பாத்திரத்தை உபயோகப்படுத்துதல்.
- ❖ குடிநீரை திறந்த தொட்டியில் சேமித்தல்.
- ❖ நீர் நிலைகளுக்கு அருகில் மலம் கழித்தல்.

### தன் சுத்தமின்மை :-

- ❖ மண்ணில் விளையாடிய பின்பு கைகளை சுத்தமாக கழுவாதிருத்தல்
- ❖ நுகம் வெட்டமை



- ❖ கழிவறைகளுக்கு செல்லும் போது காலனிகளை அணியாமல் இருத்தல்
- ❖ மலம் கழித்த பின்னும், சாப்பிடும் முன்னும் கைகளை சோப்பினை உபயோகித்து கழுவாதிருத்தல்.
- ❖ தினமும் குளிக்காதிருத்தல்.

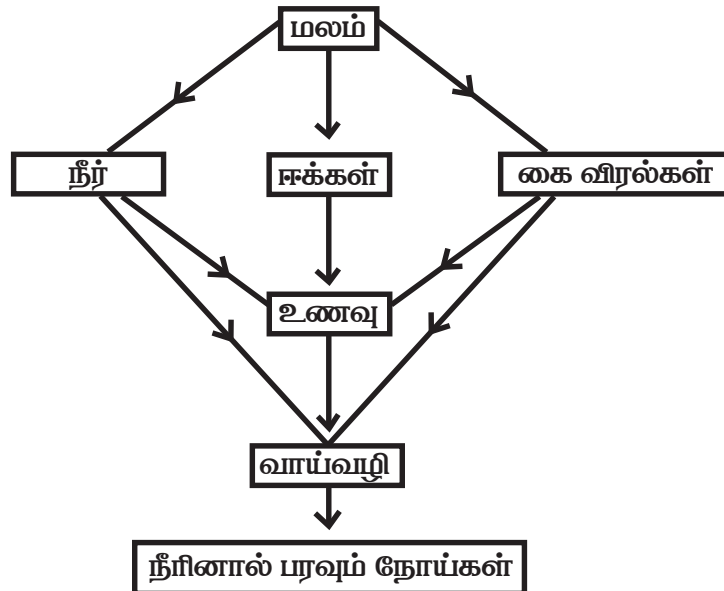
#### சுற்றுச்சூழல் சுகாதாரமின்மை :-

- ❖ நீர் நிலைகளுக்கு அருகில் அசுத்த நீர் தேங்குதல்.
- ❖ சுற்றுப்புறத்தை தூய்மையாக வைக்காதிருத்தல்.
- ❖ குப்பைகள் மற்றும் கழிவுநீர் நீர்நிலைகளில் கலத்தல்.
- ❖ திறந்தவெளியில் மலம் கழித்தல்.

#### அசுத்தமான உணவு :-

- ❖ காய்கறிகளை கழுவாமல் சமைத்தல்.
- ❖ பழங்ககளை உண்ணும் முன்பு சுத்தமான நீரில் கழுவாமல் உண்ணுதல்.
- ❖ சமைத்த உணவுப் பொருட்களை மூடாதிருத்தல்.
- ❖ தெருக்களில் ஈ மொய்க்கும் பண்டங்களை உண்ணுதல்.
- ❖ சரியாக சமைக்காத உணவு மற்றும் காயவைக்காத பாலை அருந்துதல்

#### விளக்கப்படம்



## பொதுவாக நீரினால் பரவும் நோய்கள் :-

- ❖ காலரா
- ❖ டைபாய்டு
- ❖ ஹெபடைடிஸ்

### காலரா

காலரா என்பது மிக மோசமான குடல் சம்பந்தமான நோய் ஆகும். இது தீவிரமான வலியற்ற தொடர்ச்சியான அரிசி கஞ்சியை போன்ற மலமும் மற்றும் வாந்தியையும் ஏற்படுத்தும்.

### காரணி :-

விப்பியோ காலரா

### அறிகுறிகள் :-

- ❖ வாந்தி
- ❖ குமட்டல்
- ❖ உலர்ந்த உதடுகள்
- ❖ அரிசி கஞ்சி போன்ற மலம்
- ❖ குறைந்த இரத்த அழுத்தம்
- ❖ அமைதியின்மை
- ❖ தோல் நெகிழ்ச்சி மற்றும் வறட்சி
- ❖ அடிவயிற்றுப்பிடிப்பு
- ❖ தாகம்
- ❖ நீரிழிப்பு

### வீட்டு மருத்துவம் :-

கொதிக்க வைத்து ஆறிய குடிநீர் அல்லது உப்பு சர்க்கரை கரைசலை அதிகம் அருந்துதல்.

### விளைவுகள் :-

- ❖ நீர் பற்றாக்குறையினால் ஏற்படும் அதிர்ச்சி.
- ❖ இறப்பு.

## டைபாய்டு காய்ச்சல்

டைபாய்டு காய்ச்சல் என்பது வளர்ந்துவரும் நாடுகளில் பரவிவரும் முக்கிய தொற்றுநோயாகும். இதற்கு எண்டிரிக் காய்ச்சல் என்ற வேறுபெயரும் உள்ளது. இது தொடர்ச்சியாக ஒரு வாரத்திற்கும் மேல் இருக்கக்கூடிய காய்ச்சலாகும்.

### நோய் பரவும் காரணி :-

சால்மோனல்லா டைபி

### அறிகுறிகள் :-

- ❖ ஒரு வாரத்திற்கும் மேல் தொடர்ச்சியாக ( 103 ° Fக்கும் மேல் )
- ❖ தலைவலி
- ❖ சோர்வு
- ❖ குறைவான இதய தூடிப்பு
- ❖ வாந்தி, பசியின்மை
- ❖ வயிற்றுப்போக்கு
- ❖ நெஞ்சுப்பகுதியில் இளஞ்சிவப்பு நிற புள்ளிகள்

### வீட்டு மருத்துவம் :-

- ❖ கொதிக்க வைத்து ஆறவைத்து குடிநீர் அல்லது உப்பு-சர்க்கரைக் கரைசலை அதிகம் அருந்துதல்.
- ❖ மனிதக் கழிவுகளை முறையாக அப்புறப்படுத்துதல்.
- ❖ நோயினால் பாதிக்கப்பட்டவரின் உடைகள் மற்றும் பொருட்களை கிருமிநாசினியை உபயோகித்து சுத்தப்படுத்துதல்.

### விளைவுகள் :-

- ❖ சிறுகுடலில் இரத்த கசிவு மற்றும் துவாரம் ஏற்படுதல்.

## ஹெபடைடிஸ் - ஏ

ஹெபடைடிஸ் என்பது பொதுவாக கல்லீரலில் ஏற்படும் நோய் தொற்றினைக் குறிப்பதாகும். இந்நோய் பல அறிகுறிகளான மஞ்சள் காமாலை, மஞ்சள் நிற நிறுநீர், பசியின்மை, சோர்வு, மயக்கம், வலப்புற வயிற்றுப்பகுதியில் வீக்கம் ஆகியவற்றை உள்ளடக்கியதாகும்.

### காரணி :-

ஹெபடைடிஸ் "ஏ" வைரஸ்

### பரவும் முறை :-

- ❖ அசுத்தமான நீர்
- ❖ சுற்றுப்புறத் தூய்மையின்மை ஜனத்தொகை நெருக்கம்
- ❖ தயார் நிலையில் உள்ள உணவும் பண்டங்களை உட்கொள்ளுதல் (எ.கா) பாட்டிலில் அடைக்கப்பட்ட பூச்சாறு பால் பொருட்கள், காய்கறிகள் மற்றும் பல.

### அறிகுறிகள் :-

- ❖ அதிக காய்ச்சல்
- ❖ மயக்கம்
- ❖ வயிற்றுவலி
- ❖ வாந்தி
- ❖ அடர் மஞ்சள் நிற சிறுநீர்
- ❖ மஞ்சள் காமாலை
- ❖ பசியின்மை
- ❖ சோர்வு

### வீட்டு மருத்துவம் :-

- ❖ கொதிக்கவைத்து ஆற வைத்த குடிநீர்
- ❖ தன் சுத்தம்

## நீரினால் பரவும் நோய்களை தடுக்கும் முறைகள்

நீரினால் பரவும் நோய்களை வராமலே தடுத்துக் கொள்ளலாம்.

- ❖ முதலாம் நிலை தடுப்பு
- ❖ இரண்டாம் நிலை தடுப்பு
- ❖ மூன்றாம் நிலை தடுப்பு

### முதலாம் நிலை தடுப்பு முறைகள் :-

ஆரோக்கியத்தை வளர்க்கும் நடவடிக்கைகள்

#### 1. நலக்கல்வி :

நீரின் மூலம் நோய்கள் பரவும் முறையை பற்றி நலக்கல்வியை கொடுத்தல். கீழ்க்கண்டவைகளை பற்றி நலக்கல்வியை கொடுக்க வேண்டும்.

- ❖ குடிநீர் சுத்தம்
- ❖ தன் சுத்தம்
- ❖ சுற்றுப்புற சுத்தம் மற்றும் உணவு சுத்தம்

### குடிநீர் சுத்தம் :-

- ❖ பாதுகாக்கப்பட்ட குடிநீர் என்பது நுண் கிருமிகளிலிருந்து விடுபட்டது.
- ❖ குளோரினை கலந்து குடிநீரை சுத்தம் செய்யலாம்.
- ❖ வீட்டில் குடிநீரை சுத்தம் செய்ய 5 முதல் 10 நிமிடங்கள் வரை கொதிக்க வைக்க வேண்டும்.
- ❖ கொதிக்க வைத்த சூடான நீருடன் கொதிக்க வைக்காத நீரை கலக்கசுடாது. ஏனெனில் பலவகை நோய்கள் பரவ இது முக்கிய காரணமாகிறது.
- ❖ குடிப்பதற்கு முன்பு நீரை சுத்தமான பருத்தி துணிகளாலோ அல்லது நவீன சல்லடைகளாலோ வாடிக்கட்ட வேண்டும்.
- ❖ குடிநீரை சுத்தமான பாத்திரத்தில் மூடி வைக்க வேண்டும் மேலும் குடிநீர் பாத்திரத்தை தினமும் சுத்தம் செய்ய வேண்டும்.
- ❖ அசுத்தமான கைகளையோ, சுத்தப்படுத்தப்படாத டம்பளர்களையே குடிநீருக்குள் நேரடியாக விட கூடாது.
- ❖ நீர் குழாய்களில் இருந்து நேரடியாக வரும் நீரை குடிக்க கூடாது.

### நீர் மாசு அடைதலை தவிர்க்கும் முறைகள் :-

- ❖ ஆலை கழிவுகள் மற்றும் ஊர் கழிவுகள் நீர் நிலைகளில் கலக்காமல் தடுத்தல்.
- ❖ மலகழிவுகளை நீர்நிலைகளில் கலக்காமல் தடுத்தல்
- ❖ குடிநீரை சுத்தமான மற்றும் மூடிய பாத்திரத்தில் விட கூடாது மற்றும் சுத்தமற்ற டம்பளரை நீர் எடுக்க பயன்படுத்த கூடாது.

### தன்சுத்தம் :-

- ❖ தினமும் குளிக்க வேண்டும்
- ❖ தினமும் இரண்டு முறை பஸ்துலக்க வேண்டும்
- ❖ வாரம் ஒருமுறை நகம் வொட்ட வேண்டும்.
- ❖ கழிவுகளைக் குவாக்கு செல்லும்போது காலணிகளை அணிய வேண்டும்.
- ❖ கைகளை நன்றாக சோப்பு நீர்கொண்டு மலம் கழித்த பின்பு கழுவ வேண்டும்
- ❖ மலம் கழிப்பதற்கு முன்பும், கழித்த பின்பும் நீரை கழிவுறையில் ஊற்றி சுத்தம் செய்ய வேண்டும்.
- ❖ விளையாடிய பின்பு கை, கால்களை சுத்தமாக கழுவ வேண்டும்.

### சுற்றுப்புற சுத்தம் :-

- ❖ சுற்றுப்புறத்தை தூய்மையாக வைத்தல்
- ❖ மலம் கழிக்க சுகாதார கழிவுகளை பயன்படுத்துதல்
- ❖ மலம் கழித்த பின்பு சோப்பு நீரை கொண்டு கைகளை கழிவுதல்
- ❖ திறந்த வெளியில் மலம் கழித்தலை தவிர்த்தல்
- ❖ நீர் நிலைகளுக்கு அருகில் நீர் தேங்காமல் பார்த்துக் கொள்ளுதல்
- ❖ நீர் நிலைகளை சுத்தமாக வைத்தல்

## குறிப்பிட்ட தடுப்பு முறைகள்

தடுப்புசி போடுவதின் மூலம் டைபாய்டு காய்ச்சல் மஞ்சள் காமாலை மற்றும் காலரா வராமல் தடுக்கலாம்.

## இரண்டாம் நிலை தடுப்பு முறைகள்

- ❖ விரைவில் நோயை கண்டறிதல்
- ❖ முழுமையான சிகிச்சை அளித்தல்
- ❖ அதிக நீர் ஆகாரங்கள் கொடுத்தல் (கொதிக்க வைத்து ஆரிய நீர்)
- ❖ கொதிக்கவைக்காத நீரை குடிக்கக் கூடாது மற்றும் பழுச்சாறுகளை கடைகளில் குடிக்க கூடாது.
- ❖ கைகழுவும் முறைகளை கடைபித்தல்
- ❖ நோயுற்றவரின் வாந்தி மற்றும் மலத்தை தொட்டபின் கைகளை நன்றாக சுத்தம் செய்ய வேண்டும் மற்றும் அந்த கழுவுகளை நீர் நிலைகளுக்கு அருகில் அப்புறப்படுத்த கூடாது. அது கண்டிப்பாக கழிவறையில் மட்டுமே அப்புறப்படுத்த வேண்டும்.

## மூன்றாம் நிலை தடுப்பு முறைகள்

நோயினால் பாதிக்கப்பட்டவருக்கு உடனடியாக சிகிச்சை அளிக்காமல் இருந்தால் மிகவும் பயங்கரமான விளைவுகள் உருவாக்கும் அந்த விளைவுகளை தடுக்க மருத்துவரை அணுகி உடனடியாக சிகிச்சை பெறுதல்.

## சுருக்கம்

இதுவரை நீரினால் பரவும் நோய்கள் எவ்வாறு பரவுகின்றன அந்த நோய்களை பரவாமல் தடுக்க எந்த எந்த முறைகளை பின்பற்ற வேண்டும் என்று பார்த்தோம். இந்தமுறைகளை பின்பற்றி தண்ணீரினால் பரவும் நோய்களை ஒழிப்போம்.

## முடிவுரை

குடிநீர் சுத்தமாக வைத்துக்கொள்வதன் மூலம் பலவித நோய்கள் பரவுவதை நாம் தடுக்கலாம். நீரினால் பரவும் நோய்களை தடுக்கும் முறைகளை கடைப்பிடித்து சமுதாயத்தை நீரினால் பரவும் நோய்களிலிருந்து காப்பாற்றுவோம்.