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PSYCHOSOCIAL FACTORS AFFECTING MOTHERS' CHOICES OF CHILDHOOD DIARRHOEAL TREATMENT AMONG SLUM FAMILIES IN HO CHI MINH CITY, VIETNAM

DO VAN BINH

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was submitted to the Faculty of Graduate Studies, Mahidol University for the degree of Master of Arts (Health Social Science)

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Title Psychosocial Factors Affecting Mothers' Choices of Childhood Diarrhoea Treatment among Slum Families in Ho Chi Minh City, Vietnam

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ABSTRACT

Childhood diarrhoea is a severe problem in Vietnam, as it is in many developing countries. The treatment for children depends on the mothers' choices. This study applied the Health Belief Model to investigate mothers' choices of childhood diarrhoeal treatment, and to examine the effects of psychosocial factors on their choices. The study also looked at the influence of mothers' occupation, age, education and income on their psychosocial status.

Three hundred and thirty-four mothers in Ho Chi Minh city who had at least one children under 5 years of age with diarrhoea in the 6 months prior to this study, were interviewed from 1 September to 15 October - 1996 by using an interview schedule. SPSS for Windows was used to analyse the data. Descriptive statistics and chi-square analyses were performed.

The findings show that the average age of the mothers was 32.3 years. Their average education level was 5.5 years. More than a half of the mothers (52.3%) were housewives or had no paid employment. More than forty percent (41.1%) earned a low income (42,857-151,245 VN$/person/month, approximately 4 -14 USD). The average family size was 5 persons. The total number of children of the 334 mothers was 414, and the average age of these children was 3 years. The median incidence of diarrhoea was 1.3 episodes per child in the previous sixth months.

Results showed that 54.5% of mothers chose appropriate diarrhoeal treatments, while 45.5% chose less appropriate treatments. More than one-third (37.4%) of mothers used home self-treatment only, while the remainder sought help from health personnel.

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The study also found significant associations between the mothers' choices of diarrhoea treatment and all five Health Belief Model psychosocial factors: mothers' perceived severity of childhood diarrhoea, mothers' perceived barriers to appropriate treatments, mothers' knowledge about appropriate treatments, mothers' beliefs in causes of childhood diarrhoea and mothers' perceived symptoms of the disease. Mothers' education level was also significant related to mothers' perceived severity of childhood diarrhoea, beliefs in causes of childhood diarrhoea and knowledge about appropriate treatments.

In addition, the research found that approximately two-thirds of mothers (65%) perceived childhood diarrhoea as a moderate disease. The proportion of mothers who used oral rehydration solution (ORS) and homemade solutions was high (63.8% and 42.2%, respectively). However, these solutions have associated barriers, such as taste, smell, time consuming preparation, and short duration of use. A majority of mothers have misbeliefs in traditional causes of childhood diarrhoea. They also have misperceptions about quantity of fat, food intake during a child's diarrhoeal episode, and antidiarrhoeal drug use.

The main recommendation is to improve the city's health promotion and health education programs by taking into account the psychosocial status of the poor, and mothers' low educational levels. The programs should focus on the above-mentioned barriers, and use appropriate, interesting methods of communication. Moreover, the city's Control of Diarrhoeal Disease program should review and regulate its activities related to the production and supply of ORS and childhood diarrhoeal case management at the grass roots level.

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ABBREVIATIONS

CDD	: Control of Diarrhoeal Disease
HCMC	: Ho Chi Minh City
ORS	: Oral Rehydration Solution
ORT	: Oral Rehydration Therapy
PHCS	: Public Health Care Services
SSS	: Salt - Sugar Solution
UNICEF	: United Nations Children's Fund
US$	: United States's Currency unit : Dollar
VN$	: Vietnam's Currency unit : Dong
	(Exchange rate: One US$ # 11,000 VN$)
WHO	: World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1. Background and justification

1.1.1 Control of diarrhoeal disease in the world

Childhood diarrhoeal disease is a serious global health problem among children, especially in developing countries, and particularly among children under 5 years of age. This disease is one of the most important causes leading to high morbidity and mortality among children, and is responsible for malnutrition, retarded growth and the low quality of life of children. WHO estimated that each year there are over one billion episodes of childhood diarrhea and 5 million children die of this disease [33]. In the first five years of life the median incidence of childhood diarrhea is 2.2 episodes per child per year. Each year 500 million children suffer from malnutrition and 10 million children die of severe malnutrition. Scientists have well recognized the close association between diarrhea and malnutrition in infants and young children. Diarrhea and malnutrition are linked in a vicious circle: severe diarrhea leads to reduced foods intake and malabsorption, which causes malnutrition, and malnutrition causes poor resistance to infection [32].

Foods, drinks or every intake through the oral route, that contains bacteria, chemical, animal or vegetable toxins are a common causes of childhood diarrhea. Diarrhea usually occurs in areas where hygiene and sanitation are poor and where with fecal contamination of food and water is found [11].

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Generally, the chief symptom of childhood diarrhea is the abnormal frequent expulsion of feces, which, in severe cases, may be follow with nausea, vomiting, expulsion of feces, which, in severe cases, may be followed by nausea, vomiting, abdomen pain. Excessive expulsion of feces leads to loss of water and dehydration of the patient's body. Therefore timely liquid replacement is the major treatment method. Oral Rehydration Salt (ORS) or an equivalent home made solution is an effective fluid used for rehydration, fluid restoration and electrolyte balance for the diarrhoeal patient's body.

In 1978, the World Health Organization (WHO) established a Control of Diarrhoeal Diseases (CDD) program which aims at assisting the worldwide Primary Health Care Program to prevent dehydration arising from childhood diarrhea. To pursue this purpose, the WHO/CDD program has assisted many countries to carry out activities to educate and encourage mothers to use ORS or similar home made solutions for diarrhoeal treatment. Since then, more than 110 developing countries have been supported with techniques and finance in order to implement National Diarrhoeal Control Programs. Up to the end of 1988, over 1.3 billion children under five years of age had access to the life-saving oral rehydration salts, and these activities expended over 78 million US dollars during the years 1978 to 1988 [34]. However, the childhood diarrhea episodes rate is still high and the ORS use rate is low, as the following WHO's statistics show:

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Table 1.1 Estimates of diarrhea episodes and ORS use rate of some selected countries in 1988

Country	Population < 5 year (x 1,000)	Estimated episodes diarrhea per child <5year/year	Estimated total diarrhea episodes < 5 year (x1,000)	ORS use rate (%)
Bangladesh	18,028.4	5.2	93,747.6	17
India	109,774.1	2.7	296,382.0	12
Myanmar	5,345.2	2.7	14,432.0	21
Thailand	5,503.8	2.0	11,007.6	19
Cambodia	1,297.6	4.5	5,839.3	6
Lao	637.3	3.4	2,166.8	12
Malaysia	2,182.2	1.3	2,836.9	15
Philippines	8,745.9	2.8	24,488.6	10
Vietnam	8,986.1	2.2	19,769.4	17

Source: WHO/CDD, 1989 [34]

From 1989 up to now, WHO/CDD has continuously pursued its purpose. However, while current rates of diarrhoeal morbidity and mortality is still high, the ORS use rate has reduced. In order to understand the causes of the mentioned problem, throughout 1987 and 1989, the CDD of 67 countries implemented many surveys to obtain quantified estimates of the rates of mothers' diarrhoeal treatment choices, and the proportion of cases correctly rehydrated. The results showed the median use rate of treatment methods as follows:

. ORS use rate was about 28 %

. Sugar-salt solution 3 %

. Other home fluids 28 %

. Traditional medicine 20 %

. Other medicine 41 %[34].

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Together with dehydration prevention for childhood diarrhea, the WHO/CDD program has advised mothers not to use any drugs, except in cases where the symptoms of diarrhea become serious (abnormal thirst, > 6 stools, fever, vomiting), or she should ask for help from health workers. Regarding childhood diarrhoeal treatment, in an other 140 surveys on patterns of diarrhoeal treatment conducted by the CDD program in 47 countries during 1987-1989, the results showed that antidiarrhoeals and antibiotics continued to be widely used. This problem is associated with the extensive misuse of multiple drugs (e.g. Hydroxyl quinines, dephenoxylate, loperamide, kaolin and pectin, neomycine and streptomycin), which leads to unnecessarily high costs for treatment as well as adverse reactions; and increases in antibiotic resistance. Therefore "ANTIDIARRHOEAL DRUGS and ANTIEMETICS should NEVER been used. None has proven practical value. Some are dangerous". The major these reasons for the continued use of antidiarrhoeals and antibiotics were also evaluated by WHO/CDD, and the results were as follows:

- Antidiarrhoeals and antibiotics continue to be widely used because mothers still wrongly expect them stop the child' s watery stools as soon as possible.

- The high rate of risk of contamination of foods and fluids given in bottle feeding, and inappropriate beliefs regarding breast feeding infants with diarrhea [34].

However, the situation has improved to some extent. According to a report of UNICEF in 1994 [15] the proportion of the world' s families who knew of and used ORT was increased from one-fifth to one-third within 5 years during 1988 to 1993 and hence saving one million lives were saved each year and diarrhea disease was demoted to second place among the causes of children's deaths. However. ORT still

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needs to be promoted because majority of the developing world's families still do not use it, and dehydration still causes over 1.5 million death a year. Additionally, one billion US$ per year is currently being spent on antidiarrhoeal drugs, most of which are useless or harmful.

1.1.2 Control of diarrhoeal disease in Vietnam

In order to respond favorably to the WHO/CDD goal, in 1980 the Ministry of Health in Vietnam established a Diarrhoeal Disease Control Program in every level of public health care system. At the end of 1992, over 80 percent of the commune had a CDD program. They have carried out many activities focusing on diarrhoeal prevention and treatment (e.g. diarrhoeal mass media campaigns, training programs, ORS supply, etc.). However, up to 1994 diarrhea was still the leading cause of children's death rate (CDR.) and the number of childhood diarrhea affected people was classified second highest among thirteen epidemic diseases. This rate was particularly high in slums and remote rural areas [6]. According to a report of UNICEF, during 1988-1994 ORS use rate decreased sharply from 17 percent in 1988 to 5 percent in 1994. One-third (33 percent) of mothers treated their children's diarrhea with antibiotics and about one-fourth (26 percent)used anti-diarrhoeal drugs 26 percent. Only a small proportion of them (5 percent) used ORS or home made solutions [30].

In terms of child care practice in Vietnam, children are generally cared for by their mothers, including during periods of sickness. The role of the mother in managing diarrhoeal disease is therefore very important in reducing child morbidity

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and mortality. Her motivation, her constant presence and her capacity to undertake immediate and timely action is necessary for childhood diarrhoeal treatment. A great deal of research and many psychological theories have suggested that mother's diarrhoeal related behavior is affected directly by her perception, knowledge, attitude, beliefs related to diarrhoeal disease, and these psychosocial factors are influenced by socioeconomic, demographic and personal characteristics of the mothers.

Since 1985, the Health care system in Vietnam has changed from being a provider of health care to a health care system where the costs are shared. Consequently, Western style medical services and these various forms of traditional medical care services coexist and these influence people's health care seeking behavior, including diarrhoeal treatment behavior. But little research has been done on this influence. In order to promote appropriate health seeking behavior related to diarrhoea, it is necessary to study mothers' behaviors regarding childhood diarrhoeal treatment and their underlying factors. A deeper understanding of the psycho-social factors affecting mothers' choice of childhood diarrhoeal treatment in slum areas, where the problem is serious, will be very useful for the Control of Diarrhoeal Disease program in Vietnam.

1.1.3 Research questions

In this study, the following research questions will be addressed:

- What are the diarrhoeal treatment methods mothers choose to treat their children under five years of age who suffer from diarrhea?

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- Do the mothers use ORS, equivalent home made solutions, or do they seek help from health personnel ?

- Do they have ample knowledge of the causes of diarrhea and appropriate treatment methods?

- How do they perceive the severity of acute diarrhea ?

- How do they perceive the barriers to using appropriate diarrhoeal treatment?

- In what ways, if at all, are their treatment choices affected by their level of their knowledge, beliefs and socio-demographic factors ?

To examine these questions, this study aims to investigate the psychosocial factors affecting mothers' behavior regarding diarrhoeal treatment for their children under five years of age in a slum area, in Ho Chi Minh City.

1.2. Research objectives

1.2.1. General objectives

In order to answer the above research questions, the general objectives of this study is to study mothers' illness behavior when their children under five years of age have diarrhoeal symptoms and the factors underlying childhood diarrhoeal treatment choice.

1.2.2. Specific objectives

1. To identify the mothers' diarrhoeal treatment choices.

2. To identify levels of mothers' perception of symptoms and severity of childhood diarrhoeal disease.

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3. To identify levels of mothers' perceived barriers in taking the appropriate diarrhoeal treatment methods.

4. To identify the mothers' beliefs in causes of childhood diarrhea.

5. To assess levels of mothers' knowledge about the appropriate treatment methods.

6. To examine the relationship between psycho-social factors and mothers' diarrhoeal treatment choices.

7. To examine the relationship among socio-demographic characteristics of mothers and psycho-social factors.

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CHAPTER TWO

LITERATURE REVIEW

1. 1. The Health Belief Model

Many behavioural scientists have devoted extensive conceptual and empirical effort toward the explanation and prediction of individual's health behaviours, which are classified into 3 types: to prevent illness or to detect it at a symptomatic stage (Health behaviour); in the presence of symptoms, to obtain diagnosis and to discover suitable treatment (Illness behaviour) ; and in the presence of defined illness, to undertake / receive halting disease progression (Sick role behaviour).

In this context, Backer M.H., Drachman K.H., and Kirscht M.P.proposed their Health Belief Model (HBM) as predictor of preventive health behaviour. The model hypothesized that a person will generally not seek preventive care or health screening unless they possess a minimal level of relevant health motivation and knowledge, view themselves as potentially vulnerable and the condition as threatening. They also have to be convinced of the efficacy of intervention and see few difficulties in understanding the recommended action.

According to the above hypothesis, the HBM is based on the primacy of the perceived threat, which is motivated by the force of the perceived susceptibility to an illness and its . This intern influences the likelihood of taking action, and perception of benefits minus barriers provides a preferred path of action. Socio-demographic factors and cue to action (e.g. mass media campaigns, group dynamics, behaviour

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modification, patient provider contacts, social support system and the possibilities of social engineering) are modifying factors.

Perceived threat is a subjective state of an individual when he/she feel fear of something undesirable or harmful to his/her health which influences directly to his/her likelihood of taking against or avoiding actions. With illness behaviour, the perception is motivated by both the individual's perceived likelihood of "susceptibility " to the illness and by his/her perception of probable "severity" of the consequences of the disease.

Adapting the initial HBM of Backer M.H. et al. into a model of choices of treatment behaviour that aims at explaining people's treatment decision making, Young (1980) simplified two of the above variables into an equivalent variable that is labeled "Gravity". It is the level of perceived severity of the illness held by the individual's reference group.

Perceived benefits of or minus barriers to recommended behaviours also affects directly to individual's likelihood of taking action. It is reasoned that before taking an action, the individual evaluates its consequence. If his/her action would be beneficial in reducing his/her susceptibility to and/or severity of the condition with low cost (or low level of perceived barriers) it is more likely to occur. If an individual's belief concerning the cost, the accessibility with high level of disadvantages (or high level of barriers), the probability of taking action would be low.

This variable is also applied in a simple way by Young (1980) in his model of choices of treatment. It is labeled "Accessibility" and refers to the costs and

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availability of health services in terms of "perceived barriers" without perceived "benefits".

Socio-economic, demographic variables serve to condition individual perceptions which are manifested through individual beliefs and knowledge.

The HBM has been continuously adapted from the 1960s up to now, and although social scientists have developed many other models, which differ in theoretical perspectives, and types of health behaviour to be explained, however, they contain the major variables of the HBM. The follows some major models which draw on the ideas of the Health Belief:

Suchman's model (1965a, 1965b, 1966) aims at examining the health behaviours within their surrounding social and cultural context.

Fabrega's model (1973) emphasizes culturally defined states that form the basis of decisions about medical treatment and categorizes the illness stages.

Mechanic's model (1968) emphasizes studying what occurred before an individual sees a health care provider in order to predict the ' help seeking' of a patient.

Anderson and Bartkus' model (1973) attempts to link socio-demographic characteristics to needs, economic, ecological, and social-psychological variables in order to predict the decision to seek professional help [17].

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It is well known that using the HBM for predicting the type of behaviour still has some limitations which have been proved and commented upon by many researchers through their experimented researches, such as: Flay (1988) studied smoking acquisition in adolescents, and he found that after teaching adolescent smokers about the severity, benefits, barriers, susceptibility of having lung cancer...many times, the rate of smoker did not reduce. Bond, Aiken & Somerville (1992) also proved that perceived threat in diabetes patients had no significant in predicting their eating behaviour.

However, Rosentock (1990) commented that: "The HBM continues to be used frequently by health psychologists and others who are studying the behaviours for which it is most applicable" [14].

2.2 Conceptual framework

According to the above references, it is thought that the Health Belief Model is one of the most suitable models to use for examining human's illness behaviour. Therefore in this study, the Health Belief Model will be modified as a theoretical framework to explain mother's choice of childhood diarrhoeal treatment as show in Figure 1.

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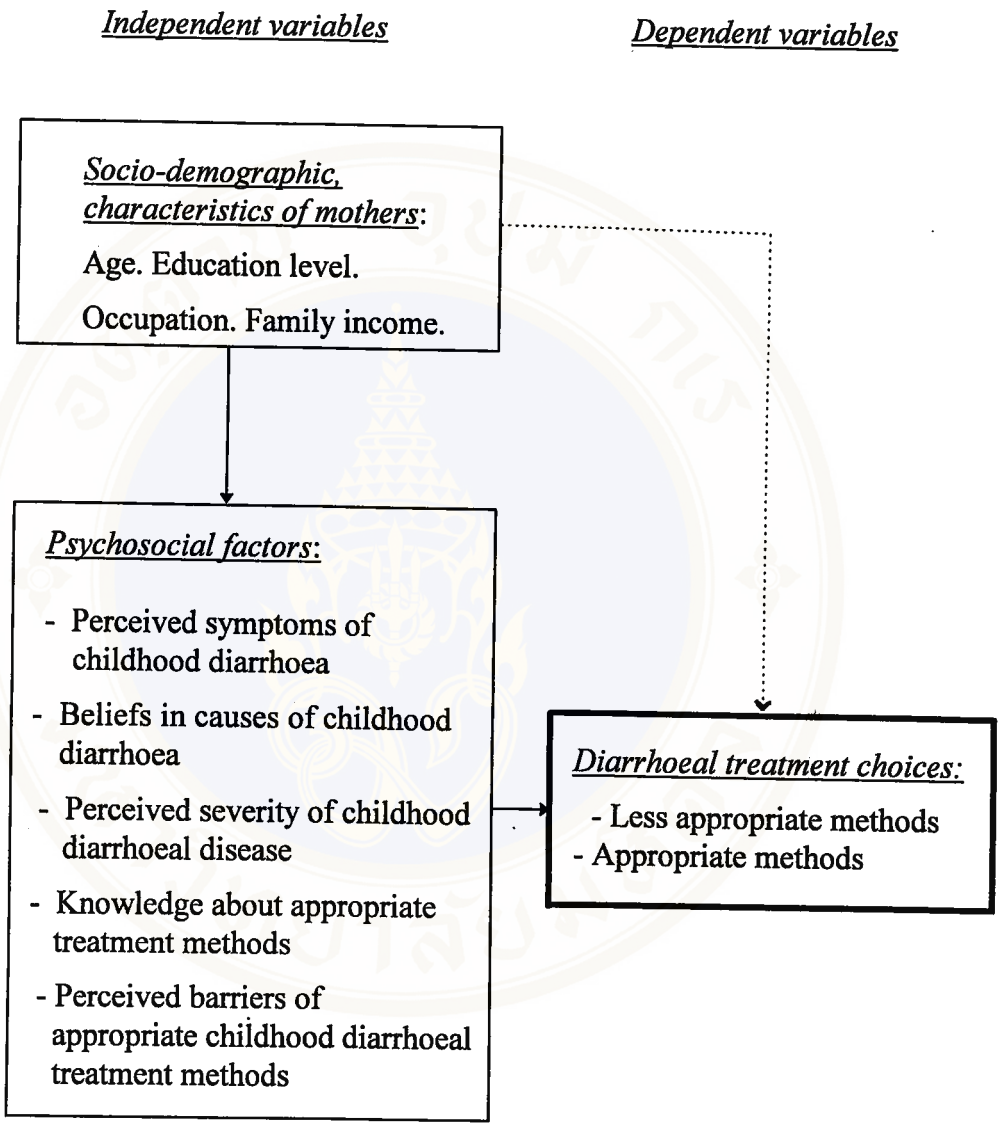
Figure 1: Conceptual framework



The model hypothesizes that a mother will choose an appropriate diarrhoeal treatment method or less appropriate one depend on her psycho-social factors encompassing beliefs in causes of diarrhoea, knowledge about the appropriate diarrhoeal treatments, perceived severity of acute diarrhoea, perceived barriers of the appropriate diarrhoeal treatments, and perceived symptoms of childhood diarrhoea .

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However, such psycho-social factors are also influenced by social-demographic characteristics of mothers: age, education, occupation and family income.

Socio-demographic characteristics of mothers

The socio-demographic characteristics of mothers are seen as indirectly influencing their choice of diarrhoeal treatment, because they may have affects on various psychosocial variables. Thus, it is hypothesized that mothers' differences in age groups, education, occupation of mothers and family income may lead to differences among their beliefs in the causes of diarrhoea, knowledge about appropriate diarrhoeal treatment method, perceived severity of diarrhoeal disease, perceived barriers of appropriate diarrhoeal treatment method and perceived symptoms of childhood diarrhoea.

Psychosocial factors

Psychosocial factors are seen as influencing factors on the mothers' choices of diarrhoeal treatment directly. It is hypothesized that the different levels (high, moderate and low) of mothers' beliefs in the causes of diarrhoea, knowledge about appropriate diarrhoeal treatment method, perceived severity of diarrhoeal disease, perceived barriers of appropriate diarrhoeal treatment method and perceived symptoms of childhood diarrhoea of mothers are likely to have an association with mothers' choice of diarrhoeal treatment.

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2.3. Hypotheses

Based on the conceptual framework in Figure 1 and the studied objectives, in order to examine the associations between mothers' choices of childhood diarrhoeal treatment and mothers' psychosocial factors as well as mothers' socio-economic, demographic characteristics, the following six hypotheses were tested in this study:

First Hypothesis

Mothers who perceive more severity of childhood diarrhoeal disease are more likely to choose appropriate methods of diarrhoeal treatment than those who perceive less severity of childhood diarrhoeal disease.

Second Hypothesis

Mothers who perceive less barriers to appropriate method of diarrhoeal treatment methods are more likely to chose appropriate methods for childhood diarrhoeal treatment than those who perceive more barriers.

Third Hypothesis

Mothers who have a belief in the biomedical causes of diarrhoea are more likely to choose the appropriate diarrhoeal treatment method than those who have traditional beliefs.

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Fourth Hypothesis

Mothers who have better knowledge about appropriate diarrhoeal treatment methods are more likely to choose appropriate methods for childhood diarrhoeal treatment than those who have lower knowledge about appropriate diarrhoeal treatment methods.

Fifth Hypothesis

Mothers who perceived more symptoms of childhood diarrhoeal disease are more likely to choose appropriate treatment methods than those who do not perceived less symptoms of childhood diarrhoeal disease.

Sixth Hypothesis

The difference among age groups, educational levels, occupations of mothers and their family income are likely to account for differences in beliefs, knowledge and perceptions related to diarrhoea.

2.4 Operational definitions

Childhood diarrhoeal disease refers to symptoms in which a patient passes 3 or more watery stools per day with or without blood.

Childhood diarrhoeal treatment:

In this study, the childhood diarrhoeal disease treatment methods refer to 2 categories :

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1. **Appropriate methods** refer to use of ORS, use of sugar-salt- solution, use of other similar home made solutions, and visit to a professional health personnel.

2. **Less appropriate methods** refer to antidiarrhoeal drugs, traditional or folk healers treatments without any rehydration solution.

- In the case of mothers who chose more than one method, if these include one of the appropriate methods, it is classified into the appropriate method category.

- This study only refers to the latest episode of diarrhoea of the children under five years of age.

Childhood diarrhoea refer to the child aged from 1 month to 60 months which had at least one episode of diarrheoa within the last six months (from April to September, 1996).

Income refers to the average income per month (in VN$) of each member in the family (Total income of family divided by family size). Based on the average income and standard deviation of all of the respondents family income, the incomes were recoded into three income groups: Low, moderate and high level.

Home made solution refers to the liquids that mother makes at home by available local materials and which are efficacious for rehydration.

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Mother refers to mothers or care takers who are the major decision makers in choosing diarrhoeal treatment methods (there is no mention of their sex)

Mother's age refer to age reported in years of the respondents. These were recoded into five age groups : < 19, 20-29, 30-39, 40-49 and >49.

Mother's education refer to reported years of schooling of the respondents. These were recoded into five groups: Illiteracy, Primary (1-5), Secondary (6-9), High school (10-12), College & above (>12).

Mother's beliefs in causes of diarrhoea refers to mothers' beliefs in factors that caused the dirarrhoeal disease of their children.

Mother's knowledge about appropriate diarrhoeal treatment refers to the understanding of mother about:

- Fluid replacement (e.g. ORS, SSS, or other equivalent homemade solutions)
- Mothers' understanding of how to stop the watery stool status of the child.
- Quantity of food/milk, fat, and nutrients given to children under five year old children during their diarrhoeal episode.

Mother's job refers to the recent major regular job e.g. vendor, handicraft maker, private services, public services and housewife/no job.

Mother's perceived severity of diarrhoeal diseases refers to mother's assessment about the impact of diarrhoea, and her assessment on the child'health.

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***Mother's perceived barriers** of appropriate diarrhoeal treatment method* refer to mothers'assessment of difficulties of using ORS and homemade solutions or in accessing the public health care services.

Oral rehydration salt (ORS) refers to fluid for treatment of diarrhoea to reduce the severity of dehydration of the disease. Its formula is introduced by WHO.

Oral rehydration treatment (ORT) refer to every solution that mothers used to treat their children with diarhoea and they had the effects to reduce the severity of dehydration of the disease.

Sugar salt solution (SSS) refer to liquid that is prepared using 8 coffee spoons of sugar, 1 coffee spoon of salt and one liter of boiled water (recommended by WHO).

2.2. Previous research findings

2.2.1. Mothers'choices of diarrhoeal treatment

Through many researches were done throughout the world during the past decades, it is generally known that the mother's choices of diarrhoeal treatment differ from country to country, as a result of different cultures, race and resources which affect a mother's belief, perception, knowledge and practice in diarrhoeal treatment [20]. Some previous research findings show the above mentioned issues and are reviewed below.

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Margaret E. Bentley's study on 'The household management of 1,467 children under five years old with diarrhoea in 3 rural areas of North India (1984) found that mothers practice a variety of adaptive and maladaptive behaviours in the management of diarrhoea. Majority of the studied mothers believed that diarrhoea can be treated (92%). The types of treatment preferred by 86% was " doctor's treatment"; only 3% felt that " home treatment" alone would suffice, less than 5% said that both " doctor and home treatment" should be done, less than 1% listed " exorcism" as a treatment, and only 1.8% of the mothers thought that ORT shout be given immediately. However, the exception to these results is the case of green diarrhoea (a type of diarrhoea mother believed that it often attributed to evil effect) where 20% of mothers believed that it required a visit to the exorcist.

The same study revealed that mothers' choices of treatment were affected by the definition classification system of diarrhoea, which compose of five categories related to either a physical or spiritual characteristics. The classification depended upon their beliefs about the harmfulness of diarrhoea, and upon their knowledge about food and fluids intake.

A study on beliefs, attitude and practice toward diarrhoeal diseases among childbearing women in the rural Northeast Thailand conducted by the Faculty of Nursing and Faculty of Medicine, Khon Kean University, showed that mothers usually use herbal medicine, ORS or home made solution equivalent to standard recommended ORS for self-treatment of childhood diarrhoea at home. Seeking

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medical treatment was the last choices when the child did not get better after some days [29].

A comparative research carried out by Parveen Rasheed on "Mothers' perception of diarrhoeal disease" in Saudi Arabia among 240 mothers attending a government primary health center of Al-Khrobar, Eastern province of Saudi Arabia, and 622 students of two governmental secondary school in this City, in December 1990, it was found that 62.5% of mothers visited a doctor within 24 hours of the onset of symptom, while 15.8% of mothers stated that they would wait up to six days before seeking medical advice. With home remedies for diarrhoea, the majority of them (83.3%) said their first choices was " modern medicine ", 10.8% of them prioritized Arabic herbal preparation, 5.8% suggested the use of opium as an initial measure for controlling diarrhoea. None of them mentioned the use of ORT or salt-sugar solution drinks for home management of the diarrhoea.

Although the research did not show an affect of the mothers' perceptions regarding mothers' choices of treatment, it stated that the low level of education of the mothers led to their low knowledge about biomedical cause of diarrhoea, and few of them knew about dehydration (17.9%), malnutrition effect (3.8%), and even 35.8% of them thought that watery stool was the most dangerous sign in diarrhoea.

Michell G.Weiss' conceptual model in "Cultural models of diarrhoeal illness" (1988) summarized that there are a variety of health services and local healers to treat diarrhoea in the world. These include:

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- Government health services,
- Private cosmopolitan (allopathic) practitioners,
- Homeopaths,
- Practitioners of formal traditional indigenous medical system,
- An array of local healers of various descriptions - including religious healers, sorcerers, herbalists, and so forth,
- Pharmacy and druggists,
- Family and community leaders.

He also commented that in lesser developed countries traditional healers are usually more readily available than cosmopolitan medical services.

Regarding treatment, diverse types of treatment were used, they can be classified under the following categories:

- Adjusting diet and fluid intake or withholding food and fluids;
- Changing breastfeeding routines;
- Cleansing the gastrointestinal tract with enemas, purgatives, and emetics;
- Local herbal remedies;
- Ritual and devotional practices to promote spiritual healing;
- Other locally sanctioned interventions (e.g. abdominal massage, manipulation of the soft palate and skin over the fontanel, cutting gums for teething diarrhoea, etc.);

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- Cosmopolitan medicines, including antimotility agents, absorbents and antibiotics;

- ORT.

Regarding mothers' choices of diarrhoeal treatment, the author assessed that mothers' choices of treatment depended upon their perceptions of diarrhoea symptoms and the ways that they experience the effects of illness, which is affected by culture-specific- patterns. Mothers' beliefs about the causes of diarrhoea may constitute categories of folk illnesses, often at variance with standard Western descriptions of disease. Consequently, people seek help from diverse sources with various treatment methods. Besides, socioeconomic and other contextual factors, such as local power relationships in the social network, may be a stronger determinant of treatment behaviour than the recommendations of health care providers [21].

In Indonesia, the studies of Ismail R. et al. (1984) found out that in the past 12.2% of mother of had no intention of using home made solution for diarrhoea treatment, 46.1% gave medication, 2.2% went to traditional healers, 3% sought for help from village health workers, 7.85% went to the health centers, and 0.3% to the hospital. Self medication was ranged from: western medicine 24.35%, ORS use 9.1%, and traditional medicine 62.1%. Almost all the doctors and nurses gave injection, 100% of them gave medicine only and 11% gave ORT (Oral Rehydration Therapy). Since the 1980s, many campaigns were carried out to encourage and train Indonesian mothers in using rice water and other home made solutions which are available for diarrhoea home treatment, but its use rate was not high. A research conducted among

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1077 families in a period of 1 year (1983-84) showed that only 19.7% of mothers used rice water solution for diarrhoeal treatment. The majority of the remainder, who did not use it, stated that it took a lot of time for cooking the rice water (40-60 minutes), it was also had limited efficacy in stopping watery stool. Records about mothers' knowledge of appropriate diarrhoeal home treatment also showed that slightly over half of respondents still liked to use medication because it could stop watery stool soon. Thus, Indonesian scientists concluded that there was a great need to improve the mothers' knowledge in using appropriate diarrhoeal home treatment. The above results showed that mothers' perceived barriers of home made solutions as well as mothers' knowledge about appropriate diarrhoeal treatment affected very significantly Indonesian mothers' choices of diarrhoeal treatment.

There were similarly results, in Brazil, where in order to evaluate the extent of ORS use for diarrhoeal treatment after carrying out an education campaign, research was conducted in Northeast Brazil in 1989. The results showed that: in the 9467 households surveyed, 982 children had diarrhoea in the last 15 days, 93 % of their mothers had received information about diarrhoea and ORS or sugar salt solution use information but 66% of mothers did not take any treatment for their children, only 24% of them utilized a recommended solution for their children, and only 6% of mothers were able to demonstrate the preparation of ORS or sugar salt solution correctly. This is due to unclear message given to them and only a few mothers were aware of the importance of increasing fluids when their children have diarrhoea [34].

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In Bangladesh, there was an attempt to study the prevailing diarrhoea management practices among 181 mothers of under five years of age children with diarrhoea in Northeast rural Bangladesh (1984). The results showed that: home fluids as a remedy were commonly used, 38% of mother favored and began treatment with home remedies, and 58% of mothers considered excessive stools as a reason for seeking medical care. 69% of mothers, were familiar with ORS but lacked knowledge about the role ORS plays in fluid replacement, consequently 55% of them said that they had restricted feeding partially during diarrhoea [34].

2.2.2 Psychosocial factors affecting mother's choices of diarrhoeal treatment.

Beliefs in causes of diarrhoea:

Escobar, Gabriel-j; Salazar, Eduador; Chuy, Mario studied on beliefs regarding the etiology and treatment of infantile diarrhoea in Lima, Peru, in 1983; respondents were 91 mothers of children under age 2. The results indicated that diarrhoea was not seen as an infectious disease, but was placed in the framework of the hot-cold dichotomy prevalent in Latin America; i.e., diarrhoea was believed to be caused by invasion of the body by cold or by ingestion of foods designated as 'cold'. From that point of view, mothers aimed their diarrhoeal home treatment at changing the foods intake or medicine given to the child.[29].

Cultural and behavioural factors often contribute to the continuation and spread of diarrhoeal diseases. Those factors are very strongly rooted in the culture and

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in the religious beliefs, which are difficult to be changed. It can be noted that the cause of transmission of diarrhoea includes mourning rituals, eating, drinking habits, environmental sanitation, and some strange unscientific beliefs and superstitious relating to defecating practices, these features were presented in a study of Meterna KNM's , in Tanazania (1984) [29].

The earlier mentioned study of Margaret E. Bentley also showed that mothers thought that causes of diarrhoea are attributed to hot weather (66%), bad food (36%), overeating (30%), teething (24%), cold weather (23%), 'hot' food (16%), hot breastmilk' (15%), evil eye (12%), and dirty water or germs (4%). These different beliefs led to the classification of different diarrhoea types, such as Watery (Pani), Bloody (Khooni), Geeen (Hara), Yellow (Pila), Mucus (Rhad), Bits pieces (Phate-phate), and influenced their thinking about methods of treatment: majority of mothers thought that diarrhoea can be treated (92%), in which 86% suggested 'doctors' treatment, 3% felt that ' home treatment' alone would suffice, less than 5% said both 'doctor and home treatment should be done, and less than 1% listed 'exorcism'. This study also used a stepwise logistic regression for investigating the determinants of medical treatment for diarrhoea, its result revealed that shorter duration of diarrhoea episodes were less likely to be addressed by medical treatment [19].

A long-term data collection about local beliefs related to diarrhoea in Western Ethiopia conducted by Veronika Scherbaum showed that many people do not know what caused diarrhoea. Ethiopians believed that teething, a bad fall, eating

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'germinated flour' can cause diarrhoea. Some thought that dirty water or the ascaris worm could be the reason. Because of that, Ethiopians treated diarrhoea with inappropriate methods [31].

Similar to the above situation, Evangelista et al. (1984) recorded the beliefs of Philippino mothers regarding to the causes of diarrhoea as follows:

- Faulty feeding habits 93.3 %
- Teething 93.2 %
- Worms 83.0 %
- Excessive heat or cold 57.3 %
- Rancid breastmilk 9.0 %
- Evil spirits 74.0 %
- Harmful microorganism and toxin 91.0 %.

The above high percentage of mothers with misconception about cause of diarrhoea brought about inappropriate diarrhoeal treatment methods: with diarrhoea caused by teething, they thought that it could be automatically stopped when the teething erupted.

Similarly, focusing on the role of rural mothers in diarrhoeal diseases treatment, a simple survey was conducted in a Philippines rural community (1983-84). It also noted that a number of mothers were still unaware of the concept of diarrhoea and their management because they had many associated misconceptions. Thus, the cause of diarrhoea was perceived as teething, a normal psychological

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process or a 'natural happening' in children. The diarrhoea could be allowed to go on until the teeth erupted [34].

A study conducted by Faculty of Nursing and Faculty of Medicine, Khon Kean University found out that diarrhoea occurring in children 0-1 year old is called ' SU ' and regarded as a natural phenomenon of normal child growth and development. 'SU' is used to distinguish diarrhoea in older children and adults. Many of them thought that diarrhoea need not be cured, children will recover themselves, or diarrhoea is unpreventable and not fatal among children. The belief was adopted by mothers from generation to generation and still affects negatively on mothers' behaviour regarding diarrhoeal treatment [29].

Knowledge about appropriate diarrhoeal treatment

As mentioned in Chapter one, acute diarrhoeal disease can be cured at home by using a low cost remedy. The treatment aims at avoiding dehydration by suitable fluid replacement and remaining the quantity of food and milk intake during the diarrhoeal episode is not necessary to prescribe costly drugs and anyway one should taking antibiotic, antidiarrhoeal and antiemetic drugs.

Although the CDD programs of many countries tried to educate parents of children under five years with regard to in the above mentioned appropriate management of diarrhoea. However, even as late as 1989 a high percentage of parents still had mistaken beliefs, misunderstanding about the causes, symptoms, severity and

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the appropriate treatment methods. These factors unfortunately, affected mothers' choices of diarrhoeal treatment, as can be seen from the following research findings:

The Joint WHO/UNICEF [33] statement on the management of diarrhoea and ORT (1986) stated that: " In many societies the parent's remedial response to diarrhoea is to withhold food and fluid, including breastmilk, in the mistaken belief that this will stop the diarrhoea and ease the strain on the in testiness. This treatment only adds to the dehydration and malnutrition caused by the illness.

With reference to mothers' knowledge about appropriate diarrhoeal treatment, the earlier mentioned study of Margaret E.Bentley (1988) indicated that " Partial or total restriction of food was widely practiced". 65% of mother thought that less food should be given, 10% of these mothers felt that more food should be offered. Of these, 67% believe that more food will increase the diarrhoea, 32% state the child is not hungry, and 11% list other reasons. And mothers who understand the ORT function in fluid replacement and who understand that it is not a medicine that will stop the diarrhoea, are more likely to use it long-term [19].

Similarly, Veronika Scherbaum's research also found that: during diarrhoea, Western Ethiopian commonly believed that food and drink should not be given, in order to ' dry out ' the diarrhoea. Many felt that if the person want to drink more, he or she will soon die. None of the local foods recommended for curing diarrhoea are appropriate. Foods recommended for 'curing' diarrhoea included dry bread mixed

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with soot, honey mixed with instant coffee powder, roasted niger seed; none of which is appropriate [31].

Dennis J. Mull and Dorthy S. Mull studied on mothers' concept of childhood diarrhoea with regard to ORS use, in rural Pakistan in 1983. It was found that 28% of children in the sample had diarrhoea but 60% of their mothers had never heard of using any type of home made sugar salt solution (SSS). The mothers who had used ORS packages showed inadequate understanding of how the solution should be prepared and administered. The most common error was underuse of the solution. Another finding of this study revealed that a certain diarrhoea was classified as a sign of folk illness requiring traditional folk treatment rather than fluid replacement or other biomedical therapy [29].

The national study on the distribution of ORS in Thailand conducted by Suirudee Voakitphokataron revealed that mothers in different areas do not have similar knowledge on ORS and do not have the same level of ORS related knowledge. Mothers with young children in the northern and central regions of Thailand have greater knowledge on ORS than mothers in other regions, consequently, mothers who had greater knowledge were more likely to use ORS than the others [1].

A study by George Davey Smith et al. on ORS use in Nicaragua (1986-1987) found out that few respondents used rehydration fluids. Among rehydration fluid users, the number of mothers who prepared the fluids correctly was low. Some

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mothers doubted the efficacy of ORT. They stated that ORS did not stop diarrhoea. Clearly, mother's knowledge about appropriate treatment methods has a highly significant on their practice [8].

Perceived severity of diarrhoeal disease.

With reference to mother's health care behaviour in Honduras, a study of Julia Declerque et al. (1984) found that treatment is more likely to be sought out if mothers perceived the severity of the diarrahoea episode through its symptoms, for example if the diarrhoea is accompanied by vomiting, blood or mucus in the stool; or if the episode lasts more than two days [16].

Margaret E. Bentley reported that many mothers perceived bloody (57%) and watery diarrhoea (25%) as being the most serious types of diarrhoea because they thought that watery diarrhoea causes weakness, water loss, and prolonged diarrhoea. Mothers whose children were experiencing chronic diarrhoea frequently became 'frantic', and switched from one doctor to another, often stacking up bottles of expensive anti-diarrhoeals. The remainder did not consider diarrhoea to be a serious illness. So, the researcher stated that 'type' of diarrhoea is a factor affecting to mothers' choices of diarrhoeal treatment. [19].

Perceived barriers of appropriate diarrhoeal treatment method.

Aiming at assessing the effects the use of ORS and other home made solutions, the studies of Azis et al., 1980; Sunote et al., 1983; Rusdi Ismail, 1984 carried out in Indonesia found that one constraint which led to low ORS use rate in

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Indonesian mothers was a lack of ORS. A low rate of homemade solutions use also prevailed because some solutions recommended by health workers were difficult to make. For example: rice water solution took 45-60 minutes for cooking [33].

Having the same objectives as the above study, Suirudee Voakitphokataron's research in Thailand revealed that the majority of mothers complained their children disliked drinking ORS because of its unpleasant taste and smell. Consequently, some mothers turned to using expensive and better tasting commercial electrolyte products whose ingredients and formula generally do not conform with the WHO standards[1].

A study conducted by Irfan Ahmed [13] in Thailand (1992) among female construction workers found out that nearly half of the mothers thought ORS was a good treatment, 40.5% stated that one wasted a lot of time preparing ORS, one-third of the respondents (36.2%) said that it was expensive. Slightly over three-fourth (754.8%) of them stated that the taste and smell of ORS were also considered as a barrier to its utility, and was disliked by most of the children. Besides, the study also showed a statistical significant association between the barrier of ORS taste and smell and the ORS use rate of mothers.

Perceived symptom of acute diarrhoea.

The majority of research related to childhood diarrhoea has looked at symptoms and their relationships with treatments. A study by Mark Nichter in Sinhalese, Sri Lanka (1988) investigated Sinhalese perceptions of digestion, diarrhoea, and dehydration and found out that mothers distinguished 4 forms of

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diarrhoea depending on stool quality and adjunct symptoms. According to the distinctions they chose different treatments. With mild diarrhoea (1 to 4 days duration and 3-5 watery stool / day) home remedies are generally given, solid food is withheld and normal liquid consumption is reduced. With acute watery diarrhoea (over 6 watery stools a day for over 2 days) medicine should is given for drying diarrhoea quickly. With blood and mucus diarrhoea (it is linked to extreme hotness of the body) the patient is taken to hospital. Some give cool home remedies (i.e. ayurverdic herbal medicines, coconut water, rice water, etc.) or allopathic medicines. Diarrhoea with vomiting is identified as the most serious form of children's diarrhoea and the general treatment of mothers was to reduce foods as well as liquid intake [20].

Similarly, George Davey Smith et al. studied the cultural construction of childhood diarrhoea in rural Nicaragua (1986-1987), the results indicated that depending on symptoms and causes of diarrhoea, Nicaragua's mothers distinguished 9 types of diarrhoea, and they treated the diseases using different methods according to its type, as follows:

Empacho is a foul-smelling, watery, white or yellow diarrhoea associated with a swollen, painful belly, fever, vomiting and nausea. Its can be dangerous and the main treatment for empacho is purgatives (e.g. a laxative oil, milk of magnesia with or without lemon juice), 57% of mothers asked for the help of traditional healer or midwife, or the mother herself (41%) treated the child, few of them took the child to medical facilities (4%).

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"Infection" is a watery, yellow or green diarrhoea, occasionally with mucus or blood, accompanied by fever and vomiting. The appropriate treatment is drugs (67% mentioned antibiotics), color syrup or pills and /or rehydration fluid.

"Sol de visa" (or evil eye) is generally green, with mucus, difficult and painful defecation, fever and headache, the infant cries and has sad or 'dirty' eyes. It can be a dangerous condition. Most mothers believe sol de visa's cause is related to the contracting of the sick persons'eyes with agitated people, pregnant women, drunks or people with hangovers, menstruating women or in the presence of young women. Therefore the person caused a child's diarrhoea has to do some good symbols or gestures in front of he/she that is a suitable treatment.

"Pujo de sol" is caused by exposure to the sun (92%), hot climate (11%) or hot indoor temperature (11%). The infants with pujo de sol experience painful and green diarrhoea with mucus. It is not a dangerous type of diarrhoea and can be treated by bath-alcohol, herbs, wood and nut of fruit.

"Diarrhoea de movimiento" has no specific features or symptoms, it occurs when the infant is teething (92%), starting to walk (89%) or crawl or sit (62%). It is generally considered to be a part of normal development and is not seen to be dangerous. 54% of mothers thought that this diarrhoea needed no treatment. Sixty percent suggested that the child should visit the HCS. A few mothers used antibiotics, frescos, rehydration fluid and rice water.

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"Worms and parasites" is a kind of diarrhoea caused by worms and parasites. It is accompanied by fever, vomiting and painful stomach. Worms are found in the stools, but parasites can generally not be seen. For both parasites and worms the majority of mothers considered the treatment should be with a specific anti-worm agent, so medical services are necessary. Self-treatment by garlic, rehydratyion fluid and herbs are also mentioned by a few of the mothers.

"Bad stomach" is a watery diarrhoea which is associated with pain in the stomach and vomiting, and may be accompanied on fever. It is not a dangerous type of diarrhoea and is caused by bad or badly prepared food (51% of mothers), milk (23%), and food in general (11%). Milk of magnesia, with or without lemon and/or a purgative oil, is the suggested treatment of over a half of the mothers. 31% of them used antacids, a few of them used laxatives, frescos, rehydration and antibiotics. 60% of mothers self-treated but 34% of the others mentioned the health care services.

"Dysentery" was referred to as 'desgaste' (wearing down). The diarrhoea is bloody and watery with mucus and the child suffers from fever, vomiting and sometimes pain in the belly. Weight loss may also be apparent. It is a most dangerous diarrhoea. Mothers thought that dysentery be caused by bad hygiene, various factors related to eating and drinking and hot climate. The mother suggested many different treatments, such as it can be treated by oral rehydration fluid, antibiotics, frescos, medicine, aluminum, injections and baths, but majority of them mentioned using medical facilities and a few of them mentioned self-treatment.

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"Fallen fontanel" is another type of diarrhoea not mentioned above. 90% of mothers thought falls could cause it. The suggested treatments relate to setting the child's body in suitable positions at home (91%) , or taking the child to a health center (11%) [8].

In a paper on 'cultural models of diarrhoea illness', Nitchell G.Weiss wrote about the perceived symptoms of Tamil people, in Southern India, where diarrhoea is called 'behdi'. It refers to various kinds of symptoms which may include an abnormal stool, which is watery or containing froth, pus or blood. People in this region, however, would not consider an infant with sunken fontanel, sunken eyes and weakness - all symptoms of dehydration plus vomiting and diarrhoea - to have 'behdi'. Depending on their perceived symptoms, Indian mothers prefer different kinds of treatment.

In Swaziland, traditional healers identify a combination of signs and symptoms, that include sunken fontanel, sunken eyes, vomiting, weakness, crying and fixed stare as a disease called " Keehabula "; diarrhoea may accompany this illness, but it is not an outstanding feature. "Umshekho" is the more common form of diarrhoea. Its symptom includes the stool may be any color but green , and it has a porridge- like texture. The patient' s stomach rumbles, he or she has little appetite and may vomit. "Umphezula" refers to a similar illness, in which the diarrhoea is green and the blood vessels on the stomach and forehead have a greenish hue.

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A study by Margret E. Bently in North India revealed that Indian workers mentioned the quality of stool distinguishing the level of severity: 57.% of respondents reported ' bloody' and 25% 'watery' were the serious symptoms of diarrhoea. The reason of the perceived severity were that they caused weakness (66%), water loss (31%), and prolonged diarrhoea. Besides, 95% of mother believed that diarrhoea could be harmful and 20% of mother believed that diarrhoea may result in death. However, a high percentage of mothers (46.1%) reported that most diarrhoea is self limiting and goes away after 2 or 3 days. Mothers who have experience of diarrhoea on the whole are not too concerned unless a symptom of severity occurs [19].

2.2.3. Effects of socioeconomic-demographic characteristics of mothers on their choices of diarrhoeal treatment.

Very few of the studies referred to earlier mentioned the relationship between mothers demographic, socio-economic, characteristics and their psychosocial features. This was recognized by Julia DeClerque et al. in (19) a review paper on models of treatment for childhood diarrhoea; where they state: ' Only a limited number of studies have investigated the relative importance of maternal, child and demographic determinants'. However, among these few studies, a majority of them identified the statistical relationship between maternal, child and demographic determinants, as follows:

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Mother's age:

The study of Margaret E. Bentley in North India also found out that: Older mothers were more likely to delay medical treatment for their children with diarrhoea; mothers who use herbal remedies to treat diarrhoea were more likely to be older women, and older mothers were likely to believe food will increase or worsen diarrhoea (these relationships have statistical significance) [19].

Nancy B.Mock et al carried out a research on socioeconomic, environmental, demographic and behavioural factors associated with the occurrence of diarrhoea in young children in the Republic of Congo, in 1981; the results revealed that older mothers held more tenaciously to certain putative traditional practices or were just physically not up to providing quality child-care[22].

Mother's education

Regarding mothers' education, a study by Bollag Ueli on managing diarrhoea in Switzeland (1984) found out that maternal education was strongly associated with the mother's decision to give ORT immediately [3].

A study by Parvenu Rasheed on perception of diarrhoeal diseases among mothers and mothers-to-be and the implications for health education in Saudi Arabia in November 1990, revealed that the important role of female literacy in increasing greater awareness of family and child health has been well established. Mothers with a high level of education are more likely to use ORT as the treatment choices of diarrhoea; mothers who were in general less educated preferred antidiarrhoeal liquids

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and injection because a strong belief still exists among mothers of a so-called 'magical' effect of injection and antibiotic suspensions. A similar preference for injections was also reported in India. Indian mothers favored injections because they thought that the injected drugs went directly to the patient's blood, and the physicians prescribed these for the patient's psychological satisfaction [24].

A study of 'mothers' fear of child death due to acute diarrhoea in Northern Punjab, Pakistan was carried out by Iftikhar A.Malik et al. (1988). The results revealed that illiterate mothers were more likely to mention fear of death (20% Vs 11% for literate mothers); because of that fear, they become very upset and are more likely to use Nimkol (the Pakistan ORS) [12].

George Dawey Smith et al. studied the cultural construction of childhood diarrhoea in rural Nicaragua (1986-1987), the study results showed that mothers with higher schooling did report more favorable attitudes towards the use of ORS [8].

Similarly, the result of the earlier mentioned research of Nancy B.Mock et al revealed that maternal education is strongly associated with the diarrhoea episodes of children [19], and Jeannine Coreil and Eddy Genece used innovation theory and decision theory in their study on 'Adoption of oral dehydration therapy among Haitian mothers. Its result showed that literacy correlates with knowledge and earlier initiation of ORS [4].

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Bollag Ueli studied ORT application in Switzerland for many years and the results revealed that maternal education is strongly associated with a mother's decision to give ORT immediately for their children with diarrhoea [3] .

Mother's occupation

In terms of respondents' occupation, a study by Iftikhar A. Malik et al. also found from that in Northern Punjab, Pakistan (1992) that mothers who live in the urban squatter and working class settlements mentioned fear of death from diarrhoea as the reason for becoming upset more often and these were significantly more likely to use of Nimkol [12].

Julia De Clerque et al. in ' Management and treatment of diarrhoea in Honduran children : Factors associated with mother's health care behaviours (1986) showed that the proportion of mothers who worked away from home and who consulted public health care services for their children with diarrhoea are higher than mothers who work at home or are not employed. It is argued that women in the work force generally have a higher education and better access to health services, especially in urban areas [16].

Family income

Pensri Phijaisanit et al. studied the relationship of socioeconomic status to severity and care of diarrhoeal diseases in infant at a Children hospital in Bangkok. The sample was 500 mothers composed of mothers of children with severe, mild diarrhoea, and well infants were included, to serve as a comparative group. It was

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found out that factors such as family socioeconomic status, family sanitary facilities and practices had great influence on mother's perceived severity of diarrhoea. And parents' literacy, family income and family size also had a significant relation to the disease and the health care choices [29].

'Families who were in a relatively better economic position were more likely to have used the ORS treatment technique before, initiated it earlier and to choose the packed method over home prepared sugar-salt solution, even when place and literacy were controlled'. Similar results were also reported in the earlier mentioned research of Jeannine Coreil and Eddy Genece [4].

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CHAPTER THREE

RESEARCH METHODOLOGY

In order to achieve the research objectives, a cross-sectional survey design was employed in this study.

3.1 . Study site selection

One among 12 slum areas in Ho Chi Minh City was chosen by simple random sampling. Its name is Ward 14, which was the study site of this study (see its descrition and map in Appendix B, page 126).

3.2 Population

The population of this study were mothers or care takers of children under five years of age whose children are having diarrhoea or had diarrhoeal disease within the preious 6 months.

3.3. Sample size and sampling technique

It is estimated that the percentage of mothers who chose the appropriate treatment methods is 30%, the desired degree of accuracy is 95% and the standard normal deviate is 1.96. Applying the formula of Andrew A.Fisher et al. in "*Handbook for Family Planning Operation Research,*1991", the appropriate sample size for this study is 322 (see the formula and sample size calculation in Appendix D, page 128).

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A list of 1,400 mothers of children under 5 years old whose children received vaccination at the Healt care station in the selected area was used as a sampling frame. In order to draw 350 mothers (322 formal cases and 28 reserved cases), the sampling interval is 4 (1,400 : 350).

Therefore in this study one mother was chosen from every 4 mothers with a random start. Through this procedure, the size of sample to be interviewed is 322. However, in this study 334 mothers were interviewed.

3.4. Data collection technique

Data was collected by face to face interviews using a structured questionnaire during 6 weeks from 15 September to 30 October, 1996.

The questionnaire includes 60 closed-ended, 17 partial closed-ended and 3 open-ended questions which cover all variables of the framework (see Appendix A, page 122). These questions were classified into 8 following parts:

Part 1: Soico-demographic characteristics of the mothers.

Part 2: Diarrhoeal history of children and mothers who perceived symptoms of childhood diarrhoea.

Part 3: Mothers' diarrhoeal treatment choices.

Part 4: Mothers' beliefs in causes of childhood diarrhoeal disease.

Part 5: Mothers' knowledge about appropriate diarrhoeal treatment methods.

Part 6: Mothers' perception of severity of childhood diarrhoea.

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Part 7: Mothers' perception of barriers of appropriate diarrhoeal treatme

Part 8: Some records regarding to the respondents household's sanitation status.

Prior to data collection, the prepared questionnaires were pretested with 30 mothers in two weeks (from 15 - 30 August 1996) at Tan Dinh Ward, a slum area with a similar population characteristics as the study site. After the pretest, the reliability of the questions in questionnaire was tested, and the questionnaire was revised to enhance its content validity.

Ten interviewers, 8 female and 2 male social workers and staff of the Ward were recruited as interviewers to conduct the interview. Two of them were chosen as team supervisors.

A one day orientation course was conducted to introduce the interviewers the objectives of the study, some basic knowledge regarding childhood diarrhoea, questions explaination, interview role play and field work management.

Data were manually precoded and analyzed by computer with the SPSS for Windows program. Descriptive statistics and chi-square tests were applied for data analysis in the study.

3.5. Limitation of the study

According to the limited time and budget, this study is restricted to one slum area. Therefore the result of this study can not be generalized as being representative of Ho Chi Minh City.

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CHAPTER FOUR

RESEARCH FINDING

This chapter is presented in four parts. The first part describes information of the socio-economic characteristics of mothers and their children under five years old. The second part shows mothers' psychosocial factors concerning diarrhoeal disease and treatment. The third part presents mothers' choices of diarrhoeal treatment. Then the last part describes the results of hypotheses test by using Chi-square for testing the relationships among mothers' choices of treatment by psycho-social factors, and psycho-social factors by the demographic, socio-economic demographic characteristics.

4.1. The socio-economic and demographic characteristics of the mothers and their children under five years old

The average age of mothers in this study was 32.3 years old with low socio-economic status. A great majority of mother had primary and secondary schooling. Nearly half (42.5 percent) of the mothers had primary education level, whereas 39.2 percent of them had secondary one.

Over half (53.2 percent) were housewives with unpaid jobs. Among those with a job, one-fifth of the mothers were vendors (21 percent), few of them work for governmental organizations (6.6 percent), private services (10.2 percent) or handicraft makers (9.0 percent). On the average, most mothers are poor with an average monthly income per person of 191,111 VN$ (approximate 18 US$). There were only sixteen

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percent of the mothers who had the highest income of between 250,001 - 1,000,000 VN$ (approximate 24 - 90 US$).

The average family size of the respondents was 5 persons. However, majority of the mothers' families (59.9 percent) are nuclear family with 2 - 4 members.

With regards to the number of children under 5 years old in the studied families, slightly over three-fourths (77.2 percent) of the mothers had one. The remainder had two (21.6 percent) and a few had three (1.2 percent) children under 5 years old. Therefore the total number of children in this study is 414. In which, more than half (52.4 percent) were boys and less than half were girls (47.6 percent).

The study found that the proportion of children at the age of 2, 3 and 4 years old were approximate equal (23.9, 22.0 and 21.7 percent, respectively). The average age of the children was 3.0 years old.

Table 4.1 Demographic and socio-economic characteristics of the mothers and their children

Characteristics	Number	Percent
Age groups (years)		
⩽ 19	3	0.9
20 - 29	138	41.3
30 - 39	146	43.7
39 - 49	32	9.6
> 49	15	4.5
Total	*334*	*100.0*
Mean	*32.3*	
Standard error	*0.5*	
Mother's education (year of schooling)		
Illiteracy	30	9.0
Primary (1-5)	142	42.5
Secondary (6-9)	131	39.2
High school (10-12)	29	8.7
College& above (>12)	2	0.6
Total	*334*	*100.0*
Mean	*5.5*	

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Table 4.1 (continued)

Characteristics	Number	Percent
Mother's job		
Vendor	70	21.0
Handicraft	30	9.0
Private services	34	10.2
Public services	22	6.6
Housewife/ No job	178	53.2
Total	*334*	*100.0*
Income/person/month (VN$)		
Low 42.857 - 150,000 (4 - 14 US$)	134	41.1
Moderate 150,001 - 250,000 (14.1 - 24 US$)	140	42.9
High 250,001 - 1,000,000 (24.1- 90 US$)	52	16.0
Total	*326*	*100.0*
Mean	*194,111 (18 US$)*	
Standard error	*5,693*	
Family size (persons)		
2 - 4	200	59.9
5 - 6	91	27.2
7 - 8	25	7.5
> 8	18	5.4
Total	*334*	*100.0*
Mean	*5*	
Standard error	*0.1*	
Number of children under five years old in the family		
1 child	258	77.2
2 children	72	21.6
3 children	4	1.2
Total	*334*	*100.0*
Sex of the children		
Boy	217	52.4
Girl	197	47.6
Total	*414*	*100.0*
Age of the children		
1 year	64	15.5
2 years	99	23.9
3 years	91	22.0
4 years	90	21.7
5 years	70	16.9
Total	*414*	*100.0*
Mean	*3.0*	
Standard error	*0.06*	

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In terms of environmental sanitation condition of the mothers' house, it was found that all houses used the city tap water supplies. For the drinking water, more than half (60.7 percent) of the mothers regularly gave boiled water. Almost half (42.8 percent) the mothers' houses had unhygienic toilets (latrine above stagnant pond, river), or were using public toilets that were also built above the polluted rivers. However, according to general observation by the interviewers, it was found that a great majority (90.7 percent) of households had moderate to good sanitation. In other words, no rubbish and flies were found around more than eighty percent of the mothers' houses (88.3 percent and 85.6 percent, respectively) (Table 4.2).

Table 4.2 Percentage of mothers by households' environmental sanitation

Households'sanitation	Number	Percent
Types of toilet use		
Pour flushed toilet	107	57.2
Latrine above stagnant pond	29	8.7
Public toilet	109	30.8
Latrine above river	11	3.3
Total	*334*	*100.0*
Drinking boiled water		
Regular	203	60.7
Sometimes	38	11.4
Rare	93	27.9
Total	*334*	*100.0*
Seen or not seen rubbish around the house		
Seen	39	11.7
Not seen	295	88.3
Total	*334*	*100.0*
Seen or not seen the flies in the house		
Seen	48	14.4
Not seen	286	85.6
Total	*334*	*100.0*
Interviewer's assessment of the housing sanitation status		
Good	117	35.0
Average	186	55.7
Bad	31	9.3
Total	*334*	*100.0*

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The diarrhoeal episodes of the children under 5 years old were recorded for the youngest children. The results showed that approximate three-fourths of the children under 5 years old got a diarrhoeal episode for a period of 1- 3 days. More than fifteen percent of them (16.7 percent) got the diarrhoeal episode for 4 - 6 days, and few of them (11.1 percent) got it for 7 - 10 days. The average duration of diarrhoeal episode of the children under 5 years old was 3.1 days. However, the children who had only 1 diarrhoeal episode were the highest proportion (59.2 percent).

Table 4.3 Percentage ofchildren by diarrhoeal episode

Characteristics of the children	Number	Percent
Diarrhoeal episodes of children		
0 episode	55	12.8
1 episodes	243	59.2
2 episodes	62	15.0
3 episodes	32	7.7
4 episodes	12	2.9
5 episodes	10	2.4
Total	*414*	*100.0*
Mean	*1.3*	
Standard error	*0.05*	
Duration of the latest episode of the youngest child		
1 - 3 days	241	72.2
4 - 6 days	56	16.7
7 - 10 days	37	11.1
Total	*414*	*100.0*
Mean	*3.1*	
Standard error	*0 .11*	

4.2 Mothers' choices of childhood diarrhoeal treatment

The recorded information regarding the methods, the kinds of drugs and solutions that the mothers chose and used for treating their children under 5 years old

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with diarrhoea were manually recoded and classified into two categories following the main suggestion of the CDD/WHO program: The appropriate methods of diarrhoeal treatment were using rehydration solutions for self-treatment at home or asking for help from professional health personnel in a timely manner.

Regarding mothers' health care seeking behaviour, data in Table 4.4 shows that almost two-thirds (63.6 percent) of the mothers asked for help from health personnel. Slightly more than seventeen percent carried their children with diarrhoea to the health personnel without any self-treatment at home, and less than half (45.3 percent) performed self-treatment at home before bringing them to the health personnel. The rest (37.4 percent) used only self-treatment at home.

Table 4.4 Percentage of mothers by health care seeking behaviour

Mothers' health care seeking behaviour	Number	Percent
Used only self-treatment at home	183	37.4
Asked for help from health personnel, in which:		
- Having no self-treatment	58	17.3
- Used self-treatment at home before asking for help from health personnel	277	45.3
Total	*334*	*100.0*

In terms of mothers' choices of diarrhoea treatment, more than half (54.5 percent) of the mothers took appropriate treatment methods, such as Oral rehydration solution (ORS), Salt sugar solution (SSS), other homemade rehydration solutions as well as seeking help from a professional health personnel. The rest (45.5 percent) accessed less appropriate treatment methods, such as use of Western or Eastern

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antidiarrhoeal drugs, use of herbs or popular traditional treatment without any rehydration solution (Table 4.5).

Table 4.5 Percentage of mothers by choices of diarrhoeal treatment

Mothers' choices	Number	Percent	Total
Appropriate methods			***54.5***
Using medicine, herbs with a kind of rehydration solution (RS)	82	24.6	
Going to private health personnel without any prior self-treatment	53	15.9	
Going to the Ward's HCS without any prior self-treatment	22	6.6	
Going to hospital without any self-treatment at home	13	3.9	
Using appropriate rehydration homemade solutions	12	3.6	
Total	*182*	*54.5*	
Less appropriate methods			***45.5***
Gave Western medicine without any of RS	110	32.8	
Gave herb or popular traditional treatment without any RS	19	5.7	
Gave Eastern medicine without any RS	17	5.1	
Gave both Western&Eastern medicines without any	6	1.7	
Total	*152*	*45.5*	***100.0***

Among mothers who chose appropriate methods, slightly more than one-fifth (24.6 percent) used three kinds of remedies: medicine, herbs and a kind of rehydration solution. More than fifteen percent of them (15.9 percent) asked for help from private health personnel without any prior self-treatment.

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Approximate one-third (32.9 percent) of the mothers in the less appropriate methods group, a highest proportion of the studied respondents, chose only Western medicine to treat their children. In addition, more than five percent (5.7 percent) of them used herb (e.g.: guava browse water, skins of mangosteen, pomegranate, orange) or popular traditional treatment (e.g.: to rube a bad wind out of the child' s body with chemical oils, or used a pin to extract the "dirty blood" out of the child' s body) (Table 4.6).

Table 4.6 Percentage of mothers by types of homemade solution use (except ORS, SSS)

Types of homemade solutions	Less appropriate methods	Appropriate methods	Total
A. Rehydration homemade solutions			
1. Rice water	26.2	33.8	30.5
2. Carrot water	6.6	27.5	18.5
3. Ginger, lemon water	8.2	10.0	9.2
4. Boiled water, soup with salt	3.3	0.0	1.4
5. Boiled liquid of sugar cane and thatch root	1.6	0.0	0.7
6. Bottled spring water with salt	0.0	2.5	1.4
B. Antidiarrhoeal homemade solutions			
7. Guava browse water	11.5	7.5	9.2
9. Fruits skin (mangosteen, pomegranate, orange)	16.4	2.5	8.5
10. Herb juice	3.3	3.7	3.5
11. Strong black coffee, tea without sugar	18.0	7.5	12.2
12. A kind of powder cake and salt water	0.0	1.3	0.7
13. Liquid of snake and orange skin soaked in wine in longtime	1.6	0.0	0.7

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Table 4.6 (continued)

Types of homemade solutions	Less appropriate methods	Appropriate methods	Total
C. Inappropriate solutions			
14. Bottled sweet drinks with salt or strong salt water	1.3	3.7	3.5
Total	100.0	100.0	100.0
(Number)	(61)	(80)	(141)

When the respondents were interviewed about the reasons for their choices, their statements were diverse (as recorded in Table 4.7). However, the mothers' belief in their choices was their major reason for their choice (47.2 percent). The proportion of mothers in the appropriate methods group was more than twenty percent higher than the proportion of mothers in the less appropriate methods group. Approximate one-fourth (23.7 percent) of the mothers stated that they have experiences in diarrhoea treatment. Among them, more mothers in the less appropriate methods group had this perception compared to the more appropriate methods group (30.1 percent compared to 18.5 percent).

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Table 4.7 Percentage of mothers by methods of diarrhoeal treatments and reasons of their choices

Reasons of mothers' choices	Less appropriate methods	Appropriate methods	Total
Believed that her choice is the best choice	32.2	59.6	47.2
Have experience	30.1	18.5	23.7
Conveniences: Easy, simple, saved times, money	20.3	8.7	13.9
Imitate neighbors, relatives	3.5	2.3	2.8
Fear of the child's bad health	0.7	2.3	1.6
Severe symptoms occurred	0.0	2.9	1.6
Following Health education programs on TV.	0.0	0.6	0.3
Get better soon	13.3	5.2	8.9
Total	*100.0*	*100.0*	*100.0*
(Number)	*(143)*	*(173)*	*(316)*

In terms of duration between the onset of diarrhoea symptoms and treatment, data in Table 4.8 describe that among the mothers who performed self-treatment at home for their children, a great majority of the mothers in both groups (92.8 percent) started the treatment within 24 hours.

For those who asked for help from health personnel, the mothers in the appropriate methods group started to seek a help earlier than the other group. The situation could be seen by observing that average days of asking for help for the mothers in the appropriate methods group was lower than that of the other group (1.6 days compare with 2.1 days), as well as the proportion of mothers in the appropriate methods group seeking help within 24 hours was three times higher than the one of mothers in the less appropriate methods group.

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Table 4.8 Percentage of mother by methods of diarrhoeal treatment and duration between the onset of diarrhoea symptoms and treatment

Duration of treatment	Less appropriate methods	Appropriate methods	Total
Self-treatment			
Within 24 hours	93.1	92.4	92.8
Within 2 days	6.2	7.6	6.9
Within 3 days	0.7	0.0	0.3
Total	*100.0*	*100.0*	*100.0*
(Number)	*(145)*	*(131)*	*(276)*
Mean	*1*	*1*	*1*
Standard error	*0.12*	*0.02*	*0.01*
Seeking help			
Within 24 hours	10.2	38.7	29.6
Within 2 days	66.1	54.0	57.9
Within 3 days	20.3	6.5	10.9
Within 4 days	3.4	0.8	1.6
Total	*100.0*	*100.0*	*100.0*
(Number)	*(59)*	*(124)*	*(183)*
Mean	*2.1*	*1.6*	*1.8*
Standard error	*0.08*	*0.05*	*0.05*

4.3 Mothers' psychosocial factors

4.3.1 Mothers' perceived severity of childhood diarrhoea

In relation to the mothers' perception of severity of childhood diarrhoea, the mothers were asked two sets of questions. The first set included five questions related to their perceptions about the effects of childhood diarrhoea. Then, the second part was one question regarding to the mothers' assessment about the severity level of childhood diarrhoea.

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Table 4.9 demonstrates that a great majority of the mothers perceived that diarrhoea causes bad effects to child's health. For example, a very high proportion (91.0 percent) perceived the effect of "loss water and bad health" with , and rather high proportions of them perceived all the other bad effects (from 65 percent to 78.7 percent).

However, when the mothers were asked to asses the severity level of childhood diarrhoea , sixty-five percent of them responded that diarrhoea was only a moderately dangerous disease of children.

Table 4.9 Percentage of mother by methods of diarrhoeal treatment and duration between the onset of diarrhoea symptoms and treatment

Mothers' perceived severity of childhood diarrhoea	Agree	Disagree	Uncertain	Total (N=334)
A. Mothers' perceived effects of childhood diarrhoea				
Having no effect	4.8	94.0	1.2	100.0
Loss water & bad health	91.0	5.4	3.6	100.0
Digested organism become weaker	65.0	6.9	28.1	100.0
Become malnutrition & retardation	78.7	6.3	15.0	100.0
May lead to death	67.7	6.0	26.3	100.0
B. Mothers' assessment about severity of childhood diarrhoea				
Childhood diarrhoea is a mild disease				14.7
Childhood diarrhoea is a moderate dangerous disease				65.0
Childhood diarrhoea is a very dangerous disease				20.3

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In sum, Table 4.10 shows the levels of mothers' perceived severity of childhood diarrhoea as follows: half (49.5 percent) of them perceived a high level of severity. Whereas one-third (30.5 percent) perceived low and one-fifth (20.0 percent) perceived moderate severity of the disease.

Table 4.10 Level of mothers' perceived severity of childhood diarrhoea.

Level of mothers' perceived severity	Number	Percent
Low	67	20.0
Moderate	102	30.5
High	165	49.5
Total	*334*	*100.0*
Mean = 11.48	*Standard deviation =*	*6.08*

Concerning the differences between the two groups of mothers' choices, data in Table 4.11 shows that for all perceived bad effects of childhood diarrhoea that the mothers were asked about, the proportions of mothers in the appropriate methods group who perceived them to be severe were always higher than that of the other group by from ten to eighteen percent.

Besides this, when the mothers were asked about the severe levels of childhood diarrhoea, the results revealed that more than sixty percent of the mothers in both groups assessed childhood diarrhoea as "a moderate disease" of children. More mothers in the appropriate treatment group assessed childhood diarrhoea as a "very dangerous disease" compared to the less appropriate methods group (27.5 percent compare with 11.8 percent). For "mild disease", on the contrary, more mothers in the less appropriate methods group had this perception than in the appropriate methods group.

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Table 4.11 Percentage of mothers by perceived severity and choices of treatment

Mothers' perceived severity	Less appropriate method (N=152)				Appropriate method (N=182)			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Having no affect	8.6	90.1	1.3	100.0	1.6	97.3	1.1	100.0
Loss water and bad health	85.5	7.9	6.6	100.0	95.6	3.3	1.1	100.0
Digested organism would be weaker	59.2	10.5	30.3	100.0	69.8	3.8	26.4	100.0
Malnutrition and retardation	71.1	11.2	17.7	10.0	85.2	2.2	12.6	100.0
Darrhoea might lead to child death	57.9	6.6	35.5	100.0	75.8	5.5	18.7	100.0
Mothers' perceived severity of diarrhoea								
a. Mild	26.4				4.9			
b. Moderate	61.8				67.6			
c. Very dangerous	11.8				27.5			100.0

4.3.2. Mothers' perceived barriers in taking appropriate diarrhoeal treatment

A high proportion of the mothers in this study did not know ORS (36.2 percent) and homemade solutions (57.8 percent). Therefore, only the ORS and homemade solutions users were asked about the barriers to using such solutions. Thus, in this part mothers' perceived barriers for taking appropriate diarrhoeal treatment were recorded through three different sections: mothers' perception related to the barriers of ORS use, mothers' perception related to the barriers of homemade solutions use, and the mothers' perception regarding the barriers in accessing public health care services.

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Mothers' perceived barriers to use of ORS

Regarding to the barriers to use of ORS, data in Table 4.12 demonstrates that the majority of mothers perceived having no barrier in obtaining an ORS supply (57.7 percent and 73.7 percent). However, "ORS solution has to be changed every 24 hours" was the barrier that the highest proportion of mothers perceived (62.4 percent). "Children did not like to drink ORS" and "Mother did not like to use ORS" were the next most perceived barriers that around half of them perceived (58.2 percent and 47.9 percent). Besides these, slightly more than forty percent of them perceived that "children were nausea and vomited when they drink ORS solution" was a barrier to ORS use, and one-third of the ORS users perceived that "ORS has no effect in stopping watery stool".

Table 4.12 Percentage of mother by their perceived barriers to ORS

Barriers	Agree	Disagree	Uncertain	Total (N=213)
Difficulty of asking for ORS	9.3	57.7	34.0	100.0
Difficulty in buying ORS	7.1	73.7	19.2	100.0
Child does not like to drink ORS	58.2	35.7	6.1	100.0
Child is nausea and vomited	40.8	46.1	13.1	100.0
Have to change ORS every 24 hr.	62.4	27.3	10.3	100.0
Mother did not like to use ORS	47.9	46.0	6.1	100.0
No affect in stopping watery stool	33.3	50.2	16.5	100.0

Among the more than sixty percent (63.8 percent) of the mothers who know ORS, half of them (50.2 percent) had a moderate level, more than one-third (37.5 percent) had low level , and a few of them (12.3 percent) had a high level of perceived barriers to the use of ORS. In sum, the total percentage of the mothers who had a

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moderate and high level of the perceived barriers was considerable proportion: 62.5 percent (Table 4.13).

Table 4.13 Level of mothers' perceived barriers to use of ORS

Level of mothers' perceived barriers	Number	Percent
Low	80	37.5
Moderate	107	50.2
High	26	12.3
Total	*213*	*100.0*
Mean = 5.93	*Standard deviation =*	*1.20*

Mentioning the percentage distribution of the important barriers to ORS between the two groups of mothers, Table 4.14 shows that around ten percent more mothers in the appropriate methods group perceived the barriers: "Mothers had to change ORS solution every day", "Children did not like to drink ORS", and "Mothers dislike to give ORS for their children with diarrhoea" compared to the mothers in the less appropriate methods group.

Table 4.14 Percentage of mother by methods of diarrhoeal treatment and perceived barriers to use of ORS

Mothers' perceived barriers of ORS use	Less appropriate method *(N=70)*				Appropriate method *(N=143)*			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Difficulty of asking for ORS	14.3	48.6	37.1	100.0	7.1	62.2	30.7	100.0
Difficult in buying ORS	12.9	61.4	25.7	100.0	4.2	79.7	16.1	100.0
Children dislike to drink ORS	52.9	34.3	12.8	100.0	60.8	36.4	2.8	100.0
Children were nausea& vomited by ORS	44.3	31.4	24.3	100.0	39.2	53.1	7.7	100.0

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Table 4.14 (continued)

Mothers' perceived barriers of ORS use	Less appropriate method *(N=70)*				Appropriate method *(N=143)*			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Have to change ORS every 24 hr.	58.6	21.4	20.0	100.0	64.3	30.1	5.6	100.0
Mothers dislike to give ORS to their children	41.4	45.7	12.9	100.0	51.0	46.2	2.8	100.0
ORS has no affect in stopping diarrhoea	58.5	28.6	12.9	100.0	21.0	60.8	18.2	100.0

Mothers' perceived barriers to homemade solution

Data in Table 4.15 show that the perception "Children did not like to drink homemade solutions" was barrier for appropriately half of the homemade solution users (46.1 percent). The perception: "Mothers had to change the homemade solution every 24 hours" was a barrier for slightly more than one-third of them. More than one-fourth of them thought that "It was not good to give too much of liquid to a child during a diarrhoeal episode". Besides these, "The homemade solutions are costly" was perceived as a barrier for approximate one-fourth of the homemade solution users.

Table 4.15 Percentage of mother by their perceived barriers to using homemade solutions

Barriers to homemade solutions	Agree	Disagree	Uncertain	Total (N=141)
Spent time for preparation	15.6	80.9	3.5	100.0
Complication of making	15.6	81.7	2.7	100.0
Child dislikes to drink	46.1	48.2	5.7	100.0
Changing the solution every 24 hr.	34.0	61.7	4.3	100.0
Not good giving too much liquid	27.0	65.2	7.8	100.0
Costly	22.7	76.6	0.7	100.0

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Related to level of mothers' perceived barriers to homemade solutions, more than sixty percent (60.9 percent) of the homemade solution users perceived a moderate barrier to using the solutions. Approximate one-fourth (24.8 percent) of them had a low level and a few of them had a high level of perceived barriers to using homemade solutions (Table 4.16).

Table 4.16 Level of mothers' perceived barriers to homemade solutions

Level of mothers' perceived barriers	Number	Percent
Low	35	24.8
Moderate	86	60.9
High	20	14.3
Total	*141*	*100.0*
Mean = 4.64	*Standard deviation = 3.31*	

Concerning the differences of percentage distribution between the two groups of mothers, data in Table 4.17 demonstrates that the proportion of the mothers in the less appropriate methods group perceived every barrier to using homemade solutions as being much higher compared to the appropriate methods group. Especially, for the barriers of "Time spent preparing ", the proportion of the mothers in the less appropriate methods group was six times higher than those in the appropriate methods group (30 percent compared to 4.9 percent). Similarly, for the perceived barriers of "Too complicated for mixing a homemade solution", and "It is costly" the proportion of the mothers in the less appropriate methods group was three times higher than that of the mothers in the appropriate methods group. For the remaining barriers the proportions of the mothers in the less appropriate methods group also was two times higher than that in the appropriate methods group.

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Table 4.17 Percentage of mother by methods of diarrhoeal treatment and perceived barriers of homemade solutions use

Mothers'perceived barriers of h. solutions	Less appropriate method *(N=60)*				Appropriate method *(N=81)*			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Time spent for preparing	30.0	68.3	1.7	100.0	4.9	90.2	4.9	100.0
Too complicated in making	26. 6	71.7	1.7	100.0	7.4	88.9	3.7	100.0
Children do not like to drink the solutions	51.6	41.7	6.7	100.0	42.0	53.1	4.9	100.0
Have to change them every 24 hrs.	46.7	48.3	5.0	100.0	24.7	71.6	3.7	100.0
Unsuitable in giving to the child much of liquid	38.3	51.7	10.0	100.0	18.5	75.3	6.2	100.0
Costly	38.3	61.7	0.0	100.0	11.1	87.7	1.2	100.0

Mothers' perceived barriers to accessing public health care services (PHCS)

Data in Table 4.18 show that among the perceived barriers to accessing PHCS that the mothers were asked, approximate half of them perceived that "Long traveling time", and "Long waiting time at the PHCS" were the strongest barriers to accessing PHCS (47.7 percent). "Mothers' job would be troubled when they had to carry their children to the PHCS" and "Health care cost" were also perceived barriers for almost forty percent of them (39 percent and. 36.5 percent, respectively). The remaining issues accounted for minimal proportions of mothers' perceived barriers to PHCS.

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Table 4.18 Percentage of mother by perceived barriers to public health care services

Barriers to PHCS	Agree	Disagree	Uncertain	Total (N=331)
Long traveling time	47.7	48.9	3.4	100.0
Long waiting time	47.7	47.7	4.6	100.0
Mother's job would be troubled	39.0	57.1	3.9	100.0
Dissatisfaction with the PHCS	14.2	54.4	31.4	100.0
Limitation of medical equipment	17.8	27.8	54.4	100.0
Do not trust on the health personnel's capacity	14.5	27.5	58.0	100.0
The services were costly	36.5	55.0	8.5	100.0
Mother does not like to use Western medicine	7.3	86.7	6.0	100.0

Generally, data in Table 4.19 show that more than sixty percent of the mothers had moderate, around one-fifth of them had high a level and low level of perceived barriers to PHCS.

Table 4.19 Level of mothers' perceived barriers to public health care services

Level of mothers' perceived barriers	Number	Percent
Low	57	18.1
Moderate	202	60.4
High	72	21.5
Total	*334*	*100.0*
Mean = 6.19	*Standard deviation =*	*3.91*

Data of Table 4.20 demonstrated that higher proportions of the mothers in the less appropriate methods group perceived every barrier to accessing PHCS compared to the appropriate methods group, with differences varying from 1 to 24 percent. For

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example, the barriers of "Long traveling time", "Long waiting time", "Mothers' jobs could be troubled", and " High costly" were perceived by from fifteen to twenty percent mothers in the less appropriate methods group compared to those in the appropriate methods group.

Table 4.20 Percentage of mothers by methods of diarrhoeal treatment and perceived barriers to PHCS and choices of treatment

Mothers' perceived barriers to PHCS	Less appropriate method *(N=151*				Appropriate method *(N=180)*			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Long traveling time	57.0	40.4	2.6	100.0	40.0	56.1	3.9	100.0
Long waiting time	55.0	39.7	5.3	100.0	41.7	54.4	3.9	100.0
Mother's job would be troubled	47.0	49.0	4.0	100.0	32.2	63.9	3.9	100.0
Dissatisfaction with the health personnel	14.6	47.7	37.7	100.0	13.9	60.0	26.1	100.0
Limitation of medical equipment	19.9	17.9	62.2	100.0	16.1	36.1	47.8	100.0
Did not trust on the health personnel' s capacity	15.9	19.2	64.9	100.0	13.2	34.2	51.6	100.0
High costly	49.0	42.4	8.6	100.0	25.8	64.9	8.3	100.0
Did not like to use modern medicines	11.3	82.2	6.5	100.0	3.9	90.6	5.5	100.0.

4.3.3 Mothers' beliefs in causes of childhood diarrhoea

Related to mothers' beliefs in causes of childhood diarrhoreal disease, the study considered two types of causes of childhood diarrhoreal disease. The first type of the cause was mothers' belief in traditional causes of childhood diarrhoea, and the second one was their belief in biomedical causes of the disease.

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The data in Table 4.21 demonstrate that around seventy percent of the mothers had misbeliefs in traditional causes of childhood diarrhoea. For example, more than seventy percent of them believed that causes of childhood diarrhoea could be: "A child had eaten sour fruits, then drank cold water", "Eat too much fat", or "A child was fed with unfamiliar formula milk". Noticeably, a very high percent (86 percent) of the mothers believed that "A mother eats inappropriate foods during breastfeeding time" could cause diarrhoea for her child. Approximate half of the respondents had misbeliefs concerning the remaining traditional beliefs.

Table 4.21 also demonstrates that the majority of the mothers had suitable beliefs about the biomedical causes of diarrhoea. For example "Eat contaminated foods/milks", "Eat unwashed vegetable and fruits", "Drink unboiled drinking water", "Child handles foods with dirty hands", "Child was fed with contaminated bottle and artificial nipple" were perceived causes of childhood diarrhoea for from more than sixty to eighty percent of the mothers.

Table 4.21 Percentage of mother by belief in causes of childhood diarrhoea

Mothers' beliefs	Agree	Disagree	Uncertain	Total (N=334)
Eating sour fruits, then drink cold water	71.0	23.0	6.0	100.0
Eat stale foods	81.1	6.6	12.3	100.0
Eat contaminated foods	76.9	9.6	13.5	100.0
Eat unwashed vegetable and fruits	62.5	24.6	12.9	100.0
Eat too much fat	69.1	19.2	11.7	100.0
Drink unboiled water	57.8	37.1	5.1	100.0
Child handles food with dirty hands	65.5	21.3	13.2	100.0
Child plays in the sunlight, then drinks cold water	35.7	27.5	36.8	100.0
Child's belly was cooled	59.3	22.5	18.2	100.0
Child is in time of teething, started walking	32.9	56.6	10.5	100.0

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Table 4.21 (continued)

Mothers' beliefs	Agree	Disagree	Uncertain	Total (N=334)
Mother eats inappropriate foods during breastfeeding time	85.9	8.4	5.7	100.0
Mother did not wash her nipples before breastfeeding	42.2	35.3	22.5	100.0
Mother did not wash her hands before preparing her child's food	42.8	37.7	19.5	100.0
Child was fed with contaminated bottle and artificial nipple	79.0	7.2	13.8	100.0
Child was fed with an unfamiliar formula milk	62.0	19.2	18.8	100.0

The figure in Table 4.22 shows that less than three-fourths (71.5 percent) of the mothers had moderate level, more than fifteen percent (16.1 percent) of them had high level, and few of them (12.6 percent) had high level of beliefs in causes of childhood diarrhoea.

Table 4.22 Level of mothers' beliefs in cause of childhood diarrhoea

Level of mothers' beliefs	Number	Percent
Low	54	16.1
Moderate	239	71.5
High	41	12.4
Total	*334*	*100.0*
Mean = 17.67	*Standard deviation =*	*3.61*

Upon further analysis, the data in Table 4.23 show that slightly higher proportions of mothers in the less appropriate methods group agreed that childhood diarrhoea is caused by the following: "A child eat too much fat"; "A child is in time of teething, started walking"; "Mother did not wash her nipples before breastfeeding";

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and "Child was fed with unfamiliar formula milk". Conversely, from 3 to 16 percent higher proportions of mothers in the appropriate methods group agreed that the remaining behaviours were causes of childhood diarrhoea.

In sum, it was discovered that a high proportion of mothers in both groups had misbeliefs in traditional causes of childhood diarrhoea. However, more mothers in the appropriate methods group had correct beliefs in biomedical causes of childhood diarrhoea.

Table 4.23 Percentage of mothers by methods of diarrhoeal treatment and beliefs in causes of childhood diarrhoea

Mothers' beliefs	Less app. method (N=152)				App. method (N=182)			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Eating sour fruits then drink cold water	67.8	25.0	7.2	100.0	73.6	21.5	4.9	100.0
Eat stale foods	78.3	7.2	14.5	100.0	82.5	6.0	11.5	100.0
Eat contaminated foods	73.7	12.5	13.8	100.0	76.9	7.7	15.4	100.0
Eat unwashed vegetable and fruits	53.9	30.3	15.8	100.0	69.8	19.2	11.0	100.0
Eat too much fat	71.7	14.5	13.8	100.0	68.2	21.4	10.4	100.0
Drink unboiled water	57.2	38.2	4.6	100.0	61.0	33.5	5.5	100.0
Child handles food by dirty hands	62.5	24.3	13.2	100.0	68.1	18.7	13.2	100.0
Child plays under the sunlight	30.9	35.5	33.6	100.0	40.7	20.3	39.0	100.0
Child's belly is cooled	56.6	25.0	18.4	100.0	63.8	18.1	18.1	100.0
Child is in time of teething, walking	32.9	55.9	11.2	100.0	26.9	62.1	11.0	100.0
Mother eats inappropriate foods	82.9	10.5	6.6	100.0	89.0	6.6	4.4	100.0
Mother did not wash her nipples before giving breastfeed	42.1	36.8	21.1	100.0	42.2	35.7	23.1	100.0

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Table 4.23 (continued)

Mothers' beliefs	Less app. method (N=152)				App. method (N=182)			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Mother did not wash her hands before preparing child's foods	44.7	36.2	19.1	100.0	49.5	33.0	17.5	100.0
Child was fed with contaminated bottle	80.3	6.6	13.1	100.0	77.5	8.3	14.2	100.0
Child was fed with unfamiliar formula milk	56.6	25.0	18.4	100.0	66.5	14.8	18.7	100.0

4.3.4. Mothers' knowledge about appropriate diarrhoeal treatment

This part presents the mothers' knowledge about ORS, salt-sugar solution, homemade solution use, mothers' knowledge about the methods to stop the watery stool of childhood diarrhoea, and mothers' knowledge about supplementary food intake of children during diarrhoeal episodes.

In order to record the mothers' knowledge regarding the use of ORS, the interviewers showed an ORS sachet to mothers and asked them "Do you know this sachet or not ?". Data in Table 4.24 show that approximately two-thirds (63.8 percent) of the respondents knew the ORS sachet and the rest (36.2 percent) did not. Among the ORS users, slightly more than three-fourths of them (75.6 percent) prepared it properly. However, approximate fifteen percent of them (14.1 percent) prepared it improperly, and the remainder (10.3 percent) reported that they did not remember how to prepare it.

Mentioning the percentage distribution between the two groups, a much higher proportion of the mothers in the appropriate treatment group knew ORS and prepared

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it properly compared to mothers in the less appropriate methods group (around 30 percent higher).

In relation to homemade solutions, more than half (57.8 percent) of the respondents did not know what it is. More than half (58.2 percent) of them used the appropriate rehydration solutions, whilst a significant proportion of them (39 percent) used the antidiarrhoeal solutions, and few of them (2.8 percent) used inappropriate solutions.

The proportion of the mothers in the appropriate methods group who knew the other homemade solutions was five percent higher than the proportion in the less appropriate methods group (39.5 percent compared to 44.5 percent). Among the mothers who knew of homemade solutions, many more mothers in the appropriate methods group used homemade rehydration solutions compared to mothers in the less appropriate methods group (71.6 percent compared to 40 percent). Whilst double the proportion of the mothers in the less appropriate methods group used antidiarrhoeal homemade solutions compared to the mothers in the appropriate methods group (55 percent compared to 27.2 percent). In sum, the figure demonstrates that more mothers in the appropriate methods group had suitable knowledge about homemade solution compared to the mothers in the less appropriate methods group.

Table 4.24 shows that when the mothers were asked about the efficacy of the diarrhoeal treatment solutions they used, more than one-third (38.0 percent) of them

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stated correctly the rehydrating effect of the solutions, and one-fourth of them (25.7 percent) did not know any effect of the solutions.

The proportion of mothers in the appropriate methods group who accountably knew the rehydration effect of the homemade solution was more than double the proportion of mothers in the less appropriate methods group (50 percent compared to 23.7 percent).

In terms of a salt-sugar solution recommended by WHO/CDD, very few mothers (12.3 percent) knew of such a solution. However, among those who did know of it, more than half (56.1 percent) did not know how to prepare it properly, and one-fourth (24.4 percent) of them did not know how to mix it. Only one-fifth (19.5 percent) of the SSS users stated the correct mixing formula.

Comparing the proportions distribution between the two groups, it was recognized that there were nearly the same proportions of mothers who knew of the solution (13.2 percent and 11.5 percent) and mixed it improperly (57.9 percent and 54.5 percent). However, a much higher proportion of mothers in the appropriate methods group knew how to properly prepare the SSS mix formula compared to mothers in the less appropriate methods group (31.8 percent compare with 5.3 percent). In sum, the figures reveal that very few of the mothers know SSS. Among them, the mothers in the appropriate methods group had more correct knowledge of SSS mix than the mothers' less appropriate methods group.

When the mothers were asked the necessity of drug use to stop a child's watery stool, two-thirds of them (66.5 percent) incorrectly answered "It should be

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stopped immediately". The proportion of mothers in the less appropriate methods group who had this incorrect belief was higher than that of the mothers in the appropriate methods group by approximately ten percent.

Regarding daily quantities of supplementary food which should be increased or maintained during diarrhoea episodes as suggested by WHO/CDD, Table 4.24 reveals that approximately three-fourths (72.8 percent) of mothers had suitable knowledge of foods/milk and nutrient intake. However, three-fourths (74.2 percent) of them had misperceptions regarding fat intake during diarrhoea episode.

The proportion of mothers' knowledge related to supplementary foods did not very much between the two groups.

Table 4.24 Percentage of mother by methods of diarrhoeal treatment and knowledge about rehydration solutions and supplementary foods

Mother's knowledge	Less appropriate methods	Appropriate methods	Total %	(N)
Know ORS				
Yes	46.1	78.6	63.8	(213)
No	53.9	21.4	36.2	(121)
Total	*100.0*	*100.0*	*100.0*	*(334)*
ORS mixed				
Do not know	24.3	3.5	10.3	(22)
Correct mix	64.3	81.1	75.6	(161)
Incorrect mix	11.4	15.4	14.1	(30)
Total	*100.0*	*100.0*	*100.0*	*(334)*
Salt sugar solution (SSS)				
Know the SSS:				
Yes	13.2	11.5	12.3	(41)
No	86.8	88.5	87.7	(293)
Total	*100.0*	*100.0*	*100.0*	*(334)*
Correction of SSS mix				
Do not remember	36.8	13.6	24.4	(10)
Prepare properly	5.3	31.8	19.5	(8)
Prepare improperly	57.9	54.5	56.1	(23)
Total	*100.0*	*100.0*	*100.0*	*(41)*

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Table 4.24 (continued)

Mother's knowledge	Less appropriate methods	Appropriate methods	Total % (N)
Other homemade solutions			
Know a homemade solution			
Yes	39.5	44.5	42.2 (141)
No	60.5	55.5	57.8 (193)
Total	100.0	100.0	100.0 (334)
Type of homemade solutions			
Rehydration solutions	40.0	71.6	58.2 (82)
Antidiarrhea solutions	55.0	27.2	39.0 (55)
Unsuitable solutions	5.0	1.2	2.8 (4)
Total	*100.0*	*100.0*	*100.0 (141)*
Mother's knowledge about efficacy of the solutions			
Do not know	36.2	17.0	25.7 (86)
Know rehydrated effect	23.7	50.0	38.0 (127)
Know other effects	40.1	33.0	36.2 (21)
Total	*100.0*	*100.0*	*100.0 (334)*
Mother's knowledge about stopping watery stools			
It should be stopped immediately	72.4	61.5	66.5 (222)
It should be stopped slowly	25.7	35.7	31.1 (104)
Should not use any antidiarrhoeal drugs	2.0	2.7	2.4 (8)
Total	*100.0*	*100.0*	*100.0*
Quantity of food or milk			
Increase	2.6	1.1	1.8 (6)
Keep as normal	70.4	71.4	71.0 (237)
Decrease	25.7	26.4	26.0 (87)
Forbear	1.3	1.1	1.2 (4)
Total	*100.0*	*100.0*	*100.0 (334)*
Quantity of fat			
Increase	0.7	0.5	0.6 (02)
Keep as normal	25.7	23.1	24.3 (81)
Decrease	19.7	17.6	18.6 (62)
Forbear	53.9	58.8	56.6 (189)
Total	*100.0*	*100.0*	*100.0 (334)*
Quantity of nourished foods			
Increase	5.9	6.6	6.3 (21)
Keep as normal	67.1	62.1	64.3 (127)
Decrease	17.8	18.1	18.0 (60)
Forbear	9.2	12.6	11.1 (37)
Do not know	00.0	0.5	0.3 (01)
Total	*100.0*	*100.0*	*100.0 (334)*

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In terms of level of mothers' knowledge, data in Table 4.25 show that more than half of the mothers (57.5 percent) had moderate knowledge about appropriate childhood diarrhoeal treatment, whilst one-fourth (26.9 percent) of them had low level, and a few of them had high level of the knowledge (15.6 percent).

Table 4.25 Level of mothers' knowledge about appropriate childhood diarrhoeal treatment

Level of mothers' knowledge	Number	Percent
Low	90	26.9
Moderate	191	57.5
High	53	15.6
Total	*334*	*100.0*
Mean = 11.96	*Standard deviation =*	*5.39*

4.3.5 Mothers' perceived symptoms of childhood diarrhoea

According to the WHO definition, the major symptom of childhood diarrhoea is watery stool over three times a day and this symptom may or may not be accompanied by other symptoms. However, all of the mothers were lay women, so the questions about childhood diarrhoea symptoms was only aimed at recording the perception that they had through their experiences in taking care of children with diarrhoea.

Table 4.26 shows that the majority of the respondents (89.8 percent) recognized that watery stool over 3 times a day was a chief symptom of childhood diarrhoea. Beside this, a high proportion of mothers perceived that this symptom was accompanied by the following symptoms: lose appetite, belly pain, high temperature, sunken eyes, dry mouth and thirsty, fatigue, poor posture and cry often (from 70.6

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percent to 83.8 percent). More than half of the mothers perceived other symptoms such as nausea, vomiting, bloody and mucus feces.

Among the above symptoms, approximately half of the mothers assessed that the most severe symptoms of childhood diarrhoea were belly pain, high temperature, sunken eyes, nausea and vomiting.

Table 4.26 Percentage of mother by perceived symptoms of childhood diarrhoeal

Diarrhoea symptoms	Agree	Disagree	Uncertain	Total
Watery stool > 3 times/day	89.8	9.0	1.2	100.0
The above symp.+ the child dislike to eat and drink	73.6	23.1	3.3	100.0
+ child's belly pain and body got high temperature	70.6	24.3	5.1	100.0
+ nausea and vomiting	56.6	37.1	6.3	100.0
+ sunken eyes, dry mouth and thirsty	76.9	19.5	3.6	100.0
+ Child is fatigue, negative posture and often cry	83.8	12.6	3.6	100.0
+ Child's fecal had blood, mucus	55.1	33.2	11.7	100.0

More than half (58.4 percent) of the mothers perceived the symptoms of childhood diarrhoea moderately well. Approximately one-fourth (24.2 percent) of them perceived the symptom well. The remainders (17.4 percent) had poor perception of the childhood diarrhoea symptoms (Table 4.27).

Table 4.27 Level of mothers' perceived symptoms of childhood diarrhoea

Level of mothers' perceived symptoms of diarrhoea	Number	Percent
Low	58	17.4
Moderate	195	58.4
High	81	24.2
Total	*334*	*100.0*
Mean = 10.495	*Standard deviation*	*= 3.183*

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Upon further analysis, the data in Table 4.28 show that in every mentioned symptom, the proportion of mothers belonging to appropriate methods group who perceived such symptoms was always higher than the proportion of mothers in the less appropriate methods group by from two to eight percent.

Through the above analysis, it could be recognized that majority of the mothers perceived symptoms of childhood diarrhoea and the proportions were higher among mothers in the appropriate methods group compared to mothers in the less appropriate methods group.

Table 4.28 Percentage of mother by perceived symptoms of childhood diarrhoea and choices of treatment

Diarrhoeal symptoms	Less appropriate method (N=152)				Appropriate method (N=182)			
	Agree	Disagree	Uncertain	Total	Agree	Disagree	Uncertain	Total
Watery stool over 3 times/ 24 hours	86.8	11.8	1.4	100.0	92.3	6.6	1.1	100.0
+ a child does not like to eat and drink	69.7	27.6	2.7	100.0	76.9	19.3	3.8	100.0
+ high temperature and belly pain	67.1	27.0	5.9	100.0	73.6	22.0	4.4	100.0
+ nausea and vomit	52.6	40.8	6.6	100.0	59.9	34.1	6.0	100.0
+ sunken eyes, dry mouth and so thirty	73.0	25.0	2.0	100.0	80.3	14.8	4.9	100.0
+ fatigue, negative posture and crying	82.9	15.8	1.3	100.0	84.6	9.9	5.5	100.0
+ child fecal has blood and mucus	52.6	36.8	10.6	100.0	57.2	30.2	12.6	100.0

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4.4 Relationship between psychosocial factors and mothers' choices of diarrhoeal treatment

4.4.1 Relationship between mothers'choices of diarrhoeal treatment and their perceived severity of the disease

Data in Table 4.29 show that the proportion of mothers in the less appropriate methods group was much higher among mothers who had low level of perceived severity of childhood diarrhoea (70.1 percent), and it dropped with higher levels of perception. In mothers in the appropriate methods group, conversely, the proportion of mothers who had a high level of the perception is the highest one (63.6 percent), and it dropped in the lower levels. Generally, the more a mother perceived higher severity of childhood diarrhoea the higher the proportion who choose appropriate method of diarrhoea treatment. The chi-square value ($P<0.05$) indicated that the relationship between mothers' choices of childhood diarrhoeal treatment and their perceived severity of childhood diarrhoea was statistically significant.

Table 4.29 Percentage of mothers by perceived childhood diarrhoea severity and choices of treatment

Mothers' choices of treatment	Mothers' perceived severity			Total
	Low	Moderate	High	
Less appropriate methods	70.1	44.1	36.4	45.5
Appropriate methods	29.9	55.9	63.6	54.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(67)*	*(102)*	*(165)*	*(334)*
Chi square value = 22.048	P. value = 0.000		Cramer's V.= 0.256	

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4.4.2 Relationship between mothers' choices of childhood diarrhoeal treatment by their perceived barriers to the appropriate diarrhoeal treatment

This part presents the relationship between mothers' choices of childhood diarrhoeal treatment and their perceived barriers to use of ORS, homemade solutions and to the public health care services.

4.4.2.1 Mothers' choices of diarrhoeal treatment by mothers' perceived barriers to use of ORS

Table 4.30 presents a sharp increase in proportions from low to high levels of perceived barriers to use of ORS among the mothers in the less appropriate methods group (from 15.8 to 33.1 and to 50.0 percent). The proportion distribution was opposite among the mothers in the appropriate methods group: It peaked at low level of perceived barriers and dropped at higher levels (from 84.2 percent to 66.9 and 50.0 percent). Overall, the more mothers perceived lower barriers to use of ORS the higher the proportion who choose appropriate methods of diarrhoea treatment. Consequently, the relationship between mothers' choices of childhood diarrhoeal treatment and their perceived barriers to use of ORS was statistically significant ($P< 0.05$).

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Table 4.30 Percentage of mothers by perceived barriers to use of ORS and choices of treatment

Mothers' choices of treatment	Mothers' perceived barriers			
	Low	Moderate	High	Total
Less appropriate methods	15.8	33.1	50.0	32.9
Appropriate methods	84.2	66.9	50.0	67.1
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(38)*	*(139)*	*(36)*	*(213)*
Chi square value = 9.815	P. value = 0.007		Cramer's V.= 0.214	

4.4.2.2 Relationship between mothers' choices of diarrhoeal treatment and their perceived barriers to use of homemade solutions

Data in Table 4.31 show that among the mothers in the less appropriate methods group, the proportion of their perceived barriers to use of homemade solutions peaked at high level (80.0 percent) and it decreased two times in the lower levels. Among the other group, conversely, the proportion of mothers perceiving low barriers to using the solutions was more than twenty percent higher than those with a in moderate level, and four times higher than those with a high level of the perception. The situation indicated that the more mothers perceived lower barriers to use of homemade solutions the higher the proportion who choose appropriate methods of diarrhoea treatment. Consequently, the relationship between mothers' choices of childhood diarrhoeal treatment and their perceived barriers to use of homemade solutions was statistically significant ($P< 0.05$).

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Table 4.31 Percentage of mothers by perceived barriers to use of homemade solutions and choices of treatment

Mothers' choices of treatment	Mothers' perceived barriers			
	Low	Moderate	High	Total
Less appropriate methods	17.1	44.2	80.0	42.6
Appropriate methods	82.9	55.8	20.0	57.4
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(35)*	*(199)*	*(53)*	*(141)*
Chi square value = 20.811	P. value = 0.000		Cramer's V.= 0.384	

4.4.2.3 Relationship between mothers'choices of treatment and their perceived barriers in accessing public health care services

Data in Table 4.32 demonstrates that the proportion with low level of perceived barriers to use of public health care services (PHCS) was lowest among the mothers' less appropriate methods group, it increased to the higher levels of the perception. A converse trend of proportion distribution occurred among the mothers in the appropriate methods group: the peak was in low level (68.1 percent), and it dropped two times in high level of the perception. In sum, the more mothers perceived lower barriers to use of PHCS the higher the proportion who choose appropriate methods of diarrhoea treatment. This trend led to a statistical significant association between the mothers' choices of childhood diarrhoeal treatment and their perceived barriers in accessing the public health care services ($P<0.05$).

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Table 4.32 Percentage of mothers by perceived barriers to use of PHCS and choices of treatment

Mothers' choices of treatment	Level of mothers' perceived barriers to PHCS			
	Low	Moderate	High	Total
Less appropriate methods	31.9	45.0	64.9	45.5
Appropriate methods	68.1	55.0	35.1	54.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(57)*	*(202)*	*(72)*	*(331)*

Chi square value = 14.005 P. value = 0.000 Cramer's V.= 0.205

4.4.3 Relationship between mothers'choices of childhood diarrheal treatment and their beliefs in causes of childhood

Data in Table 4.33 indicate that the proportions of mothers with low and moderate level beliefs in causes of childhood diarrhoea were almost equal in both groups (48.1 and 49.4 percent). However, the proportion of mothers in the less appropriate methods group dropped sharply among those with a high level of the perception. Among the mothers in the appropriate methods group the proportions in low and moderate level were also almost equal (51.9 and 50.6 percent), but it increased strongly in high level of the perception. Overall, the relationship between mothers' choices of childhood diarrhoea and their beliefs in causes of the disease was statistically significant ($P < 0.05$).

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Table 4.33 Percentage of mothers by beliefs in causes of childhood diarrhoea and choices of treatment

Mothers' choices of treatment	Mothers' beliefs			
	Low	Moderate	High	Total
Less appropriate methods	48.1	49.4	19.5	45.5
Appropriate methods	51.9	50.6	80.5	54.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(54)*	*(239)*	*(41)*	*(334)*
Chi square value = 12.7		P. value = 0.001		Cramer's V.= 0.195

4.4.4 Relationship between mothers' choices of diarrhoeal treatment and mothers' knowledge about appropriate methods of diarrhoeal treatment

Table 4.34 shows that the proportion of mothers in the less appropriate methods group reached a peak in low level of knowledge about appropriate treatment methods (70.0 percent) and declined sharply thereafter. The trend of proportion distribution in the mothers in the appropriate methods group was opposite of the mothers in the less appropriate methods group (lowest in low level: 30 percent and highest in high level: 83 percent). The figures indicate that the more the mothers had higher knowledge about appropriate methods of diarrhoeal treatment the higher the proportion who choose appropriate methods of diarrhoeal treatment. This trend led to a statistical significant association between the mothers' knowledge about appropriate diarrhoeal treatment and the mothers' choices of diarrhoeal treatment($P < 0.05$).

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Table 4.34 Percentage of mothers by knowledge about appropriate methods of childhood diarrhoea treatment and choices of treatment

Mothers' choices of treatment	Level of mothers' knowledge			Total
	Low	Moderate	High	
Less appropriate methods	70.0	41.9	17.0	45.5
Appropriate methods	30.0	58.1	83.0	54.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(90)*	*(191)*	*(53)*	*(334)*
Chi square value = 40.174		P. value = 0.000		Cramer's V.= 0.346

4.4.5 The relationship between mothers' perceived symptoms of childhood diarrhoea and their choices of diarrhoeal treatment

Data in Table 4.35 describe that the mothers in the less appropriate methods group with a low level of perceived symptoms of childhood diarrhoea took the highest proportion compared to the moderate and high level of the perception (65.5 percent compared with 40.5 and 43.2 percent). Among mothers in the appropriate methods group, the proportion reached a peak at the moderate level of the perception. It declined sharply at the low level and dropped slightly at the high level of the perception. However, this trend of proportion distribution also led to a statistical significant relationship between mothers' choices of childhood diarrhoeal treatment and their perceived symptoms of the disease ($P<0.05$).

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Table 4.35 Percentage of mothers by perceived symptoms of childhood diarrhoea and choices of treatment

Mothers' choices of treatment	Mothers' perceived symptoms of diarrhoea			
	Low	Moderate	High	Total
Less appropriate methods	65.5	40.5	43.2	45.5
Appropriate methods	34.5	59.5	56.8	54.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(58)*	*(195)*	*(81)*	*(334)*
Chi square value = 11.498		P. value = 0.003		Cramer's V.= 0.185

4.5 Relationship between the mothers' psychosocial factors and their ages, jobs, education and incomes

As mentioned in page 11 (Chapter one), the mothers' age, job, education and income/person/month were seen as factors that directly affect the psychosocial status of the mothers. This part presents the relationship between the mothers' psychosocial factors and the mothers' ages, jobs, education and incomes/person/month.

4.5.1 Mothers' psychosocial factors by ages

As displayed in Table 4.36, it can be recognized that the mothers' ages had no association with any of their psychosocial factors (P>0.05).

Moreover, the data demonstrate that approximately half of the mothers, in all three age groups of the study, had a high level of perceived severity of childhood diarrhoea. Among them, the mothers belonging to the age group of 30-39 took a highest proportion [52.1 percent compared with 47.5 percent (of the age group of 17- 29), and 46.8 percent (of the age of >39)]. Around thirty percent of the mothers

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in all age groups had a moderate level of perceived severity of childhood diarrhoea. In which, the mothers belonging to the age group of > 39 took a highest proportion (34 percent). In low level of perceived severity of childhood diarrhoea, the percentage distribution among the three age groups was also equal and includes about twenty percent of the mothers. From that, it could be recognized that among the three age groups, the mothers in age group of 30-39 had the most positive trend of the perceived severity of childhood diarrhoea, because that age group had the highest proportion with a high level (52.1 percent) and lowest proportion with a low level (19.2 percent) of the perceived severity.

Data relating the mothers' perceived barriers in accessing the PHCS and their age showed that among all the age groups, the mothers who had a moderate level of the perception were the highest proportion (around 60 percent). The percentage distribution among the three age groups was not much different. However, it could be seen that, the mothers belonging to the age group of 30-39 had the most positive trend of the perceived barriers of PHCS, because that group had the lowest proportion in high level (18.6 percent) and highest proportion in low level of perceived barriers (20 percent).

In terms of the relationship between the mothers' belief in causes of diarrhoea and their age, the trend of the percentage distribution was almost the same as with the preceding situation. There was around seventy percent of mothers in all the three age groups who had moderate level of the belief, of which the mothers in the age group of 17-29 included the highest proportion (73 percent compared with 69.9 percent and 72.3 percent). The proportion of the mothers who had a low level of the belief, in all

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the three age groups, included around fifty percent of the mothers, whilst the proportion of mothers with a high level of the perception was around twelve percent. Comparing the percentage distribution among the three age groups, the age group of 30-39 was the most negative group because it included the highest proportion in low level (18.5 percent) and lowest proportion in high level of the belief (11.6 percent).

Similarly, the data related to the mothers' knowledge about appropriate childhood diarrhoeal treatment and their age showed that the proportion of the mothers who had moderate level of the knowledge, in all three age groups, also included more than half of the mothers. Among them, the mothers belonging to the age group of > 39 included the highest proportion (68.1 percent compared to 53.9 percent and 53.4 percent). The proportion of mothers belonging to the age groups of 17- 29 and > 39 in low level of the knowledge were double that of the mothers in high level of the knowledge (31.2 percent compared to 14.9 percent of the age group of 17- 29, and 21.3 percent compared to 10.6 percent of the age group > 39). The mothers belong to the age group of 30-39 also had a higher proportion in low level of the perception than mothers with a high level of the knowledge (26.7 percent compared with 19.9 percent). Among the three age groups, the mothers in the age group of 17-29 was the most negative group because they had highest proportion in low level (31.2 percent) and lowest proportion in high level (14.9 percent) of knowledge about appropriate diarrhoeal treatment.

Likewise, the data regarding to the relationship between the mothers' perceived symptoms of childhood diarrhoea and their age show that around sixty percent of mothers, in all the three age groups, perceived a moderate number of

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symptoms. In which the mothers belonging to the age group of 17-29 included the highest proportion (60.3 percent compared with 56.8 percent and 57.4 percent). In all the three age groups, there was more than twenty percent of the mothers who perceived a high number of symptoms. There was from 15.8 percent to 19.1 percent of mothers, in all three age groups, who perceived a low number of symptoms. In which, the mothers in the age group of > 39 included the highest proportion (19.1 percent compared with 15.8 percent and 18.4 percent). To compare the three age groups, the data showed a positive trend of perceived symptoms of childhood diarrhoea skewed to the mothers belonging to the age group of 30-39.

Table 4.36 Percentage of mother by psychosocial factors and their age

Mothers' psychosocial factors	Mothers' ages			Total
	17-29	30-39	>39	
Mothers' perceived severity of diarrhoea				
Low	21.3	19.2	19.2	20.0
Moderate	31.2	28.7	34.0	30.5
High	47.5	52.1	46.8	49.5
Total	*42.2*	*43.7*	*14.1*	*100.0*
(Number)	*(141)*	*(146)*	*(47)*	*(334)*
Chi-square value = 0.912	P. value = 0.922		Cramer's value = 0.039	
Mothers' perceived barriers to use of PHCS				
Low	15.0	20.0	15.2	17.2
Moderate	62.1	61.4	56.5	61.0
High	22.9	18.6	28.3	21.8
Total	*42.3*	*43.8*	*13.9*	*100.0*
(Number)	*(141)*	*(145)*	*(46)*	*(331)*
Chi-square value = 2.971	P. value = 0.562		Cramer's value = 0.066	

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Table 4.36 (continued)

Mothers' psychosocial factors	Mothers' ages			Total
	17-29	30-39	>39	
Mothers' beliefs in causes of childhood diarhoea				
Low	14.2	18.5	14.9	16.2
Moderate	73.0	69.9	72.3	71.5
High	12.8	11.6	12.8	12.3
Total	*42.2*	*43.7*	*14.1*	*100.0*
(Number)	*(141)*	*(146)*	*(47)*	*(334)*
Chi-square value = 1.069	P. value = 0.899		Cramer's value = 0.040	
Mothers' knowledge about appropriate diarrhoeal treatment				
Low	31.2	26.7	21.3	27.8
Moderate	53.9	53.4	68.1	55.7
High	14.9	19.9	10.6	16.5
Total	*42.2*	*43.7*	*14.1*	*100.0*
(Number)	*(141)*	*(146)*	*(47)*	*(334)*
Chi-square value = 5.083	P. value = 0.278		Cramer's value = 0.087	
Mothers' perceived symptoms of childhood diarrhoea				
Low	18.4	15.8	19.2	17.4
Moderate	60.3	56.8	57.4	58.3
High	21.3	27.4	23.4	24.3
Total	*42.2*	*43.7*	*14.1*	*100.0*
(Number)	*(141)*	*(146)*	*(47)*	*(334)*
Chi-square value = 1.675	P. value = 0.795		Cramer's value = 0.050	

4.5.2 Relationship between mothers' psychosocial factors and their jobs

Table 4.37 shows that there were no statistical significant association between the mothers' psychosocial factors and their jobs (P>0.05).

For the relationship between perceived severity of childhood diarrhoea and the mothers' job, it was seen that among the different groups of jobs, the mothers who work for the governmental sector had the highest proportion who perceived high severity (54.4 percent), and lowest proportion who perceived low severity, a situation

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which shows a positive trend for this group. Besides, it should be considered that a larger proportion of mothers who belong to the other jobs (housewife/no job, vendor, handicraft maker, work for private sector...) perceived a low level of severity because the proportion of mother in this group was not only rather high but the group contained numerous occupations (19.1 percent and 23.1 percent).

In terms of the relationship between mothers' perceived barriers to accessing PHCS and their job, the data described that a majority of the mothers perceived a moderate level barriers. If combining both moderate and high level of perceived barriers, it was noted that the housewife group included the highest proportion of the mothers who perceived a moderate and high level of barriers(84.8 percent). The figure also shows a positive trend for the governmental worker group.

Likewise, data related to the relationship between the mothers' belief in causes of childhood diarrhoea and their job show a similar trend as the preceding analysis, but the proportion of the mothers who had a moderate level of the belief in all of the three groups of job was rather higher.

When considering the relationship between mothers' knowledge about appropriate diarrhoeal treatment and their job, more than half (52.8 percent and 61.2 percent) of the housewives mother and the mothers who work in freelance services had a moderate level of knowledge about appropriate diarrhoeal treatment, the proportion of governmental workers who had a moderate level of such knowledge was lower than that of the other groups of jobs (45.5 percent). It need to mention that the housewives was the group with the highest proportion of mothers with a

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knowledge level comparing to the other group of job, and this group was also included the largest number of mothers.

In terms of the relationship between mothers' perceived symptoms of diarrhoea and their job, the trend of the proportion distributions was also almost the same as the trend of the mothers' belief in causes of diarrhoea and job.

In sum, the general relationship was a positive trend that skewed to the mothers in governmental services group.

Table 4.37 Percentage of mother by psychosocial factors and their jobs

Mothers's psychosocial factors	Mothers' jobs			Total
	Housewife	Freelance services	Gov. services	
Mothers' perceived severity of childhood diarrhoea				
Low	19.1	23.1	9.1	20.1
Moderate	31.5	28.4	36.4	30.5
High	49.4	48.5	54.5	49.4
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(170)*	*(134)*	*(22)*	*(334)*
Chi-square value = 2.674		P. value = 0.613	Cramer's value = 0.063	
Mothers' perceived barriers to use of PHCS				
Low	15.2	10.0	28.6	17.2
Moderate	59.9	64.7	47.6	61.0
High	24.9	17.3	23.8	21.8
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(177)*	*(133)*	*(21)*	*(331)*
Chi-square value = 5.007		P. value = 0.286	Cramer's value = 0.086	
Mothers' beliefs in causes of diarhoea				
Low	15.7	17.9	9.1	16.2
Moderate	74.7	68.7	63.6	71.6
High	9.6	13.4	27.3	12.2
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(170)*	*(134)*	*(22)*	*(334)*
Chi-square value = 6.807		P. value = 0.146	Cramer's value = 0.100	

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Table 4.37 (continued)

Mothers's psychosocial factors	Mothers' jobs			Total
	Housewife	Freelance services	Gov. services	
Mothers' knowledge about appropriate diarrhoeal treatment				
Low	33.2	20.9	27.3	27.8
Moderate	52.8	61.2	45.4	55.7
High	14.0	17.9	27.3	16.5
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(178)*	*(134)*	*(22)*	*(334)*
Chi-square value =	P. value = 0.146		Cramer's value = 0.100	
Mothers' perceived symptoms of childhood diarrhoea				
Low	10.0	17.9	9.1	17.4
Moderate	56.7	60.5	59.1	58.4
High	25.3	21.6	31.8	24.2
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(170)*	*(134)*	*(22)*	*(334)*
Chi-square value = 2.084	P. value = 0.720		Cramer's value = 0.055	

4.5.3 Relationship between mothers' psychosocial factors and mothers' education

Data in Table 4.38 show the statistical significant associations between the mothers' perceived severity of childhood diarrhoea, the mothers' beliefs in causes of such disease, the mothers' knowledge about appropriate diarrhoeal treatment and their educational level ($P<0.05$). However, the mothers' perceived barriers to accessing PHCS and the mothers' perceived symptoms of childhood diarrhoea were not insignificantly associated with their education. ($P>0.05$) .

For the mothers' perceived severity of childhood diarrhoea and the mothers' education, the result show that there was approximate 40 percent of the illiterate mothers and mothers who had elementary education (1-5 years) who perceived high

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severity whilst the proportion of other educational groups who perceived high severity was more than half (58 percent in educational group of 6 - 10, or more than two-third (67.7 percent - in educational group of > 10). Among those who perceived low severity,, the proportion of the mothers who had over elementary educational level was much lower than that of the other groups. The figure shows a negative trend for mothers having over elementary education. Consequently, there was a statistical significant association between the mothers' perceived severity of childhood diarrhoea and their educational level. From this result, it could be stated that "Mothers who had a higher educational level were likely to perceive a higher severity of childhood diarrhoea compared to those who had a lower educational level".

In terms of the relationship between the mothers' perceived barrier to accessing PHCS and their education, it can be seen that more than half of the mothers in all four educational groups perceived a moderate level of barriers. Noticeably, the mothers belonging to the secondary educational group (6 -10) had the highest proportion (23.1 percent) in the high level, and the lowest proportion (13.8 percent) in the low level of the perception. Therefore, the most negative trend was found in this group. In contrast, the most positive trend skewed to the mothers with the highest education. This trend could be the cause for the insignificant association between perceived barriers to PHCS and education.

For the relationship between the mothers' beliefs in causes of childhood diarrhoea and their education, the majority of the mothers in all four educational groups had moderate level of the belief. Moreover, it was seen that in the high level of the belief, the mothers in highest educational group had highest proportion. The

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proportion of the remaining groups decreased sharply according to their lower educational level. The trend was completely reversed in low level of the perception. From the above observation and the statistical significant association ($P<0.05$), it could be said that "Mothers who had higher education were more likely to have a higher number of correct beliefs in causes of childhood diarrhoea than those who had lower education".

Likewise, there was also a statistically significance association between the mothers' knowledge about appropriate diarrhoeal treatment and their education ($P < 0.05$). Data in Table 4.30 also show almost the same trend as the preceding relationship in terms of the percentage distribution . From these, it could be recognized that " Mothers who had higher educational level were likely to have higher knowledge about appropriate diarrhoeal treatment than those who had lower education".

In terms of the relationship between the mothers perceived symptoms of childhood diarrhoea and their education, the data show that in all levels of the perception, except the illiteracy group, the proportion distributions among the three remaining educational groups were almost the same, including around 15 percent at the low level, 60 percent at the moderate level, and 25 percent at the high level of perceived symptoms of childhood diarrhoea. Noticeably, one-third of the illiterate mothers had a low level of the perception and this proportion was also almost double that of the mothers belonging to the other educational groups. In sum, the illiterate mothers were the ones who had the most negative trend of the perceived symptoms of

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childhood diarrhoea (highest proportion at low level and lowest proportion at high level of perceived symptom of childhood diarrhoea).

Table 4.38 Percentage of mother by psychosocial factors and their education

Mothers' psychosocial factors	Mothers' education				Total
	Illiteracy	1 -5	6 - 10	> 10	
Mothers' perceived severity of diarrhoea					
Low	40.0	25.4	12.2	9.7	20.1
Moderate	20.0	35.2	29.8	22.6	30.5
High	40.0	39.4	58.0	67.7	49.4
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(30)*	*(142)*	*(131)*	*(31)*	*(334)*
Chi-square value = 23.858	P. value = 0.000			Cramer's value = 0.188	
Mothers' perceived barriers to use of PHCS					
Low	20.7	16.9	13.8	30.0	17.2
Moderate	51.7	62.0	63.1	56.7	61.0
High	27.6	21.1	23.1	13.3	21.8
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(29)*	*(142)*	*(130)*	*(30)*	*(331)*
Chi-square value = 6.092	P. value = 0.412			Cramer's value = 0.095	
Mothers'beliefs in causes of childhood diarhoea					
Low	23.3	17.6	13.7	12.9	16.1
Moderate	73.3	73.2	72.5	58.1	71.6
High	3.4	9.2	13.8	29.0	12.3
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(30)*	*(142)*	*(131)*	*(31)*	*(334)*
Chi-square value = 13.091	P. value = 0.041			Cramer's value = 0.139	
Mothers' knowledge about appropriate diarrhoeal treatment					
Low	43.3	34.5	19.8	16.1	27.8
Moderate	46.7	53.5	61.1	51.6	55.7
High	10.0	12.0	19.1	32.3	16.5
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(30)*	*(142)*	*(131)*	*(31)*	*(334)*
Chi-square value = 18.460	P. value = 0.005			Cramer's value = 0.166	

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Table 4.37 (continued)

Mothers' psychosocial factors	Mothers' education				Total
	Illiteracy	1 -5	6 - 10	> 10	
Mothers' perceived symptom of diarrhoea					
Low	33.3	15.5	16.0	12.9	17.4
Moderate	46.7	61.3	57.3	61.3	58.4
High	20.0	23.2	26.7	25.8	24.3
Total	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(30)*	*(142)*	*(131)*	*(31)*	*(334)*
Chi-square value = 6.524	P. value = 0.367		Cramer's value = 0.098		

4.5.4 Relationship between mothers' psychosocial factors and mothers' incomes

Regarding this relationship, none of the mothers' psychosocial factors had a statistically significant association with the incomes/person/month of mothers families (P>0.05).

Data in Table 4.39 demonstrate that in the analysis of mothers' perceived severity of such disease and the mentioned incomes, it was observed that the mothers belonging to moderate incomes group had the highest proportion having a low perceived severity (20.7 percent), and they were also had lowest proportion with a high perceived severity (46.4 percent), whilst the mother in low incomes group had a higher proportion with high perceived severity (59.1 percent), and the lowest proportion with the low perceived severity (13.6 percent). From that, it could be recognized that the mothers belonging to high incomes group had the most positive trend among the others.

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Regarding the relationship between mothers' perceived barriers to accessing the PHCS and their incomes, the data show that the majority of the mothers in the three different income groups had moderate level of the perception. In which, the mothers in the moderate incomes group had the highest proportion perceiving low barriers (19 percent), and the mothers in high incomes group, conversely, had the lowest proportion perceiving low barriers (9.3 percent). Comparing the general trend among the three groups of incomes, the moderate incomes group had the most positive trend. However, considering the total percentage of mothers who had moderate and high levels of perceived barriers to the PHCS, the results show that a considerable proportion of the study mothers perceived barriers to the PHCS (more than 80 percent of them had moderate and high level of perceived barriers of PHCS).

Similarly, the analysis of mothers' beliefs in causes of childhood diarrhoea and their incomes showed that the majority of the mothers in all three incomes groups had a moderate level of the beliefs (including from 68.2 percent to 74.9 percent). Among those, the moderate income group was the most negative group, because regardless of its favorable economic condition, it had the lowest proportion in the high level (11.1 percent), and the highest proportion (18.0 percent) in the low level of the belief, and it also included the most highest numerous population.

The result of the mothers' knowledge about appropriate diarrhoeal treatment and their incomes showed that the percentage distribution in this relationship differed little from the preceding relationship: rather lower proportions in moderate knowledge and rather higher proportions in low and high knowledge. However, the most negative group was also the mothers belonging to the moderate incomes group.

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Relating the mothers' perceived symptoms of childhood diarrhoea and their incomes, the results show that more than half (58 percent - 59 percent) of the mothers in the three different income groups had a moderate level of the perception. Noticeably, in high level of the perception, there was a negative trend: the proportion of mothers who had a high level of the perception decreased gradually from the low income group to the high income group (27.3 percent , 25.3 percent, 20.9 percent). In contrast, among low level of the perception, the proportion distribution had the opposite trend. Therefore, there was no relationship between mothers' psychosocial factors and incomes (P>0.05).

Table 4.39 Percentage of mother by psychosocial factors and their income

Mothers' psychosocial factors	Mothers' incomes/person/month			Total
	Low income	Moderate incomes	High incomes	
Mothers' perceived severity of childhood diarrhoea				
Low	13.6	20.7	16.3	19.6
Moderate	27.3	33.0	16.3	30.4
High	59.1	46.3	67.4	50.0
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(22)*	*(261)*	*(43)*	*(326)*
Chi-square value = 7.922	P. value = 0.094		Cramer's value = 0.110	
Mothers' perceived barriers to use of PHCS				
Low	13.6	19.0	9.3	17.3
Moderate	54.6	59.3	72.1	60.7
High	31.8	21.7	18.6	22.0
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(22)*	*(258)*	*(43)*	*(323)*
Chi-square value = 4.523	P. value = 0.339		Cramer's value = 0.083	
Mothers'beliefs in causes of childhood diarrhoea				
Low	13.6	18.0	7.0	16.2
Moderate	68.2	70.9	74.4	71.2
High	18.2	11.1	18.6	12.6
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(22)*	*(261)*	*(43)*	*(326)*
Chi-square value = 5.194	P. value = 0.267		Cramer's value = 0.089	

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Table 4.39 (continued)

Mothers' psychosocial factors	Mothers' incomes/person/month			Total
	Low income	Moderate incomes	High incomes	
Mothers' knowledge about appropriate treatment methods				
Low	13.6	29.5	20.9	27.3
Moderate	68.2	55.2	55.8	56.1
High	18.2	15.3	23.3	16.6
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(22)*	*(261)*	*(43)*	*(326)*
Chi-square value = 4.658	P. value = 0.324		Cramer's value = 0.084	
Mothers' perceived symptoms of diarrhoea				
Low	13.6	16.9	20.9	17.2
Moderate	59.1	57.9	58.2	58.0
High	27.3	25.2	20.9	24.8
Total	*100.0*	*100.0*	*100.0*	*100.0*
(Number)	*(22)*	*(261)*	*(43)*	*(326)*
Chi-square value = 0.872	P. value = 0.928		Cramer's value = 0.036	

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CHAPTER FIVE

CONCLUSION, DISCUSSION AND RECOMMENDATIONS

This chapter includes three parts. The first part summarizes the main results of the study. The second one discuss and concludes about the findings, and the last one is the recommendations.

5.1 SUMMARY

This study tried to apply the Health Belief Model to examine the influences of mothers' psychosocial factors on their choices of childhood diarrhoeal treatment, as well as to test the effects of some socioeconomic demographic characteristics of mothers on the mothers' psychosocial factors; such as mothers' perceived severity of childhood diarrhoea, mothers' perceived barriers to appropriate treatment methods, mothers' beliefs in causes of diarrhoea, mothers' knowledge about appropriate treatment methods, and mothers' perceived symptom of childhood diarrhoea.

The research design was a cross sectional study, including field observation and survey techniques for data collection.

Ward 14 of District 8, is a slum area in Ho Chi Minh City of Vietnam was selected as the study site. The sample for this study was 334 mothers who had at least one child under five years old. The mothers were selected by systematic random sampling among 1,400 mothers living in this area. Data collection by field observation and face-to-face interviews was conducted during 1 September to 15 October, 1996. The research team consisted of two supervisors and 8 interviewers. Data were coded

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and analyzed by the SPSS for windows program. Chi-square analysis was the major statistic to be used to test the hypotheses of this study.

The study results showed that the average age of the respondents was 32.3 years and the majority of them belong to the age group of 20 to 39 (85 percent). Their average years of school attainment was 5.5. More than eighty percent of them had an elementary or secondary education. Nine percent of them had a high school or higher education and more than nine percent were illiterate. More than half of the respondents were housewives or had no job (53.2 percent), 21 percent of them were vendors, and approximate 20 percent of them work for the private sector or handicraft makers. The remainder (6.6 percent) work in the governmental sector. The average family size of the respondents was 4.6 persons. More than half of the mothers' families had from 2-4 members (59.9 percent), slightly more than one-third of their families had from 5-8 members, and 5.4 percent of the mothers' families had more than 8 members. The average income/person/month of the respondents was 194,111 VN$ (approximate 18 US dollars). All of the respondents' families used city tap water, however, more than half of their families had hygienic toilets, and the rest used temporary and unhygienic latrines. Regarding sanitation condition, more than one-third (35 percent) of mothers' house were assessed as being good, more than half (55.7 percent) of them were assessed average, and a few of their houses were assessed as being bad (9.3 percent).

The average number of diarrhoeal episodes of the children under 5 years old in the previous six months was 1.3, in which the proportion of children who had one episode was highest (59.2 percent). Fifty percent of the children under 5 years old got

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two diarrhoea episodes, and importantly, thirteen percent of the children got from 3 to 5 diarrhoea episodes. The average duration of one diarrhoeal episode was 3.1 days.

Regarding the mothers' psychosocial factors, the study results showed that slightly more than thirty percent (30.5 percent) of the mothers perceived a moderate level of severity of childhood diarrhoea, and twenty percent of them perceived a low level of severity. Low proportions of mothers perceived the effects: "child's digested organism become weaker" and "diarrhoea may lead to a child's death", and there also was five percent of mothers who perceived "diarrhoea had no effect on a child's health".

In terms of the mothers' perceived barriers to administering appropriate diarrhoeal treatment, two-third of the respondents knew of ORS. Half of them perceived a moderate level of barriers to ORS use and 12.3 percent of them perceived a high level of barriers. However, ORS still has many perceived barriers, of which the barriers of " Mother have to change ORS every day", and "The child disliked to drink ORS" were perceived by high proportions of mothers (58.2 percent and 62.4 percent).

Slightly more than forty percent of the mothers knew of homemade solutions. Among them, sixty percent perceived a moderate level and approximate fifteen percent of them perceived a high level of barriers to using the homemade solutions. The studied mothers also perceived many constraints in using the solutions. Of which, the barriers"Child disliked to drink homemade solutions", and "Mother had to change

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the solutions every day" were perceived by the highest proportions of the mothers (46.1 percent and 34 percent, respectively).

In relation to barriers to accessing the PHCS, the majority of the mothers perceived a moderate and high level of barriers (60.4 percent and 21.5 percent, respectively). Among all of the barriers, the barriers of "Long traveling time", "Long waiting time" and "Costly" were agreed on by the high proportion of the mothers (47.7percent, 47.7 percent and 36.5 percent, respectively).

Considering mothers' beliefs in causes of childhood diarrhoea, approximate three-fourth (72.2 percent) of the mothers had moderate amount and more than fifty percent (16.1 percent) of them had low amount of beliefs. Among all of the beliefs that the mothers were asked, a very high proportion of them perceived biomedical beliefs properly. However, from 62 percent (lowest) to 85.9 percent (highest) of the mothers had hamful misbeliefs, which were affected by culture such as: "Child had eaten the sour fruits then drank fresh water", "Child eat too much fat", "Child's belly was cooled", "Mother eats inappropriate foods during breastfeeding time", "Child was fed with an unfamiliar milk formula ", and "Child is in time of teething, walking, etc.".

Regarding the mothers' knowledge about appropriate diarrhoea treatment, the proper knowledge related to ORS, SSS, homemade solutions use and supplementary foods intake during diarhoea episode were the ones they should knew. However, there was only around half of them who knew of these these treatments, and approximate half of them knew how to use them properly. Generally, the studied result revealed

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that approximate thirty percent of them (26.9 percent) had a low level and more than half had a moderate level of knowledge in the correct use of diarrhoeal treatment. For example, for the ORS mix, there was approximate seventy-five percent (75.9 percent) of them prepared it properly. For the homemade solutions, more than forty percent of the users used inappropriate antidiarrhoeal solutions. The mothers' knowledge about SSS was worse than that of the ORS use: The proportions of SSS users who did not know or had incorrect mixes were much higher than those of the ORS users. It was also noted that two-third of the mothers thought that the watery stool condition of a child should be stopped immediately by any drugs or remedy. In relation to foods intake, noticeably, more than one-fourth of them had misperceptions, such as: more than half (56.6 percent) of them said that fat should be restricted, and approximate thirty percent (29 percent) of them stated that nutrient should be decreased or restricted and more than one-fourth of them (27.2%) stated that food should be decreased or restricted during the duration of the childhood diarrhoeal episode. The majority of the mothers correctly perceived symptom of diarrhoea. However, there still was seventeen percent (17.3 percent) of them had a low level of the perceptions.

Concerning the mothers' choices of diarrhoeal treatment, the study results demonstrated that approximate thirty percent (27.8 percent) of mothers used only self-treatment at home. Approximate three-fourths of them (72.2 percent) asked for help from health personnel, of which, more than fifteen percent (17.3 percent) of them carried their children to the health personnel without any prior self-treatment. More than half of them had prior self-treatment (54.9 percent).

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In terms of diarrhoeal treatment methods, more than half (54.5 percent) of the mothers chose appropriate methods, of which one-fifth (21.3 percent) of them used three kinds of remedies: medicines, herbs, and a kind of rehydration solution. More than fifteen percent (15.9 percent) of them asked for help from private health personnel without any prior self-treatment at home.

The remainder (45.5 percent) chose less appropriate methods of diarrhoeal treatment. Among those, one-third (32.9 percent) of them used only Western medicine, more than five percent (5.7 percent) of them used herbs or a popular traditional treatment. Consaidering the reasons of mothers' choices, aproximate half of them stated that they trusted their decision. Among those, the proportion of mothers in the appropriate methods group was approximate double the proportion of mothers in the less appropriate methods group. Forty percent of mothers said that their choices were the most convenience ones, of which, the proportions between the two groups were approximate equal. Besides those two main reasons, they also presented some other reasons but the proportion of those reasons were very few and diverse.

Concerning the time before starting a diarrhoeal treatment, a very high proportion (92.8 percent) of the respondents who administered self-treatment for their children under 5 years old at home started their self-treatment in within 24 hours. Among those, the proportion of mothers in the less appropriate methods group was a little higher than the proportion of mothers in the appropriate methods group. The average time before starting self-treatment was equal between the two groups (one day). In the cases of mothers who asked for help from health personnel, the mothers in

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the appropriate methods group started their choices earlier than the mothers in the less appropriate methods group (the average days of asking for a help from a health personnel of mothers in the less appropriate methods group was 2.1 days while the one of mothers in the appropriate methods group was 1.6 days).

Chi-square analysis was used to test the relationship between the mothers' choices of diarrhoeal treatment and their psychosocial factors, as well as the relationship between the mothers' psychosocial factors and their age, job, education, and income. The results of the tests described that all of the mothers' psychosocial factors (mothers' perceived severity of childhood diarrhoea, mothers' perceived barriers of appropriate diarrhoeal treatment methods, mothers' beliefs in causes of childhood diarrhoea, mothers' knowledge about appropriate methods of diarrhoeal treatment, mothers' perceived symptom of childhood diarrhoea) had statistically significant associations with mothers'choices of diarrhoeal treatment. However, the test results related to the relationship between the mothers'psychosocial factors and their age, job, education, and income showed that the mothers' education only had a statistically significant association with the mothers' perceived severity of childhood diarrhoea, the mothers' beliefs in causes of childhood diarrhoea and the mothers' knowledge about appropriate methods of childhood diarrhoeal treatment. The mothers' ages, jobs and incomes had no significant association with mothers' psychosocial factors.

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5.2 DISCUSSION and CONCLUSION

It can be said that the majority of the study hypotheses were accepted in this study. From these results, it can be stated that mothers' choices of childhood diarrhoea treatment were affected by the psycho-social factors and the mothers' education affected to the mothers' psycho-social status. These findings are useful for the Control of Diarrhoeal Disease' s education programs.

The two major psychosocial factors in the Health Belief Model which directly affect the out come of a person were : Perceived threat of the illness and perceived benefit minus perceived barriers in taking an action (treatment). To compare the results of this study with the framework and the arguments of the HBM, it is recognized that most of the study accepted hypotheses which are compatible with the arguments of the HBM, and the study results were also compatible with the majority of the previous studied results that were referenced in Chapter 2 (Literature review).

Moreover, mentioning the mothers' perceived severity of childhood diarrhoea. The results of this study showed that "mothers who had higher perceived severity of childhood diarrhoea were more likely to choose the appropriate diarrhoeal treatment". However, through the results, it was recognized that more than half of the respondents perceived a moderate level of severity of childhood diarrhoea, and they also assessed childhood diarrhoea disease is an moderately dangerous one. The results explained one of the reasons why mothers chose less appropriate diarrhoeal treatment methods. Moreover, although the study was carried out in a special area of a small slum of a big city with a small sample, the result of the first hypothesis may be a consideration for

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responsible health officers when this status was compared with the high mortality and morbidity rate of diarrhoea in Vietnam some decades ago.

For the barriers to homemade solutions, the HBM also said that perceived barriers in taking a treatment is also a psychological factor which directly affects a person's behaviour. The lower the perceived barriers the more likely to produce the out come. The results of the studied second hypothesis were also compatible with the HBM, and the previous study results, as well. Moreover, the results of this study revealed that the proportion of mothers who used ORS solution was much higher than the proportion that was reported in a document by UNICEF Vietnam [30]. However, ORS solution still has some important disadvantages in use. For example, its bad taste and smell, the misunderstanding of mothers about its efficacy, and an ORS solution, once already mixed, must be used in a short period of time.

The homemade solutions also had some important barriers to their use, such as "Time spent for preparing", "Costly", and some of the homemade solutions have no rehydration effect.

Mentioning the use of salt sugar solution, it was known that the CDD program in Vietnam has ceased encouraging mothers to use SSS, because its formula is difficult to remember, which causes their incorrect mixes (the majority of mothers were confused about the proportion of salt and sugar in mixing) and led to some adverse effects [5].

Through the above discussions, one should think about the questions: "whether the mentioned decision of the CDD program needs to be reviewed ?". Based

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on the study data and the recent social-economic context of Vietnam, and to comparing the three kinds of solutions: ORS, homemade solutions and SSS, it could be seen that a salt-sugar solution has the lowest cost; sugar and salt is available in every Vietnamese kitchen; the taste and smell of SSS is more suitable to the children; a salt-sugar solution could be mixed in suitable amounts. Thus, it is thought that the barrier of SSS being a complicated mixed formula could be overcome.

Likewise, the results of testing the hypothesis mothers' choices of childhood diarrhoeal treatment and their perceived barriers to accessing the PHCS also showed a statistical significant association. Concerning this issue, it was seen that although the location of the PHCSs are not far from Ward 14's resident's houses and the transportation in Ho Chi Minh city is good, quite high proportion of the mothers still perceived the barriers of "Long traveling time", "Long waiting time", and "Costly" (approximately fifty percent). To combine these barriers with the reasons for the mothers' choices of diarrhoeal treatment, such as they thought that their choices were the most convenient choices, it could be seen that the barriers to the PHCS could lead to their behaviour of "Buy some modern drugs from the nearest store" or "Go to the private health care services". Therefore, the responsible officers of PHCS should consider the above mentioned barriers to PHCS.

In terms of mothers' beliefs in causes of childhood diarrhoea, the third study hypothesis was also be accepted. From this, it could be said that "mothers who had correct belief in causes of childhood diarrhoea were more likely to chose the appropriate diarrhoeal treatment compared to those who had incorrect beliefs in causes of such disease". However, the study results also showed that a high proportion

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of the respondents were still having misbeliefs in the majority of traditional causes of childhood diarrhoea, and all these misbeliefs were harmful. However, a high proportion of mothers had correct beliefs related to biomedical causes of the disease.

The results of this study also showed that "Mothers who had high knowledge about appropriate diarrhoeal treatment were more likely to chose the appropriate diarrhoeal treatment compared to those who had lower levels of such knowledge". This statement correctponds with the results of the majority of the studies that were referenced for this study. Moreover, concerning the proportion of appropriate methods of diarrhoeal treatment, it was recognized that the proportion of mothers using ORS was much higher than the proportion that the UNICEF Vietnam showed in their document (5 percent compared to 63.8 percent) [30]. However, through the summary section, it is known that up to now there is a considerable lack of the mothers' knowledge related to ORS, SSS mix, the efficacy of rehydration solutions, antidiarrhoeal drugs use, as well as the knowledge related to quantity of food, fat and nutrient intake during a child's diarrhoeal episode. Among these problems, antidarrhoeal drugs use and the decreasing and restricting the quantity of fat giving to a child during his/her diarrhoeal episodes were the most serious problems. Combining the results of this study, results of groups discussion among interviewers, and checking the diarrhoeal treatment drugs that the mothers used to treat their children under 5 years old with diarrhoea, it is known that almost one-third of the mothers used antidiarrhoeal drugs that were bought from the pharmacies or private health personnel in the area. So, the problem was not only related to mothers' knowledge about appropriate diarrhoea treatment, but the drugs sellers and private health

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personnel, also. In the recent context of a competitive market for drugs and health care services, it is thought that this problem is an important problem that the city CDD program should take into consideration. For the misbeliefs in decreasing or restricting fat given to the child during his/her diarrhoea episode, this problem is affected by Vietnam culture from generation to generation. Many mothers thought that fat could cause childhood diarrhoea, so it must be restricted or decreased. This misbelief is completely contrary to the biomedical concept. Thus, the city CDD program should consider the problem more.

The fifth hypothesis was also accepted. The result of hypothesis testing proved that "mothers who perceived a high numbers of the symptoms of childhood diarrhoea were more likely to chose the appropriate diarrhoeal treatment compared to those who perceived lower numbers of symptoms". This conclusion was also in agreement with the previous studies results that were referenced for this study. However, when comparing the proportion of the mothers who perceived a high number of symptoms of childhood diarrhoea with the other mothers' perceptions in this study, it could be stated that the mothers' perceived symptoms of childhood diarrrhoea was better, because they had experience from the diarrhoeal episodes of their children.

The study results showed an insignificant relationship between the mothers 'ages, jobs, incomes and mothers'psychosocial factors. Therefore the related hypotheses were rejected. As mentioned by Mitchell G. Weiss [21] in the literature review chapter, these relationships were also in agreement with the majority of the research findings which were done during the 1980' decade. Besides, in the context of this study, the non-significant results could be obtained due to the fact that most of the

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mothers are in the reproductive age group, they live in a small area with almost the same living condition, they have the same chance for accessing the health education and communication programs and health services. Therefore there were not much difference in psychosocial perceptions among the different age groups. Consequently, the mothers' age did not affect their psychosocial factors.

Likewise, in terms of the general types of job, the mothers'jobs may seem different among the respondents, but in terms of qualifications of the jobs, and the condition of accessing the health care educational and communicational programs, there was not much difference among housewife/no job, handicraft makers and workers in the private sector. Thus, the mothers'jobs did not affect their psychosocial factors. However, the study data showed that there was a difference between the above mothers' mentioned jobs and the mothers who work for the government sector, because the majority of the mothers work for this sector had higher educational level, and therefore chose the appropriate diarrhoeal treatment. Besides, the governmental workers also had more chance than the others to access the official health educational programs [30]. However, very few of the studied respondents worked in this sector, so there could not be a statistically significant relationship between mothers' jobs and their psychosocial factors. It is thought that further controlled research would explain clearer and more significant relationships concerning this issue.

Similarly, the mothers' incomes also had no statistically significant association with their psychosocial factors. This status was also in agreement with Mitchell G. Weiss' assessment [21], that the insignificance could be the result of the small varriance in income amount, there was not much difference in income for the majority

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of mothers in both groups, because most of them were among the poor and poorest people, in comparison to the common income per capita for all of Vietnam (Income per capita of Vietnamese in 1993 was 200 USD [30], whilst the income per capita of the mothers who belong to the low income group in the study was only from 48 - 164 USD - 1996). This situation in addition to the fact that childhood diarrhoeal disease is not a disease which requires much money for a treatment led to the insignificant association between the mothers' family incomes and their psychosocial factors, which is a reasonable causation in this study.

Mentioning the mothers' education, there was a statistically significant association between mothers' education and their perceived severity of childhood diarrhoea. The same result was found in some previous studies. Through the proportion distribution of chi-square analysis, it was recognized that the proportion difference began with the over elementary group (from 6 form) and the positive trend included the group with more than an elementary education. So, mothers who were illiterate or had an elementary education (lower than the average attained school years of the respondents - 5.5 years) were the ones who need to be considered for help in improving their perceived severity of childhood diarrhoea.

Likewise, mothers' educational level also had a statistically significant association with their beliefs in causes of childhood diarrhoea. This status was reasonable, because many causes of childhood diarrhoea require a certain amount of education to distinguish and understand between the suitable beliefs and the misbeliefs, therefore it is mothers with higher educational levels who would

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understand the causes of childhood diarrhoea clearer. The data of this study offered proof for this popular explanation.

Regarding the association between mothers' knowledge about appropriate diarrhoeal treatment and their education, it was also a statistically significant association. The status is compatible with the common situation in Vietnam, as well as with some research results which were referenced in this study. It is thought that for correctly perceiving the pathological causes of childhood diarrhoea some education basics are necessary. Based on those basics, it would be easier for mothers to have appropriate knowledge about childhood diarrhoeal treatment.

There was an insignificant association between mothers'perceived barriers to PHCS and their education, as well as between mothers' perceived symptoms of childhood diarrhoea and their education. For the first issue, the situation was reasonable, because barriers of PHCS were the mothers'assessement about the real status of the PHCS, which would come from the mothers' observations, feeling, and experience. So that, the mothers' perceived barriers to PHCS was not affected by their educational level. Similarly, mothers' perceived symptoms of diarrhoea was learned through the observations of their children with diarrhoea. Thus, the insignificant association between the two issues were also reasonable.

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5.3 RECOMMENDATIONS

A- To improve the activities of the City CDD program

With purpose of reducing the childhood diarrhoeal episode and reducing the children death rate caused by diarrhoea in the slum areas of Ho Chi Minh City Vietnam; based on the findings discussed in section 5.2, the following recommendations are suggested :

1. To continue to develop effective prevention and control of childhood diarrhoeal disease through the health communication and education programs. These programs should be focused on the low educational and poor people, and aim at helping people to improve their knowledge, perceptions, beliefs and practices related to the following factors:

1.1 To help the people, especially the mothers who have children or belong to reproductive age, to be aware of the effects, severity, causes of childhood diarrhoea, knowledge about appropriate methods of childhood diarrhoeal treatment and knowledge about childhood diarrhoea symptoms. Each of the above issues should be stressed by promoting following important items:

a) The severity of childhood diarrhoea should not only be concerned with the serious effects of the disease at the onset of episode, but also with the development of the children' s physical and mental health in long term, also.

b) For the causes of childhood diarrhoea, the preventive programs should stress the mothers'misbeliefs about traditional causes of childhood diarrhoea

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and help them to change their misbeliefs, and change their unhygienic eating, drinking and living behaviour, also.

c) In relation to knowledge about appropriate methods of childhood diarrhoeal treatment, the programs should focus on: the efficacy, the correct mix of ORS, SSS and homemade solutions; the suitable quantity, kinds and times of food, fat and nutrient given to a child during a diarrhoeal episode, as well as after the episode; the disadvantages of the antidiarrhoeal drugs use.

1.2 In order to achieve the above objectives, the activities of the CDD health education communication programs should use lively, attractive and suitable methods of education which apply to low education adults. For example, methods including participatory education, focus group discussion, direct observation and practice, learning through games, etc.

2. Up to now, the Vietnam CDD program still receives its ORS product from abroad, through the UNICEF Vietnam'aid [5]. The results of this study also showed some barriers to ORS use related to its taste and smell. Therefore, it is thought that the Ministry of Health of Vietnam should allow local pharmaceutical factories to produce a local ORS. It may more suitable for the Vietnamese children's taste and smell, and for the ORS supply, as well. Besides this suggestion, people should be encouraged to continue using salt sugar solution because of its low cost and available ingredients.

3- Through the researcher's observation and discussion, it was known that the City CDD program had an action plan that requested every commune health care station to set up a small place in the station where it showed some simple ORS mixing

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materials and practical guides (this place is named " Goc ORS" # "A corner of ORS "), but this plan no longer exists whilst the results of this study showed low rate of ORS use and low rate of ORS correct mix. Thus, it is suggested that the "Goc ORS" should be re-established.

4- The average diarrhoeal episode/year of children under 5 years old in the study was rather higher than that of children under 5 years old for the whole country (1.3 episodes/6 months compared with 2.2 / 2 episodes/years). This status could be affected by numerous factors, but the lack of hygienic toilets in this slum may be one important factor that is related to the diarrhoeal disease transmission factor for this area. The study data showed that approximately half of the respondents' houses have an unhygienic latrine, or they don't have any kind of latrine. Therefore, they have to use the temporary public latrines which are also unhygienic. From this situation, it is suggested that the City government should take into consideration to assist, facilitate the community government and the community residents to solve the lack of hygienic toilet problem of this area.

5- Although the Vietnam government promulgated a compulsory education law, as well as providing "an elementary education for all", and "in service complementary for all" programs since 1975, up to now the average year of school attainments of the studied mothers are much lower than those of all the women at reproductive age in Vietnam. The status of illiteracy and low education of mothers not only affected to their bahaviour regarding childhood diarrhoeal disease but also their behaviour related to many other practices. Thus, it is suggested that the city

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government should review and improve the two above mentioned education programs in the slum areas.

B. Recommendation for further studies

- This study was carried out in a small area and sample size, so that its result had limited generalizability and representativeness. Therefore, it is suggested to study the same objectives to this study with the larger study site, sample size survey combined with in-depth studies.

- "Knowledge, attitude, practice and prescribing pattern of oral rehydration therapy among private practitioners and drugs sellers in Vietnam" should be studied.

- "The utilization of public health care services at commune level in Vietnam" also should be studied.

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Appendix A

Q.No.....

QUESTIONNAIRE

Interview date: First time at.....AM, PM...../...../ 1996.
Second time at.....AM, PM...../...../ 1996.
Total time of the interview:.....minutes.
Name of interviewer:.....

Name of mother.....
Address:.....Cell.....Area..... Ward..... District 8 .
Street....., Ho Chi Minh City

1. How old are you ? .....years old (Date of birth 19.....)
2. What was the class that you enroled ? Class.....
3. What is your major job?
   1. ☐ Vender. 2. ☐ Handicraft maker 3. ☐ Private service.
   4. ☐ Governmental service. 5. ☐ Housewife/No job.
   6. ☐ Others, specify.....
4. Average family income / month:.....VN$
5. Are there how many persons in your family.....persons.
6. How many children under five years of age do you have ? : .....Childs
   Child 1-Name:.....,.....months of old (...../19....). ☐ Male, ☐ Female
   Child 2-Name....., ...months of old (...../19....). ☐ Male, ☐ Female
7. Average times of diarrhoeal episodes occurring for each of above childs in the last 6 months

Child 1: 0. ☐ No 1. ☐ One. 2. ☐ Two. 3. ☐ Three. 4. ☐ four. 5. ☐ Over four
Child 2: 0. ☐ No 1. ☐ One. 2. ☐ Two. 3. ☐ Three. 4. ☐ four. 5. ☐ Over four.

8. Usually how long the latest episode of diarrhoea lasted on your youngest children ?
   1. ☐ within 24 hours. 2. ☐ 2 days. 3. ☐ 3 days 4. ☐ 4 days.
   5. ☐ Over 4 days.(Specify the number of day:.....)
9. Do you think that whether the following items are symptoms of childhood diarrhoeal disease or not ? (Multiple answers are allowed).

	Agree	Disagree	Uncertain
1. Passed watery stool over 3 times/day.	☐	☐	☐
2. Passed watery stool over 3 times/day and he/she refused to eat and suck	☐	☐	☐
3. Passed watery stool over 3 times/day with fever and belly pain	☐	☐	☐
4. Passed watery stool over 3 times/day + vommiting	☐	☐	☐
5. Passed watery stool over 3 times/day with eyes sunken, parched lips and thirsty	☐	☐	☐
6. Passed watery stool over 3 times/day with slow activity and indisposed	☐	☐	☐
7. Passed watery stool over 3 times/day with mucusand blood	☐	☐	☐
8. Others, specify.....			

10. In your opinion, among the above symptoms what are themost severe symptoms ?
    Specify (follows the above ordinal number).....

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11. How long after your children had watery stools you started to treat them ?

	a. Home care	b. Seeking the health care services
1. Within 24 hours.	☐	☐
2. Within 2 - 3 days.	☐	☐
3. Within 4 - 5 days	☐	☐
4. Later than 5 days.	☐	☐

5. Others, specify.....

12. How did you treat the lastest diarrhoeal episode of your child ?

.....

Please tell the name of medicine or describe its form.....

.....

Please tell the reasons of choosing this methoed.....

.....

13. In your opinion, whether we should treat the child with diarrhoea by any drug in order to stopping his / her watery stool ?

1. Should do as soon as possible ☐, because:.....

....

2. The watery stool should be stopped slowly ☐, because:.....

.....

3. Should not treat them by any antidiarrhoea drug ☐, because:.....

....

4. Others, specify.....

....

What are your opinions about the following causes of diarrhoea ?

	Agree	Disagree	Uncertain
14. Child has ate sour fruits than drank cold water	☐	☐	☐
15. Eat stale or contaminated foods	☐	☐	☐
16. Child eats food that flies or insect swarmed	☐	☐	☐
17. Child eats vegetable which are unclean washed	☐	☐	☐
18. Child eats much of lipid	☐	☐	☐
19. Child does not drinks boiled water	☐	☐	☐
20. Child hands foods with dirty hands	☐	☐	☐
21. Child has played under sun light then drank much cold water	☐	☐	☐
22. Child's belly cooled	☐	☐	☐
23. Child is in time of teething, crawl, starts to walk	☐	☐	☐
24. Mother eats inappropriate foods during breast feeding	☐	☐	☐
25. Mother did not wash nipple before breastfeed	☐	☐	☐
26. Mother did not wash their hands before preparing child's foods	☐	☐	☐
27. Child was fed by contaminated bottle and nipple	☐	☐	☐
28. Child was fed with a strange formula milk	☐	☐	☐

29.Othres, specify.....

.....

30. In your opinion, what were the causes of the latest diarrhoeal episode of your child ?
Specify (the ordinal number of the above issues).....

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31. Do ou know ORS solution?

1. Yes ☐
2. No ☐ (If no, please skip to question 42)

32. How much water do you need for mixing one packet of ORS ?

Specify.....

33. Do you know where you can get ORS? (Multiple answers are allowed):

1. Drug stores. ☐ 2. Health care centers ☐
3. Hospitals. ☐ 4. Private physicians ☐
5. Others, specify:.....

Please choose one among three options: agree, disagree, uncertain, about barriers of ORS use when your children drinks this solution.

	Agree	Disagree	Uncertain
34. It is difficult to ask for ORS	☐	☐	☐
35. It is difficult to buy ORS	☐	☐	☐
36. Children do not like the taste of ORS	☐	☐	☐
37. Child is often naused, vomited when he/she drinks ORS	☐	☐	☐
38. ORS solution needs to be change after every 24 hrs	☐	☐	☐
39. Mother does not like to give ORS for their children	☐	☐	☐
40. ORS effects slowly in stopping watery stool	☐	☐	☐

41. Other, specify.....

42. Do you know how to make a home made sugar-salt solution ?

1. Yes ☐
2. No ☐

(If yes, continue question 43; if no, skip to question 48)

43. Please describe the way to make its

Please specify.....

44. Except ORS and SSS, do you know how to make some other homemade solutions ?

1. Yes ☐ 2. No ☐

(If yes, continue question 45; if no, skip to question 46)

45. Please describe its recipe

Specify.....

46. In your opinion, what are the efficacy of ORS or others equivalent homemade solutions?

Specify.....

Please choose one among three followed options: agree, disagree, uncertain, about barriers of making, drinking of sugar-salt,r ice water, or other home make solutions.

	Agree	Disagree	Uncertain
47. Spent cooking time	☐	☐	☐
48. Complication of making	☐	☐	☐
49. Child does not like to drink	☐	☐	☐
50. Mother does not like to give these solutions for their children	☐	☐	☐
	Agree	**Disagree**	**Uncertain**
51. It is not good for a child with diarrhoea when he/she drinks a lot of liquids	☐	☐	☐
52. Costly	☐	☐	☐

53. Others, specify.....

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54. Please tell us did you increase, decrease, forbear or maintain as daily quantity of food, milk that you gave for your child during diarrhoeal episode ?

1. Increase ☐
2. Decrease ☐
3.Restrict ☐
4. Maintain as daily quantity ☐
5. Do not know ☐
6. Others, specify.....

55. Please tell us did you increase, decrease, forbear or maintain as daily quantity of fat, oil that you gave for your child during diarrhoeal episode ?

1. Increase ☐
2. Decrease ☐
3. Restrict ☐
4. Maintain as daily quantity ☐
5. Do not know ☐
6. Others, specify.....

56. Please tell us did you increase, decrease, forbear or maintain as daily quantity nutrient foods (e.g. meat, fish, egg, vegetable, bean...) that you gave for your child during diarrhoeal episode?

1. Increase ☐
2. Decrease ☐
3. Restrict ☐
4. Maintain as daily quantity ☐
5. Do not know ☐
6. Others, specify.....

57. In your opinion, childhood diarrhoea is a mild, moderate or very dangerous disease?

1. Mild ☐ 2. Moderate dangerous ☐ 3. Very dangerous ☐

Please choose one among three followed options: agree, disagree or uncertain, for these opinions:

	Agree	Disagree	Uncertain
58. The child's health has any effect with diarrhoea	☐	☐	☐
59. Diarrhoea causes the child decreased health, watery loss	☐	☐	☐
60. Diarrhoea causes the child's digested organism to be weak	☐	☐	☐

	Agree	Disagree	Uncertain
61. Diarrhoea may cause malnutrition that leads to a retardatory development of his/her physical and mental health	☐	☐	☐
62. Diarrhoea may cause a death	☐	☐	☐

63. Others, specify.....

Please choose one among three options: agree, disagree, uncertain, about barriers of public health care service when you carry your children to there for diarrhoeal treatment:

	Agree	Disagree	Uncertain
64. Spent traveling time	☐	☐	☐
65. Spent waiting time	☐	☐	☐
66. Mothers'job could troubled	☐	☐	☐
67. Unsatisfied with the services of the health workers	☐	☐	☐
68. The Health station is lack of medical tools	☐	☐	☐
69. Doctors and nurses' ability of health station are limited	☐	☐	☐
70. Costly	☐	☐	☐
71. Mother dislike giving Western medicine for their child	☐	☐	☐

72. Others, specify.....

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73 Which kind of toilets you have in your family ?

1. Pour flushed toilet ☐ 2. Latrine above stagnant pond ☐
3. Use public toilet. ☐ 4. Others, specify.....

74. Which kind of water do you use ?

1. Tap water ☐ 2. Well water ☐
3. Others, specify.....

75. Do you give boiled drinking water for your child ?

1. Regular ☐
2. Sometimes ☐ - when ?.....
3. Rarely ☐ - when ?.....
4. Others, specify.....

-Interviewer's observation about sanitation status of household:

76. Rubbish surround and in the house:

1. Seen. ☐ 2. Not seen ☐

77. Flies in the house :

1. Seen ☐ 2. Not seen ☐

78. Interviewer's assessment about household's sanitation status:

1. Good ☐ 2. Average ☐ 3. Bad ☐

Other records of interviewer .....
.....
.....

Interviewer's signature,

Researcher,

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Appendix B: *Research site description*

Ho Chi Minh City is a large city in the South of Vietnam. Its population is around 5 million, who are living in eighteen districts (12 suburb districts and 6 urban districts). Among the central urban districts, there are about dozen slums with approximate 0.5 million habitants who live in a poor condition. It was known that they are at high risk for childhood diarrhoea and many other health problems. Especially, diarrhoeal episode among children under five years of age is also higher than other City's urban areas.

Ward[1] 14 is an urban poorest Ward among 16 Wards of District 8. It locates at Southeast of the Ho Chi Minh City Center and is surrounded 4 streets: Binh Dong, Nguyen Duy, Ngo si Lien and Hoang si Khai street. The four streets follow along four severe polluted rivers: Kinh Doi, Kenh Ben Nghe, Kenh Ngang No 1 and Kenh Ngang No 2. Its land shape looks like a small rectangle island. Within its area of 0.5 Km2, there are approximately 14,454 habitants, living in 2,258 households that located in 52 cells[2] of 5 areas[3], where there are approximately 1,400 mothers who have 1,600 children under five years old.

Production in the zone is almost small, with four factories: Wheat flour factory, Duck feather factory, Battery factory, and a Wheat flour store which locate along Binh Dong street and Kenh Doi river. Thus, a side of the Ward is a close port. With this characteristic, over 80% residents are porters, laborers; the remainders are handicraft makers, venders or sellers with low education level, and few of governmental workers...

Health facilities in the area include one health care station (HCS) with a small pharmacy that sell some common drugs or supply some free of charge drugs, services, such as ORS, condom, vaccine.. for the residents. The Ward HCS is staffed by 1 medical doctor and 3 nurses, and locates at middle of a side of the ward, so it is not difficult for a resident in accessing HCS, it take about 15 minutes walk to a farest resident. Besides, contributing for public health care services, a Red Cross team and 2 health care volunteers also practice some first aids or simple health care activities at each area. Together with the public health care services, there are two private doctors, two dentists, three nurses (one is a nurse of the HCS, she practices out of office hours), one acupuncture healer, three pharmacies and some small Eastern medicine store practice legally in the Ward [18].

---

[1] Ward is an administrative unit. Its population is around 10,000 - 20,000 persons.

[2] Each cell has from 40 - 50 households.

[3] A ward is divided to 5 - 10 areas.

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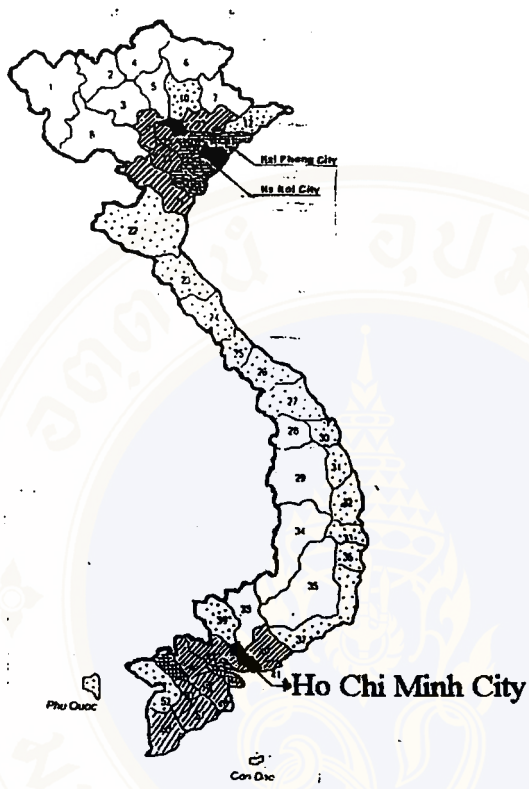
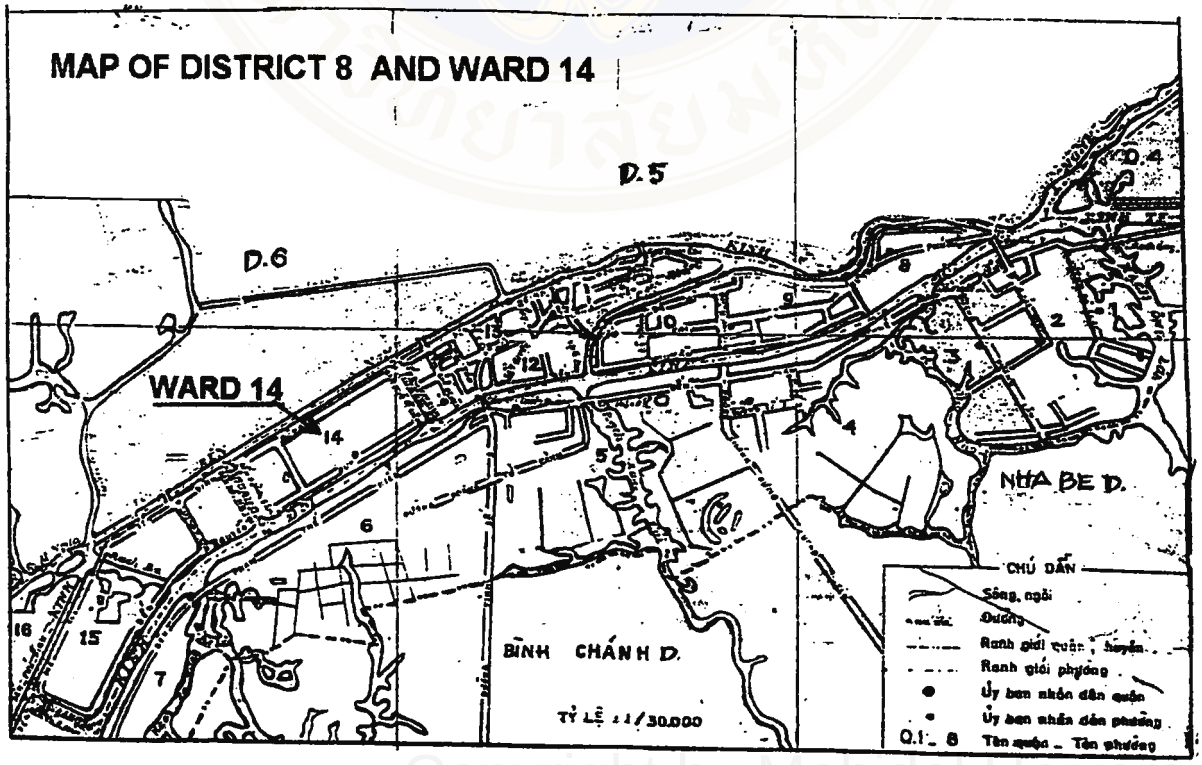
Map of the study site

MAP OF VIETNAM



MAP OF DISTRICT 8 AND WARD 14



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Appendix D : *Formula and calculation of sample size*

- *Formular:*

$$n = \frac{Z^2 \cdot p \cdot (1-p)}{d^2}$$

- **n** : Estimated sample size.
- **Z** : The standard deviation. With 95% confidence, **Z = 1.96.**
- **p** : Estimated proportion of appropriate treatment methods, **p = 30%**
- **d** : Degree of accuracy, set **d = 0.05**

- *Calculation :*

$$n = \frac{(1.96)^2 \cdot (.30) \cdot (.70)}{(.05)^2} = \underline{322}$$

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Appendic E Childhood diarrhoeal self-treatment guideline

CÁCH DÙNG DUNG DỊCH ORESOL — ĐỂ TRÁNH MẮC BỆNH TIÊU CHẢY — [illegible] PASTEUR [illegible] KHU VỰC ĐÔNG NAM

CÁCH PHA DUNG DỊCH ORESOL:

Phải lường đúng một lít nước chín.
Phải pha trọn cả gói ORS, không chia nhỏ.
Phải khuấy tan hết bột ORS.

CÁCH UỐNG DUNG DỊCH ORESOL:

TUỔI	Lượng ORESOL uống sau mỗi lần đi tiêu	Lượng ORESOL uống tối đa (pha sẵn) / 24 giờ
Dưới 24 tháng	50 - 100 ml	500ml /24 giờ
2 đến 10 tuổi	100 - 300 ml	1000ml/24giờ
Trên 10 tuổi	Theo nhu cầu	2000ml/24 giờ

* Nếu uống dung dịch Oresol bị ói :
Thường là do uống quá nhanh, cần cho uống từ từ.

* Nếu uống đủ lượng Oresol sau mỗi lần tiêu lỏng:
Cho thêm thức uống khác (nước cháo, nước trái cây...)

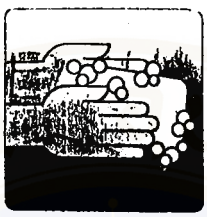
* Nếu trẻ chưa chịu uống Oresol:
Cho thức uống khác và lần tiêu chảy kế tiếp cho uống Oresol.

* Nếu quá 24 giờ Oresol đã pha uống còn dư:
Đổ bỏ Oresol đó, pha dung dịch Oresol mới.

* Nếu uống hết lượng Oresol tối đa sớm hơn 24 giờ:
Tiếp tục cho uống thêm Oresol và đưa trẻ đến khám bệnh.

PHẢI : * ĂN CHÍN, UỐNG CHÍN.
*** RỬA TAY:**

- Trước khi ăn hoặc cho trẻ ăn
- Sau khi rửa và đổ bô cho trẻ
- Sau khi đi đại tiện



LIFEBUOY BẢO VỆ GIA ĐÌNH KHỎI VI TRÙNG !
Vì có chứa chất [redacted] Lifebuoy diệt trùng hiệu quả hơn các loại xà phòng thường.

CHỮA BỆNH TIÊU CHẢY TẠI NHÀ

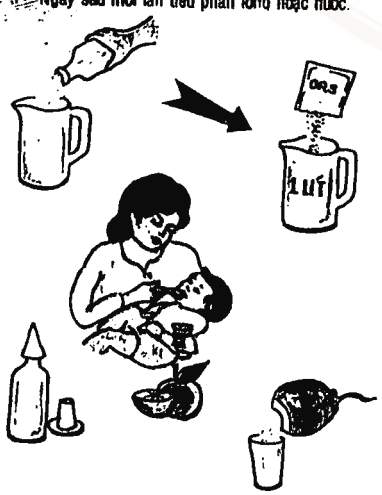
NHỮNG ĐIỀU CẦN LÀM KHI TRẺ BỊ TIÊU CHẢY

1. **TRẺ CẦN UỐNG NHIỀU NƯỚC HƠN THƯỜNG NGÀY**
   Để ngừa mất nước do tiêu chảy.
2. **TRẺ CẦN ĂN - BÚ ĐẦY ĐỦ**
   Để ngừa yếu sức, suy dinh dưỡng.
3. **TRẺ PHẢI ĐƯỢC KHÁM NGAY KHI CẦN**
   Để được chữa bệnh kịp thời.

DUNG DỊCH ORESOL LÀ MỘT LOẠI THUỐC — ĐÃ ĐƯỢC KIỂM NGHIỆM TẠI VIỆN PASTEUR — KHÔNG DÙNG THUỐC NẾU CHƯA CÓ SỰ CHỈ DẪN
DUNG ORESOL PHẢI TUÂN THEO SỰ CHỈ DẪN — CỦA Y BÁC SĨ THĂM KHÁM TRẺ.

1 TRẺ CẦN UỐNG NHIỀU NƯỚC HƠN THƯỜNG NGÀY

Cho trẻ uống dung dịch Oresol
Ngay sau mỗi lần tiêu phân lỏng hoặc nước.



Cho trẻ uống thêm :
- Nước chín
- Nước dừa tươi
- Nước cam vắt

Thêm chút muối. Không thêm đường.

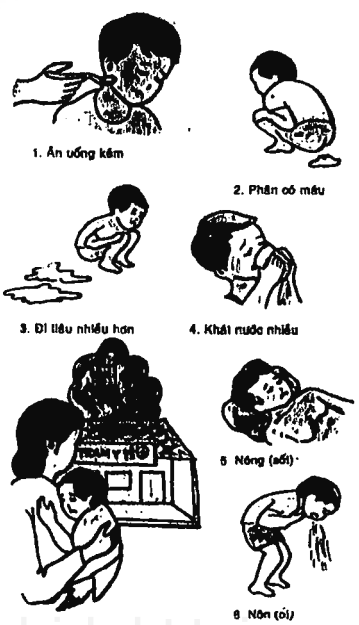
2 TRẺ CẦN ĂN - BÚ ĐẦY ĐỦ

Cho trẻ ăn - bú thường xuyên.
Cố gắng cho ăn-bú nhiều bữa càng tốt.

Bú sữa mẹ là tốt nhất.
Thêm vào thức ăn Dầu ăn, Trứng, Rau, Đậu, Thịt cá...
- Nấu nhừ, tán nhuyễn.

3 TRẺ PHẢI ĐƯỢC KHÁM NGAY KHI CẦN

Đưa trẻ đến khám bệnh kịp thời
Khi trẻ không khá hoặc có dấu hiệu nguy hiểm:



Hoặc có dấu hiệu không tốt nào khác.

KHÔNG UỐNG CÁC LOẠI NƯỚC CÓ NHIỀU ĐƯỜNG — KHÔNG NÊN KIÊNG CỮ ĐẬU ĐỒ ĂN HOẶC MỠ, — KHÔNG DÙNG THUỐC CẦM TIÊU CHẢY, THUỐC CHỐNG NÔN (ÓI)
ĐỂ DÙNG CÓ THỂ GÂY TIÊU CHẢY THÊM — ĐỂ TRẺ CÓ SỨC MẠU LÀNH BỆNH. — NẾU DÙNG SẼ NGUY HIỂM, DỄ BỊ NGỘ ĐỘC

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