

Chapter 1

Introduction

Diarrhea disease is a major public health problem in developing countries. It is a communicable infected disease, which has a large number of cases and high morbidity rate. The epidemiological office the Ministry of Public Health reported that diarrhea disease in Thailand has a higher incidence rate than other communicable infected diseases (Department of Communicable Disease Control, 2000). In addition, when the epidemic pattern of diarrhea disease was studied over past 10 years, it was found that the number of cases was highest in 1999. This happened because of the drastic change in the economy and community (Vathanophas et al, 1986). A large number of people moved from the countryside to towns. As a result, the populations of the towns increased drastically and public facilities were insufficient. Water supplies were not enough to drink and use, sanitation was not good, rubbish and wastes increased, sewage and wastewater were not hygienically treated, resulting in the accumulation of germs and disease carriers (Churat, 1987; Satienchok, 1988; Satyawisis, 1990).

Epidemic patterns of diarrhea disease in Thailand had been studied by the Office of the Permanent Secretary for the public health in during 1995-1999 period. The results show that the incidence rate due to diarrhea for children was four times higher than that for adults. The Epidemiological Office also studied the incidence rate of diarrhea in 1999. It was observed that there were 981,072 cases of diarrhea disease, and the incidence rate for children was 7117.3 per 100,000 population. In 1999, there were 397 deaths from diarrhea. The disease can be found in every age group from January to December (The Office of the Permanent Secretary, 2000).

The epidemic pattern of diarrhea disease in Pattani Province, located in the south of Thailand, has been studied since 1995. The numbers of cases had increased over the 1995-1999 period. The incidence rates for each year from 1995 to 1999 were 1502.2, 1682.8, 1853.1, 1720.9, and 2783.7 per 100,000 population, respectively (Pattani Public Health Province Office Report, 1999). In 1999 the number of cases of diarrhea disease in children under 5 years old was 5,103 out of 17,265 per 100,000 population

(38.56 %). It was observed that although the number of people who had diarrhea increased drastically, the mortality rate decreased. This tendency is similar to that for rural areas (Pattani Public Health Province Office Report, 1999). However the incidence rate in Pattani Province was higher than the benchmark for the control of diarrhea disease set up by the Ministry of Public Health.

In developing National Public Health plan No.8 (1997-2001), a program for the control of diarrhea disease has been set up. The aim of this program is to decrease the incidence rate and mortality rate of diarrhea disease. The program states that the incidence rate of diarrhea disease in children under 5 years old should be less than 3,000 per 100,000 population, whereas that in other groups of age is less than 1,000 per 100,000 population (Ministry of Public Health, 1997).

From the above information it is of interest to investigate "why diarrhea disease occurs in Pattani Province every year" and "what factors affect on acute diarrhea disease in children age under 5 years in Pattani Province".

1.1 Objective

The main objective of this study is to investigate the risk factors related to acute diarrhea disease in children under 5 years old using mother and child carers in Pattani Province as subjects. A future objective is to develop a model to forecast the risk factors related to acute diarrhea disease in children under 5 years old.

1.2 Research Hypotheses

Socio-demographic factors, environmental factors, knowledge factors about diarrhea disease and behaviour factors for prevention of diarrhea disease are related to acute diarrhea disease in children aged under 5 years in Pattani Province.

1.3 Definition of terms

Diarrhea disease : excrement is fluid or water more than 3 times during 24 hours, or excrement is blood once a day.

Factors : components of activity in association with behaviour for prevention and treatment diarrhea disease. They can be measured by the percentage and the mean.

Risk factors : factors affecting diarrhea disease in children under 5 years old in Pattani Province caused by socio-demographic characteristics, environment, knowledge and behaviour of mother and child carer.

Socio-demographic factors : carers, age, sex, marital status, religion, occupation, income and education of carers.

Environmental factors : water, child play area, domestic animal, garbage disposal and defecation pattern.

Knowledge factors : causes of diarrhea disease, symptoms, prevention, treatment and danger sign.

Behaviour factors : personal hygiene, food and milk.

ORS : oral dehydration salt, consisting of water with salt and mineral salt.

Behaviour for prevention to the diarrhea disease : conduct for prevention of diarrhea disease of mother and child carer having children aged under 5 years.

Children aged under 5 years : age groups of children under 5 years staying in the village of Panarehk District in Patani Province.

Knowledge about diarrhea disease : ability to remember and can answer about text of knowledge with cause, symptoms, preventions, treatment and factors related to acute diarrhea disease by answering the questionnaire.

Experience about diarrhea disease : number of times when the children aged under 5 years had diarrhea sickness during 1 year (1 January - 31 December 1999)

Danger signs of diarrhea disease : the symptoms of the patient were heavy sickness with diarrhea disease including heavy defecation, heavy vomiting, heavy weakness and excrement of blood or the patient not eating and drinking.

1.4 Review of literature

The review of the literature is divided in two sections as follows:

1.4.1 Concept and Theory of Diarrhea Disease

Characteristics of diarrhea disease

Diarrhea is one of the communicable diseases, it can spread from a patient to another person by water and food. The symptoms observed in the patients start from a little sign to a more serious sign and patients have a risk of death in a short time. (Suknirun 1991).

Cause of diarrhea disease

Diarrhea disease can occur by:

1. Infection with bacteria including *Vibrio*, *Salmonella*, *Shigella* and *E.coli*,
2. Infection with a virus including *Rotavirus* and *Norwalk*.
3. Food poisoning from *Staphylococcus aureus*, *Streptococcus*, *Salmonella* and *Clostridium botulinum*.
4. Other infection including *Ameba* and *Helminthes*.

Seat of a diarrhea disease

Germ of cause of diarrhea disease has a seat in people, animal and environment.

Time period of disease occur

1. Virus infection : 1-2 days.
2. Bacterial infection : 2-7 days.
3. Other infection : 1 week or more.

Infection

Germ moves from feces of the patient to another person through food (Hasdee, et al, 1995).

Spread of diarrhea disease

Germ can be transferred from one person to another by touch (from mother to child), by insect or animals and by eating the germ of the diarrhea disease with food.

Alternatively, for people do not use the toilet, the germ can transfer from a patient to other people through the environment (from stools in the river)(Jintaganont P. 1994).

Time period of infection

The patient can transmit disease to another person every time there is germ in the excrement. The normal time that the germ can stay alive in the body of a person is around 1 week.

The swiftness and antibody of disease

Diarrhea disease can occur in every person and in every age group, especially in children aged under five years. In addition, diarrhea disease usually occurs with malnutrition in infants, or in infants brought up on condensed milk. Diarrhea disease usually occurs with inferior development among people with low income. Antibodies of diarrhea disease may occur after diarrhea sickness. But this antibody cannot last for long. The people who ever have sickness with diarrhea disease get sick again if they are infected with the disease.

Occurrence of diarrhea disease

When infected with the disease by eating, the germ gets into the body and stays in the stomach for a time. It doesn't grow up in there, due to an acid in the stomach. Then it goes into the small intestines, where it quickly grows because the small intestine has an alkali condition. Diseases occur from toxins in germ building. Toxin activates the membrane of the small intestines resulting in flowing of gush water and mineral salts out from the body to the intestines more than normal. Finally the result of this is diarrhea disease (Palank, 1991).

Symptom and sign show

The patient has excrement, which is fluid or water more than 3 times during 24 hours, or blood once a day. Moreover, the patients are thirsty, have dehydration, fever,

abdominal pain, vomiting and decrease of weight. For patients who have serious sickness with diarrhea, a deep eye socket, in flexibility of skin, fast respiration rate, slow down of pulse, urine increase and finally shock, can be observed (Archananuparp, 1980).

Control and prevention

There are five methods critical necessitating for diarrhea disease control and prevention (Sirear and Dagnow. 1988) :

1. Toilet construction, people should have and use a hygienic toilet, for the sake of control and prevention the spread of diarrhea disease.
2. Improve the water quality before drinking or using.
3. Sanitation hygienically, including cleaning indoors and around the house, garbage disposal, building the cattle pen or an enclosure of other pets far out of a house.
4. Cooking food hygienically, including the place of cooking, method of keeping, cooking and sterilize food.
5. Developing hygiene behaviour for health care, especially to washing hands before eating and after using the toilet.

Simple treatment

The most three important methods for giving care and treatment for child patient with diarrhea sickness (Hasdee, et al. 1995) are as follows :

1. Prevention of dehydrates in the patient.
2. Rectifying dehydrates in the patient.
3. Giving soft food to a patient by giving them a little food many times per day.

The treatment of diarrhea disease can start at home, by giving the patients fluid food including water, soup, rice soup, milk or oral dehydration salt (ORS) (Sutra et al. 1990). If the patients have good symptoms, they can have fluid food until the sickness is gone (Powpradist, 1987). But if the patients have heavy sickness, they have to be taken immediately to the doctor.

1.4.2 Literature Review

Jintaganont (1994) examined various factors related to diarrhea disease among children under 5 years old in Songkhla in the south of Thailand. Six hypotheses were formulated to guide the study relating to preventive health behaviours, socioeconomic factors, physical environment, preventive health attitudes, religion and religiosity, and the incidence of diarrhea. Focus groups in mother or guardian sessions were conducted before and after the survey. Altogether, 393 respondents were randomly selected from two sub-districts in Songkla Province, one sub-district from the Buddhist community and the other from the Muslim community. The results from focus groups indicated that most Buddhist respondents understood the concept of diarrhea, whereas most Muslim respondents did not recognize mild diarrhea as diarrhea. More than half of the Buddhists drank rain water, while the Muslims did not. Both groups did not boil well water for drinking. In addition, preventive health attitudes were significantly different between Buddhists and Muslims.

Jinnadu et al (1991) studied childhood diarrhea in rural Nigeria. This population-based study was conducted to determine the prevalence, mortality, and socio-environmental determinants of diarrhea disease in children less than 5 years of age in a rural of Akoko North, Ondo state, Nigeria Social. Environmental factors, including dirty feeding bottles and utensils, inadequate disposal of feces and household refuse, and poor storage of drinking water, were found to be significantly related to the high incidence of the disease.

Poor hygiene practices as risk factors were also investigated by Gorter et al(1998) for the transmission of childhood diarrhea in rural Nicaragua. Findings were reported from a prospective follow-up study in rural Nicaragua of the effect of a number of hygienic practices upon diarrhea disease in children under 2 years of age in 172 families, of whom half had experienced a higher rate than expected of diarrhea in their children and the other half a lower rate. Hygiene behaviour was observed over two mornings and diarrhea incidence was recorded with a calendar period a disease of 5 months. Of 46 good practices studied, 39 were associated with a lower risk of diarrhea, five were unrelated, and a higher risk was observed for two. The washing of

hands, domestic cleanliness, and the use of diaper/underclothes by the child had the strongest protective effect against diarrhea.

Wibowo and Tisdell (1993) examined health, safe water and sanitation, using a cross-sectional study in Central Java, Indonesia. A review of prior studies had shown that safe water supply and sanitation (WSS) improvements can decrease diarrhea morbidity and mortality, but methodological deficiencies, inadequate health indicators, and failure to control the confounding factors flaw most of the studies. In this study, a production function approach at the community level was used to determine the effects of WSS. Morbidity from diarrhea and all water-borne diseases was the dependent variable. If there were no other controlled variables, safe water was more important than sanitation, but there is low substitutability. Both factors must be improved simultaneously. Estimates were provided for the reduction in morbidity associated with specific increases in WSS. Even 100% coverage will not eradicate water-borne or diarrhea disease.

Rasdjarmrearnsook (1998) studied some behavioural risk factors relating to diarrhea disease in children under 6 years of age. The method for this study was a cross-sectional survey conducted in 7 provinces of the Thai Public Health Region 6, which included Khonkaen, Sakon Nakhon, Kalasin, Nong Khai, Loei, Udon Thani and Nong Bua Lam Phu during 8-21 February 1996. The samples were selected by stratified two-stage sampling and the data were obtained by interviewing the parents of children under 6 years of age. Results showed that the parents provided their children rainwater, boiled water, and shallow-well water at the percentages of 53.4%, 25.8% and 13.7%, respectively. Besides, it was observed that hand washing every time before cooking was performed by only 21.2% of the respondents, and nail clipping twice a week was done by only 15.1%. Most of them had a proper management with a relatively high rate of 88.2%. From this study, it was found that the practice might increase the sickness with diarrhea disease in children.

Hasdee et al. (1995) examined the prevention behaviour and treatment provided for diarrhea children under 5 years among mother and care givers in the community level in Nonthaburi Province in Thailand. The promising factors of this studied were sociodemographic, sanitation and environmental health, as well as psychological

factors concerning preventive behaviour and treatment provided for diarrhea children under 5 years. It was found that education level and source of drinking water, water supply and refuse disposal were significantly related to mother's and care givers' behaviour in terms of prevention and treatment of children with diarrhea disease.

Jirajin (1991) studied the relationship between the pattern of belief in health and behaviour of the mother when her child had diarrhea disease. The results found that age of mother, education level, occupation, income of family and experience about diarrhea disease were positively related to the pattern of belief in health and behaviour of mother when her child had diarrhea disease.

Waravit et al (1990) examined diarrhea disease in children age 0-5 years in Bangkok, by studying the risk factors and natural rate of occurrence of diarrhea disease focusing on health education and health promotion in the community. Age groups of the children stratified important risk factors of diarrhea disease occurrence. For the children aged 0-6 months, the risk factors were "*the poverty of family, low level education of mother and mother do not work*". For the children aged 7-11 months, the risk factors were "*the poverty of family and low level education of mother*". The risk factors for children aged 1-2 years were "*the mothers working in the town and behaviour for childcare were not hygienic*". For the children aged 2-5 years, the risk factors were "*defecate excrement not hygienically treated, no washing hands before eating and after using the toilet, and not covering up food from flies*".

Sattayavisit (1995) studied factors affecting to diarrhea disease in children age 0-5 years old in Thailand. It was found that, children aged 0-2 years old have diarrhea sickness 2.9 time per years. And the children are not drinking the boil water get sick with diarrhea disease was 1.6 times higher than that for children are drinking the boil water. In children aged 2-5 years old. They would have diarrhea sickness 1.05 time per years, and the children are staying in the family is not defecate feces in the toilet would have diarrhea sickness was 1.75 times higher than that for children are staying family is defecate feces in the toilet. Another that the children are played with domestic animal would have diarrhea sickness 1.44 times higher than the children did not.