CHAPTER IV

RESULTS

This study was a descriptive research with the aim to study the prevalence rate of acute infantile diarrhea, related factors and the relationship between these factors and the onset of acute diarrhea among the children under one year of age in Municipal communities, Thungsong District, Nakhon Si Thammarat Province. The studied population were all the children under one year of age and 245 child care-givers in municipal communities. The data were collected by interviewing, during 1- 31 July, 2003. The research results were presented in 8 parts as follows

Part 1 : General information of care - givers

Part 2 : Knowledge regarding acute diarrhea, attitudes toward acute diarrhea, and diarrhea preventive practices of care – givers

Part 3 : General information of children under one year of age

Part 4 : Data regarding acute infantile diarrhea

Part 5 : Environmental sanitation factors

Part 6 : Regarding receiving information about acute diarrhea and home-visit

Part 7 : Relationship between personal characteristics of care givers and the onset of acute infantile diarrhea

Part 8 : Relationship between acute infantile diarrhea and related factors.

Part 1 : General Information of Care - givers

Table 1: Number and percentage of characteristics of care givers (N=245)

General characteristics	Number	Percentage
Age (year)		
Less than 20	23	9.4
20-29	119	48.6
30-39	54	22.0
40-49	23	9.4
50-59	10	4.1
60 and older than	16	6.5
$\bar{X}$ = 30.8 years SD = 12.1 years MIN = 15 years MAX = 74 years		
Main occupation		
Agriculturist	9	3.7
Laborer	41	16.7
Government officer	8	3.3
Housewife	151	61.6
Traders	36	14.7
Educational level		
Uneducated	3	1.2
Primary level	98	40.0
Secondary level or equivalent	94	38.4
Diploma or equivalent	35	14.3
Bachelor degree or equivalent	15	6.1
Income of family per month (baht)		
Less than or 5,000	98	40
5,001-10,000	122	49.8
10,001-15,000	9	3.7
Higher than 15,000	16	6.5
Median = 6,600 bahts SD = 4,422 bahts MIN = 1,000 bahts MAX = 30,000 bahts		

It was found that about half of the care- giver aged 20-29 years (48.6 %), followed by the age group of 30-39 years (22.0 %), with the average age of 30 .8 years, the standard deviation of 12 .1 years, the minimum age was 15 years, and the maximum age was 74 years. Regarding occupation of the care- givers, more than half of them were housewives (61.6 %) followed by traders (16.7%). Forty percent of them finished primary level and 38.4 percent finished secondary level or equivalent. About half of them has income 5,000 – 10,000 Bahts per month and 40 percent had income less than 5,000 Bahts per month, with the average income of 6,600 and standard diversion of 4,422 Bahts, the minimum was 1,000 Bahts whereas the maximum income was 30,000 Bahts (Table 1)

Part 2 : Knowledge regarding acute diarrhea, attitudes toward acute diarrhea, and diarrhea preventive practices of care – givers

2.1 Knowledge regarding acute diarrhea

Table 2: Number and percent of care-givers by knowledge regarding acute diarrhea, item-by-item

NO	Questions	Answer		
		Correct	Incorrect	Don' Known
		Number (%)	Number (%)	Number (%)
	Cause of Diarrhea			
1.	The left – over bottle – milk that was not covered, if used to feed the children again may cause diarrhea.	219(89.4)	16(6.5)	10(4.1)
2.	The high density of houseflies may be the causes of diarrhea for children.	209(85.3)	23(9.4)	13(5.3)
3.	The dirty of the house may cause diarrhea in children.	181(73.9)	49(20.0)	15(6.1)
4.	Eating the left – over food may cause diarrhea.	177(72.3)	51(20.8)	17(6.9)
5.	Drinking water from a well or a canal without boiling will make the children immune to diarrhea.	159(64.9)	70(28.6)	16(6.5)
6.	The breast-fed children have the same chance of developing diarrhea as the bottle-fed ones.	104(42.4)	110(44.9)	31(12.7)
	Signs and Symptoms			
7	Diarrhea in children is the condition that the passage of three or more loose stools or one mucked or bloody stools in a day.	213(86.9)	19(7.8)	13(5.3)
8	The sick children with diarrhea may have a fever and a vomit.	181(73.9)	37(15.1)	27(11.0)
9	Diarrhea among infants is as severe as that among grown-up children.	152(62.0)	71(29.0)	22(9.0)
10	It is not dangerous for a children to have diarrhea.	52(21.2)	186(75.9)	7(2.9)

Table 2: (Cont.) Number and percent of care-givers by knowledge regarding acute diarrhea, item-by-item

NO	Questions	Answer		
		Correct	Incorrect	Don' Known
		Number (%)	Number (%)	Number (%)
	Prevention			
11.	Before feeding the child, the care-giver must wash hands properly.	216(88.2)	28(11.4)	1(0.4)
12.	Littering garbage in the bin with the cover will help preventing diarrhea.	214(87.4)	18(7.3)	13(5.3)
13.	Defecation into sanitary latrine will help preventing diarrhea.	208(84.9)	30(12.2)	7(2.9)
14.	Hand washing with soap before breast-feeding is not necessary	81(33.1)	163(66.5)	1(0.4)
15.	After cleaning the child who has defecated if the hands are not fecally contaminated it is not necessary to wash hands.	48(19.6)	194(79.2)	3(1.2)
	Basic Treatment			
16.	Giving ORS to the sick child with diarrhea can subset the last water and electrolyte.	213(86.9)	18(7.3)	14(5.8)
17.	Giving the anti-diarrhea drug to the child with diarrhea in order to stop defecating.	79(32.2)	146(59.6)	20(8.2)

Knowledge about causes of acute diarrhea of care- givers it was that almost half of then (44.9%) answered the statement on "The breast-fed children have the same chance of developing diarrhea as the bottle-fed ones." incorrectly whereby 12.7 percent answered that "did not know" and high level answered correctly the statement on "The left – over bottle – milk that was not covered, if used to feed the children again may

cause diarrhea" and "The high density of houseflies may be the causes of diarrhea for children." (89.4% and 85.3% respectively).

Signs and symptoms about acute diarrhea of care- givers it was found that the highest percentage of the respondents answers incorrectly the statement regarding "It is not dangerous for a children to have diarrhea." (75.9%) and highest percentage correctly answered the statement on "Diarrhea in children is the condition that the passage of three or more loose stools or one mucked or bloody stools in a day."(86.9%)

Preventive about acute diarrhea of care- givers it was found that the highest percentage of the respondents answered these two items incorrectly "Hand washing with soap before breast-feeding is not necessary, after cleaning the child who has defecated if the hands are not fecally contaminated it is not necessary to wash hands. (66.5%) and 79.2% respectively). and highest percentage correctly answered the statement on "Before feeding the child, the caregiver must wash hands properly." "Littering garbage in the bin with the cover will help preventing diarrhea." And "Defecation into sanitary latrine will help preventing diarrhea." (88.2%, 87.4% and 84.9% respectively).

Treatment regarding acute diarrhea of care- givers it was found that most of the respondents answered correctly "Giving the anti-diarrhea drug to the child with diarrhea in order to stop defecating" (86.9%) and more than haft of them answered incorrectly the statement on "Giving ORS to the sick child with diarrhea can subset the last water and electrolyte." (59.6%) (Table 2)

Table 3: Knowledge level of care - givers about acute diarrhea

Knowledge	Total score	level		
		Low (0-59%)	Moderate (60-79%)	High (80-100%)
		Number (%)	Number (%)	Number (%)
Cause	6 score	113(46.1)	117(47.8)	15(6.1)
$\bar{X}$ = 4.28 score SD = 1.26 score MIN =1 score MAX = 6 score				
Signs and Symptoms	4 score	63(25.7)	61(24.9)	121(49.4)
$\bar{X}$ = 2.44 score SD = 0.86 score MIN =0 score MAX = 4 score				
Prevention	5 score	37(15.1)	139(56.7)	69(28.2)
$\bar{X}$ = 3.13 score SD = 0.96 score MIN =0 score MAX = 5 score				
Treatment	2 score	172(70.2)	0(0.0)	73(29.8)
$\bar{X}$ = 0.61 score SD = 0.61 score MIN =0 score MAX = 2 score				
Total	**17 score**	**80(32.7)**	**149(60.8)**	**16(6.5)**
$\bar{X}$ = 13.14 score SD = 2.01 score MIN =6 score MAX = 16 score				

causes of diarrhea : It was found Almost half of care-givers had the moderate level of knowledge regarding causes of diarrhea (47.8 %) with the maximum score of 6, the minimum score of 1 and the average score of 4.28 (the total score was 6)

signs and symptoms : Almost half of care-givers had the high level of knowledge regarding signs and symptoms of diarrhea (49.4%) with the maximum score of 4, the minimum score of 0, and the average score of 2.44 (from the total score of 4).

prevention : More than one-fourth of care-givers had a high level of knowledge regarding the prevention of acute diarrhea (28.2%), with the maximum score of 5, the minimum score of 0, and the average score of 3.13 (the total score of 5).

Treatment : One- third of care-givers had a high level of knowledge regarding treatment of acute infantile diarrhea (29.8%), with the maximum score of 2, the minimum score of 0, and the average score of 0.61 (from the total score of 2).

And if was found that only 6.5 percent of care -givers had the high level of over all knowledge regarding acute diarrhea, the maximum score was found to be 16, the minimum score was 6 and the average score was 13.14 (from the total score of 17). (Table 3).

Table 4: Number and percent of knowledge level of care-givers by their characteristics

Care-giver' characteristics	Level of Knowledge		
	Low	Moderate	High
	Number (%)	Number (%)	Number (%)
Age (year)			
Less than or 25	30(38.0)	45(57.0)	4(5.0)
older than 25	50(30.1)	104(62.7)	12(7.2)
Main occupation			
Housewife/Agriculturist	57(35.6)	92(57.5)	11(6.9)
Laborer/Government officer / Trader	23(27.1)	57(67.1)	5(5.8)
Educational level			
Lower or Primary level	31(30.7)	61(60.4)	9(8.9)
Higher than Primary level	49(34.0)	88(61.1)	7(4.9)
Income of family per month (baht)			
Less than or 5,000	36(36.8)	55(56.1)	7(7.1)
Higher than 5,000	44(29.9)	94(63.9)	9(6.2)

Age : It was found that the care – givers whose age was over 25 had a higher level of knowledge than the younger group. (7.2% and 5.0% respectively).

Occupation : It was found that the care-givers who were the labor worker, government officials and the trader had a higher level of knowledge than the housewives and agriculturists .(8.5% and 5.5% respectively).

The level of education : It was found that the care-givers with the primary level of education or lower had a higher level of knowledge than the group who had a higher than primary education. (8.9% and 4.9% respectively).

Family income : It was found that the care-givers whose income was lower than 5000 bahts per month had a higher level of knowledge than the group whose income was more than 5,000 bahts per month.(7.1% and 6.2% respectively). (Table 4)

2.2 Attitude toward acute diarrhea

Table 5: Number and percentage of attitude level of care-givers by their characteristics, item-by-item

NO.	Questions	Answers		
		Agree	Un-certain	Disagree
		Number (%)	Number (%)	Number (%)
	Positive statements			
1.	Without proper and prompt treatment, the children get diarrhea would be dead.	198(80.0)	40(16.3)	7(3.7)
2.	Diarrhea among the children has related with the care – giver, s hygienic practices.	196(80.0)	43(17.6)	6(2.4)
3.	The children who has even been of diarrhea are not immune to diarrhea, so they will have diarrhea again.	147(60.0)	49(20.0)	49(20.0)
4.	Breast – bed children can be better protected against diarrhea than bottle – fed ones.	136(55.5)	86(35.1)	23(9.4)
5.	Even though the children get diarrhea, the care-givers have to go on feeding them with water and milk, or else they will lack food and water.	127(51.8)	84(34.3)	34(13.9)

Table 5: (Cont.) Number and percentage of attitude level of care-givers by their characteristics, item-by-item

NO.	Questions	Answers		
		Agree	Un-certain	Disagree
		Number (%)	Number (%)	Number (%)
	Negative statements			
6.	The children getting diarrhea is a sign of a stool drainage. After this, they that will eat more food and grow up more rapidly.	61(24.9)	45(18.4)	139(56.7)
7.	The child with diarrhea needs more condensed milk than usual in order to provide for supplementary food.	71(29.0)	37(15.1)	137(55.9)
8.	Diarrhea is not frightful because anybody can get it.	81(33.1)	64(26.1)	100(40.8)
9.	Having loose or watering stool is an infant, s sign of growth	107(43.7)	82(33.4)	56(22.8)
10.	The breast – fed children can develop diarrhea if their mothers eat fermented food	206(84.1)	23(9.4)	16(6.5)

It was found that high percentage of the respondents agreed with the positive statements, the respondents had misbelieve about how to treat the infants with acute diarrhea. Regarding the statements on "Even though the children get diarrhea, the care-givers have to go on feeding them with water and milk, or else they will lack food and water." and "Breast – bed children can be better-protected against diarrhea than bottle–fed ones." there were 51.8 % and 55.5 % respectively who agreed with these statements. For negative statements which indicated the negative attitudes toward diarrhea. The majority of them (84.1%) agreed with the statement "The breast – fed

children can develop diarrhea if their mothers eat fermented food" and 43.7 % agreed with the statement regarding "Having loose or watering stool is an infant, s sign of growth." (Table 5)

Table 6: Number and percentage of level of attitudes toward diarrhea of the child care-givers

Level of attitudes	Score	Number	Percentage
Negative	4-11	15	6.1
Neutral	12-15	137	55.9
Positive	16-20	93	38.0
Total		**245**	**100**

$\bar{X}$ = 12.26 score SD = 3.06 score MIN = 4 score MAX = 20 score

More than haft had neutral attitudes toward acute diarrhea (55.9%). Follow by positive attitudes and negative attitudes. (38.0% and 6.1% respectively) The attitudinal mean score was 12.26, the maxim score to 20, that the minimum score of 4 (from the total score of 20). (Table 6)

Table 7: Number and percentage of attitude level of care-givers by their characteristics

Care-giver' characteristics	Level of Attitude		
	Negative	Neutral	Positive
	Number (%)	Number (%)	Number (%)
Age (year)			
Less than or 25	4(5.1)	50(63.3)	25(31.6)
older than 25	11(6.6)	87(52.4)	68(41.0)
Main occupation			
Housewife/Agriculturist	12(7.9)	83(51.9)	65(40.6)
Laborer/Government officer / Trader	3(3.6)	54(63.5)	28(32.9)
Educational level			
Lower or Primary level	9(8.9)	56(55.5)	36(35.6)
Higher than Primary level	6(4.21	81(56.3)	57(39.6)
Income of family per month (baht)			
Less than or 5,000	7(7.1)	54(55.1)	37(37.8)
Higher than 5,000	8(5.4)	83(56.5)	56(38.1)

Age : It was found that the care – givers who were over 25 years of age had a higher level of positive attitudes than the group who was the same or younger than 25 years of age. (41.0% and 31.6% respectively).

Occupation : It was found that the care-givers who were housewife and aagriculturist had a higher level of positive attitudes than the group of laborer, government officer / traders. (40.0 %and 34.0% respectively).

The level of education : It was found that the care – givers whose education was higher than primary level had a higher level of positive attitudes than lower or primary level.(39.6 and 35.6% respectively).

Family income : It was found that the care-givers whose wages were lower than 5,000 bahts per month and the group whose wages were higher than 5,000 bahts per month had nearly the same level of the positive attitudes, which were 37.8% and 38.1% respectively. (Table 7)

2.3 Diarrhea Prevention practices of care–givers.

Table 8: Number and percentage of care -givers preventive practices

NO	reventive practices	Answers		
		Every tim	Some time	Never
		Number (%)	Number (%)	Number (%)
	For breast – fed child (N =48)			
1.	Cleaning breasts before breast – feeding the children.	12(25.0)	36(75.0)	0(0.0)
2.	Washing hands with soap before breast – feeding the children.	10(21.0)	37(77.0)	1(2.0)
3.	Disposing stool into the latrine.	22(45.8)	19(39.6)	7(14.6)
	For bottle – fed child (N =111)			
4.	Washing hands with soap before preparing bottle – formula.	22(19.8)	80(72.0)	9(8.2)
5.	Washing the bottle with plain water only.	3(2.7)	10(9.0)	98(88.3)
6.	Feed the children with the bottle until it is used up then make it again.	9(8.1)	6(5.4)	96(86.5)
7.	Disposing stool into the latrine.	41(47.7	31(36.0)	14(16.3)
	For breast – fed and Bottle – fed child (N =111)			
8.	Cleaning breasts before feeding the child.	33(38.4)	51(59.3)	2(2.3)
9.	Washing hands with soap before feeding the children.	29(33.7)	51(59.3)	6(7.0)
10.	Washing hands with soap before preparing the bottle – formula.	31(36.0)	43(50.0)	12(14.0)
11.	Washing the bottle with water only.	10(11.6)	10(11.6)	66(76.8)
12.	Feed the children with the bottle until it is used up then make it again.	5(5.8)	6(7.0)	75(87.2)
13.	Disposing stool into the latrine	52(46.8)	48(43.3)	11(9.9)

Among the breast-fed children, it was found that the care-givers practiced unhygienic practices especially handwashing with soap before breastfeed the child, whereby only 21 percent said that they washed their hands with soap before breastfeeding every time.

For the bottle-fed infants, unhyginic practices were found among the care givers especially the behavior regarding washing hands with soap before preparing the bottle formula. Only 19.8 percent said that they washed their hands with soap before preparing formula every time

Among the infant who were both breast-fed and bottle-fed, it was found that unhygienic practices were found among the caregivers the same as those in the groups of beast-fed and bottle-fed, with regard to washing hand with soap before feeding the child. Only 33.7 percent of the mother were found to wash their hand with soap every time before breast feeding and 36.0 percent of them washed their hands with soaps every time before preparing bottle formula. (Table 8)

Table 9: Number and percentage of care - givers preventive practices level.

Preventive practices	Number	Percentage
Poor	110	44.9
Fair	89	36.3
Good	46	18.8
Total	**245**	**100**

It was found that almost haft of the sample practiced poor level of preventive practices (44.9%). Follow by fair level (36.3%) and good level (18.8%) (Table 9)

Table 10: Number and percentage of acute diarrhea preventive practice level by care-giver's characteristics

Care-giver' characteristics	Level of preventive practice		
	Poor	Fair	Good
	Number (%)	Number (%)	Number (%)
Age (year)			
Less than or 25	47(59.5)	20(25.3)	12(15.2)
Older than 25	63(38.0)	69(41.5)	34(20.5)
Main occupation			
Housewife/Agriculturist	76(47.5)	60(37.5)	24(15.0)
Laborer/Government officer / Trader	34(40.0)	29(34.1)	22(25.9)
Educational level			
Lower or Primary level	39(38.6)	40(39.6)	22(21.8)
Higher than Primary level	71(49.3)	49(34.0)	24(16.7)
Income of family per month (baht)			
Less than or 5,000	55(56.1)	31(31.6)	12(12.3)
Higher than 5,000	55(37.4)	58(39.5)	34(23.1)

Age : It was found that the care-givers whose age was over 25 years had better preventive practices than the group whose age was 25 years or lower. (20.5% and 15.2% respectively.)

Occupation : It was found that the care-givers who were laborer, government officer and traders had better preventive practices than those who were Housewife and Agriculturist (25.9% and 15.0 respectively.)

Level of Education : It was found that the care-givers whose education was in the primary level or lower had better preventive practices than those whose education was higher than the primary level. (21.8% and 16.7% respectively.)

Family Income : It was found that the care-givers whose wages were over 5,000 bahts per month had better preventive practices than those whose wages were as much as or lower than 5,000 bahts per month. (23.1%and 12.2% respectively.) (Table10)

Part 3 : General Information of the Children under one year of Age

Table 11: Number and percentage of children under one year by personal characteristics and caring.

Personal characteristics	Number	Percentage
Age (month)		
0-6	107	43.7
7-12	138	56.3
$\bar{X}$ = 6.91 months SD = 3.07 months		
MIN = 0 month MAX =12 months		
Birth weight (grams)		
2,000 – 2,499	16	6.5
2,500 – 3,000	65	34.7
> 3,000	144	58.8
Breast – feed since birth		
Yes	227	92.7
No	18	7.3

Table 11: (Cont.) Number and percentage of children under one year by personal characteristics and caring.

Personal characteristics	Number	Percentage
Duration of breast fed	45	19.8
Less than 1 month	85	37.4
1 – 3 months	40	17.6
4-6 months	57	25.2
more than 6 month		
Nutritional status		
Normal	242	98.8
Malnutrition level 1	2	0.8
Malnutrition level 2	1	0.4
Received vaccination		
Complete	242	98.8
Not complete	3	1.2

From the total number of 245 studied infants, it was found that more than half of them (56.3%) aged 7-12 month with the average age of 6.9 month, whereby more than half of them (58.8%) had normal birth weight (higher than 3, 000 grams), 92.7 percent were breast- fed, 37.4 % breast fed 1-3 month. The highest percentage of the children (98.8%) had normal nutritional status and 98.8 percent have received vaccination complete. (Table 11)

Part 4 : Data Regarding Acute Infantile Diarrhea

Table 12: Prevalence rate of acute infantile diarrhea (N =245)

Acute infantile diarrhea	Number	Percentage
No	187	76.3
Yes	58	23.7
Total	**245**	**100**

During the period of 3 months it was found that the prevalence rate of acute infantile diarrhea was 23.7 per 100 infants.(Table 12)

Table 13: Episode of acute infantile diarrhea (N =58)

Episode of acute infantile diarrhea	Number	Percentage
1 times	53	91.4
2 times	4	6.9
3 times	1	1.7
Total	**58**	**100**

The majority of the studied sample (91.4 %) were sick with 1 episode of acute diarrhea whereas 1.7 percent had 3 episodes. (Table 13)

Table 14: The monthly average episode of acute infantile diarrhea

Acute infantile diarrhea	Number	Episode of acute infantile diarrhea	Average episode of acute infantile diarrhea
- April 2546	15	15	1.0
- May 2546	15	18	1.2
- June 2546	28	31	1.1
Total	**58**	**64**	**1.1**

The analysis of episodes of acute infantile diarrhea during 3 months of study showed that the average episode of each month was quite the same of April, May and June (1.0, 1.2 and 1.1 respectively) and average diarrhea episode was 1.1 episodes / child / 3 months (Table 14)

Table 15: Number and percentage of infants by the type underlying diseases before getting acute diarrhea

Infant	Number	Percentage
Normal	187	76.3
Acute diarrhea	58	23.7
No underlying diseases before getting acute diarrhea	40	68.9
Had underlying diseases before getting acute diarrhea	18	31.1
- Pneumonia	2	11.1
- Measles	2	11.1
- Cold	14	77.8
Total	**245**	**100**

Most of the infants had a cold before having acute diarrhea (77.8 %) (Table 15)

Table 16: Number and percentage of infants with acute diarrhea by treatment methods

Infant	Number	Percentage
Treatment methods		
-Nothing	13	20.3
-Bought the drugs at the drug store	2	3.1
-Primary Care unit	6	9.4
-Clinic / private hospital	37	57.8
-Government hospital	6	9.4
Total	**64**	**100**

It was found that more than half of the ill infants have been treated at the clinic or private hospitals (57.8%), followed by "Nothing" (20.3%), and 9.4 percent were treated at the Primary Care unit and government hospitals. (Table 16).

Part 5 : Environmental Sanitation Factors

Table 17: Number and percentage of the households by environmental sanitation

Environmental Sanitation	Number	Percentage
Drinking water		
Tap water	26	10.6
Rainy water	3	1.2
Bottled water	194	79.2
Well water	22	9.0
Treatment of water before feeding		
Noting	10	4.1
Using the filter machine	9	3.7
Boiling for 10 – 15 minutes	226	91.2

Table 17: (Cont.) Number and percentage of the households by environmental sanitation

Environmental Sanitation	Number	Percentage
Have the bin with cover for the garbage	175	71.4
Yes	70	28.6
No		
Garbage disposal	30	12.3
Burning	4	1.6
Burying	6	2.4
Throwing in to the river	205	83.7
The sanitary workers dump it		
Sewage disposal	184	78.1
Through the public sewer	43	17.6
Dump it under the house	18	7.3
Drain it to the river / water source		
Density of houseflies	61	24.9
No	162	66.1
There are some	22	9.0
Many		
Eradication of houseflies		
No houseflies	61	24.9
Have houseflies	184	75.1
No Eradication	137	74.4
Eradication	47	25.6
Methods of Eradication		
Using glue or trap	15	31.9
Using chemical spay	7	14.9
Hitting with bad	25	53.2

It was found that most of the sample infants drink bottle drinking water (79.2%). Regarding the treatment of water before feeding the child, the majority of the

care-givers boiled water for 10-15 minutes (91.2%). For garbage disposal 71.4 % kept the garbage in the bin with cover and the sanitary workers dump it (83.7%). The sewage disposal was done by draining into the public sewer (78.1%). Regarding the density of houseflies, about three-fifth of the sampled households survey had some houseflies, and most of them (74.4%)did not use any measure to control or get rid of houseflies. (Table17)

Table 18: Number and percentage of the households by healthy and unhealthy environmental sanitation

Environmental sanitation	Household			
	Healthy/correct		Unhealthy/incorrect	
	Number	Percentage	Number	Percentage
Drinking water	245	100.0	0	0.0
Garbage disposal	175	71.4	70	28.6
Sewage disposal	184	75.1	61	24.9
Houseflies eradication	22	12.0	162	88.0

The characteristics of environmental sanitation were divided into two categories, healthy and unhealthy. Regarding water sanitation, the healthy or clean water is tap water, bottled and well water that was treated by filtration or boiling for 10-15 minutes whereas unclean water the well water that have not been treated. It was found that the total of the sample used the health or clean water (100%)

Garbage disposal. The health method is having the bin or container with the cover for garbage and it was disposal by burying or burning or getting rid by the sanitation workers service whereas the unhealthy or in corrected method is having the

bin /container with the cover for garbage and was disposal by throwing into the river, canal or do not have the bin with the cover for garbage. It was found that the majority of the respondents disposed garbage correctly (71.4%)

Sewage disposal. The correct or healthy sewage disposal method is draining sewage to the public sewer or drainage system. The incorrect or unhealthy sewage disposal is throwing sewage down to the ground or drain into the river or water source. It was found that most of the respondents practiced the correct or healthy method (75.1%)

Eradication of houseflies. The correct or healthy eradication of houseflies method is constant eradication and control of houseflies is to apply chemicals or traps or glue. The incorrect or unhealthy eradication of houseflies is no eradication of houseflies or no constant eradication of houseflies. It was found that most of the respondents practiced the incorrect or healthy method (88.0%)(Table 18)

Part 6 : Receiving information about diarrhea and home-visit received from public health personal / public health volunteers

Table 19: Number and percentage of the households by receiving information about diarrhea, source of information and home-visit received

Reinforcing factors	Number	Percentage
receiving information about diarrhea		
No	166	67.8
Yes	79	32.2
source of information (n = 166)		
Newspapers / journals	45	27.2
Public health personnel	19	11.4
Public health volunteer	5	3.0
Radio / TV	83	50.0
Relatives/companions	7	4.2
Other	7	4.2
home-visit received from public health personal or public health volunteers		
No	171	69.8
Yes	74	30.2

Receiving information about diarrhea. It was found that three fifth of the respondents have ever receiving information about diarrhea (67.8%). For the source of information, half of them receiving the information from radio and television (50.0%), followed by newspapers and journals (27.1%)

Home-visit by public health personal or public health volunteers. It was found the three fifth of the respondents have not ever gotten any home-visit from public personal or public health volunteers (69.8%) (Table 19)

Part 7: Relationship between personal characteristics of care-givers and the onset of acute infantile diarrhea

Table 20: Number and percentage of child care- givers by general characteristics and acute infantile diarrhea

general characteristics of Care-giver	acute infantile diarrhea				χ^2	P
	No		Yes			
	N	%	N	%		
Age (year)					1.125	0.289
Less than or 25	57	72.2	22	27.8		
older than 25	130	78.3	36	21.7		
Main occupation					0.001	0.969
Housewife/Agriculturist	112	76.3	38	23.7		
Laborer/Government officer / Trader	65	76.5	20	23.5		
Educational level					6.101	0.014
Lower or Primary level	69	68.3	32	31.7		
Higher than Primary level	118	81.9	26	18.1		
Income of family per month (baht)					0.738	0.390
Less than or 5,000	72	73.5	26	26.5		
Higher than 5,000	115	78.2	32	21.8		

Age : It was found that no significant relationship between the age of the care-givers and the onsets of infantile diarrhea (P>0.05) though the morbidity rate of infantile diarrhea under the care of the care-givers whose ages were 25 years or lower was higher than those under the care of the ones whose ages were older than 25 years, which were 27.8% and 21.7% respectively.

Occupation : It was found that no significant relationship between the occupation of the care-givers and the onsets of infantile diarrhea (P>0.05) ,because the morbidity rate of infantile diarrhea under the care of those who had housewives and agricultural was the morbidity rate of infantile diarrhea as those under the care of the ones who were labour workers, government officials and trading careers, which were 23.7% and 23.3% respectively.

Educational level : It was significant relationship was found between the educational level of the care-givers and the onsets of infantile diarrhea P = 0.014 because the morbidity rate of infantile diarrhea under the care of those who had lower or primary level was higher than those under the care of the ones whose had higher than primary level which were 31.7% and 18.1% respectively.

Income of family : It was found that no significant relationship between the income of the care-givers and the onsets of infantile diarrhea (P > 0.05) although the morbidity rate of infantile diarrhea under the care of those who had Income Less than or 5,000 was higher than those under the care of the ones whose had Income more than 5,000 which were 26.5% and 21.8 % respectively. (Table 20)

Part 8 : Relationship between acute infantile diarrhea and related factors.

Table 21: Number and percentage of child care- givers by knowledge level and attitudes level toward acute infantile diarrhea

Knowledge level	Attitude level		χ^2	P
	Negative/Neutral	Positive		
	Number (%)	Number (%)		
Low/Moderate	142(62.0)	87(38.0)	0.002	0.969
High	10(62.5)	6(37.5)		

It was found that no significant relationship between the level of knowledge on acute diarrhea and the level of attitudes toward acute diarrhea ($p>0.05$) although more than half of the care-givers with a low and moderate level of knowledge had a level of negative and neutral attitudes (62%) and more than half of the care-givers with a high level of knowledge had a level of negative and neutral attitudes (62.5%) (Table 21)

Table 22: Number and percentage of care- givers by knowledge level on the basis of causes and prevention about acute infantile diarrhea and preventive practices level

Knowledge level	preventive practices level		χ^2	P
	Poor/Fair	Good		
	Number (%)	Number (%)		
Low/Moderate	186(81.2)	43(18.8)	1.000	0.649*
High	13(81.2)	3(18.8)		

* Fisher's Exact Test

It was found that no significant relationship between the level of knowledge on the basis of the causes and the prevention of diarrhea and the level of the preventive practices of the care-givers ($p>0.05$) although most of the care – givers with low and moderate levels of knowledge had poor or fair preventive practices (81.2%) and most of the care-givers with a high level of knowledge had poor or fair preventive behavior. (81.2%)(Table 22)

Table 23: Number and percentage of care- givers by attitudes level toward acute infantile diarrhea and preventive practice

Attitude level	preventive practices level		χ^2	P
	Poor/Fair	Good		
	Number (%)	Number (%)		
Negative/Neutral	123(80.9)	29(19.1)	0.024	0.876
Positive	76(81.7)	17(18.3)		

It was found that no significant relationship between the level of attitudes toward acute diarrhea and the level of preventive practices of the care-givers ($p>0.05$) though most of the care-givers with a level of negative and neutral attitudes had poor or fair level of preventive practices. (81.7%) (Table 23)

Table 24: Number and percentage of preventive practices of the care – givers and acute infantile diarrhea

preventive practices level	acute infantile diarrhea		χ^2	P
	No	Yes		
	Number (%)	Number (%)		
Poor	70(63.6)	40(36.4)	19.584	0.001
Fair	74(83.1)	15(16.9)		
Good	43(93.5)	3(6.5)		

Significant relationship was found between the level of preventive practices of the care-givers and the onsets of acute diarrhea P= 0.001 ; that is to say, the care-givers with indecent preventive practices had a higher of percentage from acute infantile diarrhea while those with decent preventive practices had a low of percentage from acute infantile diarrhea, which were 36.4% and 6.5% respectively.(Table 24)

Table 25: Distribution of number and percentage of children by general characteristics and the onset of acute diarrhea

general characteristics of children	acute diarrhea				χ^2	P
	No		Yes			
	N	%	N	%		
Age (month)					18.858	0.001
0-6	96	89.7	11	10.3		
7-12	91	65.9	47	34.1		
Birth weigh (grams)					1.183	0.223
lower than 2500	14	87.5	2	12.5		
2500or more than 2500	173	75.5	6	24.5		
Nutritional status					0.557	0.557*
Normal	185	76.4	57	23.6		
Malnutrition	2	66.7	1	33.3		
Immunization					0.557	0.557*
Complete	185	76.4	57			
Not complete	2	66.7	1			

* Fisher, Exact Test

Age : It was found significant relationship between the children's ages and the onset of acute diarrhea (p=0.001) ; that is to say, the children whose ages were 7 to 12 months had a higher percentage of acute infantile diarrhea than those whose ages were 0-6 months, which were 34.1% and 10.3% respectively.

Infants' birth weight : It was found that no significant relationship between the birth weight and the onset of acute diarrhea (p>0.05) though the infants' birth weight was lower than 2,500 grams, and this group had lower percentage of acute diarrhea than those whose birth weight was as much as or lower than 2,500 grams, which were 12.5% and 24.5% respectively.

Nutritional status : It was found that no significant relationship between the level of nutrition and the onset of acute diarrhea (p>0.05) although the children with the normal level of nutrition had lower the percentage of acute diarrhea than those with malnutrition, which was 23.6% and 33.3% respectively.

Immunization : It was found that no significant relationship between the immunization and the onset of acute diarrhea (p>0.05) although the children who received complete of vaccination had a lower percentage of acute diarrhea than those who had incomplete vaccination, which were 23.6% and 33.3 respectively.(Table 25)

Table 26: Number and percentage of environmental sanitation factor and acute infantile diarrhea

Environmental sanitation	Acute infantile diarrhea				χ^2	P
	No		Yes			
	N	%	N	%		
Garbage disposal					9.840	0 .002
Correct	143	81.7	32	18.3		
Incorrect	44	62.9	26	37.1		
Sewage disposal					1.530	0.216
Correct	144	78.3	40	21.7		
Incorrect	43	70.5	18	29.5		
Houseflies eradication and control of houseflies					1.166	0.280
Correct	86	79.6	22	20.4		
Incorrect	101	73.7	36	26.3		

Garbage disposal : It was found significant relationship between the garbage disposal the onset of acute infantile diarrhea P = 0.02 ; that is to say, the children living in the households where there was a proper way of disposing garbage had a lower percentage from diarrhea than those living in the households where there was no proper way of disposing garbage, which were 18.3% and 38.1% respectively.

The sewage disposal : It was found that no significant relationship between The sewage disposal and the onsets of acute infantile diarrhea (p>0.05), although the children living in the households where there was a proper way of disposing sewage disposal had a lower percentage from acute diarrhea than those living in the households where there was no proper way of disposing sewage water, which were 21.7% and 29.5% respectively

The eradication of houseflies : It was found that no significant relationship between the eradication of houseflies and the onsets of acute infantile diarrhea ($p>0.05$), although the children living in the households which decent eradication of eradication of houseflies had lower percentage from acute diarrhea than the households where these was an indecent way of eradication houseflies, which were 20.4% and 26.3% respectively. (Table 26)

Table 27: Number and percentage of receiving information about acute infantile diarrhea and knowledge level about acute infantile diarrhea

Receiving information	knowledge level			χ^2	P
	Low	Moderate	High		
	Number (%)	Number (%)	Number (%)		
Yes (N = 166)	39(23.5)	114(68.7)	13(7.8)	19.787	0.001
No (N = 79)	41(51.9)	35(44.3)	3(3.8)		

Significant relationship was found between the receiving of information about acute diarrhea and the level of knowledge about diarrhea P= 0.001 ; that is to say, the care-givers who used to receive the information about diarrhea had a higher level of knowledge than those without any information at all, which were 7.8% and 3.8% respectively. (Table 27)

Table 28: Number and percentage of receiving information about acute infantile diarrhea and attitude level toward acute infantile diarrhea

receiving information	attitude level			χ^2	P
	Negative	Neutral	Positive		
	Number (%)	Number (%)	Number (%)		
Yes (N = 166)	8(4.8)	91(54.8)	61(40.4)	2.322	0.313
No (N = 79)	7(8.9)	46(58.2)	26(32.9)		

Significant relationship was not found between the receiving of information about acute diarrhea and the level of attitudes toward acute diarrhea ($p>0.05$) although the care-givers who used to receive the information about acute diarrhea had a higher level of positive attitudes than those without learning any information at all; that is to say, 40% of the care-givers who receiving information of acute diarrhea had a level of positive attitudes, while 32.9% of the care-givers who had no receiving information of acute diarrhea had a level of positive attitudes. (Table 28)

Table 29: Number and percentage of receiving information about acute infantile diarrhea and diarrhea preventive practices of care – givers

receiving information	preventive practices level			χ^2	P
	Poor	Fair	Good		
	Number (%)	Number (%)	Number (%)		
Yes (N = 166)	77(46.4)	54(32.5)	35(21.1)	3.758	0.153
No (N = 79)	33(41.8)	35(44.3)	11(13.9)		

Significant relationship was not found between the receiving of the information about acute diarrhea was and the level of preventive practices of the care-givers

(p>0.05) although the care-givers who receiving information about acute diarrhea had a higher level of good preventive practices than those with no receiving information about diarrhea at all; that is to say, 21.1% of the care-givers who receiving information about diarrhea had a high level of good preventive practices, while only 13.9% of those without receiving information had a high level of good preventive practices,. (Table 29)

Table 30: Conclusion relationship between care-giver, s characteristics and acute infantile diarrhea

personal characteristics	χ^2	P	Result at P =0.05
Age	1.125	0.289	No significant
Main occupation	1.688	0.194	No significant
Education level	0.101	0.014	Significant
Family income	0.738	0.390	No significant
preventive practices level	19.584	0.001	Significant

Significant relationship was found between in the aspects of care-givers and the onsets of acute infantile diarrhea was the level of education and preventive practices level but no significant relationship was found between of age, occupation, and family income and the onsets of acute infantile diarrhea (Table 30)

Table 31: Conclusion relationship between children characteristics and acute infantile diarrhea

Children characteristics	χ^2	P	Result at P =0.05
Age	18.858	0.001	significant
Birth weigh	1.183	0.372	No significant
Nutritional status	0.557	0.557	No significant
Immunization	0.557	0.557	No significant

Significant relationship was found between the factor in the aspect of the children and the onsets of acute diarrhea that was age, but no significant relationship was found between the birth weight, the level of nutritional status, and the received of immunization and the onsets of acute diarrhea. (Table 31)

Table 32: Conclusion relationship between environmental sanitation factors and acute infantile diarrhea

environmental sanitation	χ^2	P	Result at P =0.05
Garbage disposal	9.840	0.002	Significant
Sewage disposal	1.530	0.216	No significant
Eradication /control houseflies	1.166	0.280	No significant

Significant relationship was found between the factors in the aspect of environmental sanitation and the onsets of acute infantile diarrhea were the disposal of the garbage but no significant relationship was found between the disposal of the sewage water and eradication of houseflies and the onsets of acute infantile diarrhea (Table 32)