



CHAPTER IV

RESULTS

This chapter presents the results of a cross-sectional survey research on the level of preventive and control behaviors against DHF among primary school children and the relationship between predisposing factors (age, grade level, gender, parent's education level, occupation, knowledge about DHF, attitude towards DHF), enabling factors (parent's income, sufficiency of resources), and reinforcing factors (social support from teachers, social support from parents and accessed to information about DHF). The study population was 4th-6th grade children in school of the Department of Primary Schools, Chulaporn District, Nakhon Si Thammarat Province in the academic year 2003. The sample consisted of 407 children. The results of the study are presented as follow:

1. Socio-Demographic Characteristics

1.1 Socio-demographic characteristic of the samples consisted of Grade level, gender, age and whom they were living with, as shown in Table 1.

Data were obtained from 407 primary school children in grades 4, 5, and 6, the number and percentage of students in each grade were 135(33.2%), 146 (35.9%), and 126 (31.0%), respectively. More than half (55.0%) of the children were female. The average age of the sample was 11.07 years with standard deviation of 0.93 years. The

youngest was 8 years old, and two primary school children were 14 years old representing the oldest. The majority group was 11years old (36.2%), followed by 10years old (29.0%). The majority was living with father and mother (82.1%), followed by 8.8 % living with their mother only, 7.4% living with relative and 1.7% with their father only.

Table 1: Number and percentage of the respondents by demographic characteristics.

Demographic characteristic		Number (N=407)	Percentage
Grade	4	135	33.2
	5	146	35.8
	6	126	31.0
Gender	Male	183	45.0
	Female	224	55.0
Age (years)	8	1	0.2
	9	5	1.2
	10	118	29.0
	11	147	36.2
	12	116	28.5
	13	18	4.4
	14	2	0.5
	$\bar{X} = 11.07$ S.D. = 0.93	Min = 8	Max = 14
Live With	Both father and mother	334	82.1
	Father only	7	1.7
	Mother only	36	8.8
	Others, such as relatives	30	7.4

1.2 Socio–demographic characteristics of theirs parents.

The most of occupation of the father’s subjects were agriculture (74.9%). The majority of them were educated at the primary school level (60.9%). The most of occupation of the mother’s subjects were agriculture (76.7%). The majority of them were educated at the primary school level (68.6%). The details are shown in Table 2.

Table 2: Number and percentage of the respondents’ parent by socio-demographic characteristics.

Socio - demographic characteristic	Number (N=407)	Percentage
Father’s Occupation		
Government officer/state enterprise	21	5.2
Employee	44	10.8
Own business (trader/contractor)	20	4.9
Agriculture	305	74.9
Others (Unemployed)	14	3.5
unknown	3	0.7
Father’s Education		
Did not attend school	2	0.5
Primary school level	248	60.9
Secondary school	113	27.8
Diploma	8	2.0
Bachelor’s Degree or higher	7	1.7
unknown	29	7.1

Table 2: (cont.) Number and percentage of the respondents' parent by socio-demographic characteristics.

Demographic Characteristic	Number (N=407)	Percentage (100.0)
Mother's Occupation		
Government officer/state enterprise	3	0.7
Employee	27	6.6
Own business (trader/contractor)	41	10.1
Agriculture	312	76.7
Housewife /unemployed	22	5.4
Unknown	2	0.5
Mother's Education		
Did not attend school	4	1.0
Primary school	279	68.6
Secondary school	94	23.1
Diploma	1	0.2
Bachelor's Degree or higher	3	0.7
Unknown	26	6.4

2. Data Concerning Predisposing, Enabling, and Reinforcing Factors and the Prevention and Control of DHF.

2.1 Predisposing factors that consist of knowledge about DHF and attitudes towards DHF.

2.1.1 Knowledge about DHF and prevention and control.

The study revealed that, from a total of 17 scores. The average score on knowledge about DHF and prevention control of it was 12.5, standard deviation was 2.4 score, the highest score was 17, and the lowest was 3, the level of the sample's knowledge about the DHF and prevention control of it, ranged from moderate to high.

Nearly half of the subjects had knowledge about DHF was in the moderate level with an 11-13 score or 60-79%; this included 182 children (44.7%). This was followed by a high level of knowledge, 14-17 score or 80-100% with 154 children (37.8%), and finally, a score lower than 60%, 0-10 score were shown at 17.4% with 71 children, as shown in Table 3.

Table 3: Number and percentage of respondents by the level of knowledge about DHF.

Level of Knowledge	Number (N=407)	Percentage (100.0)
High knowledge (14-17 scores)	154	37.8
Moderate knowledge (11-13 scores)	182	44.7
Low knowledge (0-10 scores)	71	17.5
$\bar{X} = 12.49$ S.D. = 2.44	Min = 3	Max = 17

When considering each item of knowledge about the DHF and prevention control, which had 17 items, the study revealed that almost all of the samples (98.8%) knew that the *Aedes aegypti* mosquito was the vector for the DHF, 94.6% of them knew that school age children were the high risk group to be infected by this disease. The study found 91.9% of the sample knew that the DHF was caused by an infected mosquito bite; 90.9% knew the life cycle of the mosquito. The question with the least number of correct answers, only 21.4 %, was the question concerning the length of time Abase sand was effective for eliminating larvae but 47.4% knew the importance of cleaning containers or flowerpots every 7 days if the larvae was found. (see Table 4)

Table 4: Number and percentage of the items on the knowledge about DHF, prevention and control of DHF correctly answered by respondents.

Items	Number of respondent as correctly answered (N=407)	Percentage
The name of the vector for the DHF.	402	98.8
The most of patients with DHF.	385	94.6
The cause of the DHF.	374	91.9
The metamorphosis of the vector for DHF.	370	90.9
The season is the DHF vector the most widespread.	367	90.2
The best measure on prevention and control of DHF.	353	86.7
The source where the DHF vector preferred to lay its eggs.	340	83.5
The benefit of the Libestes fish.	334	82.1
The best prevention method to avoid getting the DHF disease.	305	74.9
Time of the day that the DHF vector usually bites.	283	69.5
The method to combat man mosquito contact.	282	69.3
The source where Abate sand used for	280	68.8
The typical signs and symptoms of DHF.	274	67.3
How often to clean uncovered container	236	58.0
The method to control or eliminate larvae at the lotus bowl or cement tanks	218	53.6
The method to control or eliminate larvae at the vases or flowerpots	193	47.4
Effective duration of Abate sand	87	21.4

2.1.2 Attitude towards DHF and prevention and control

The attitudes toward prevention and control of DHF, nearly half of the sample had a fair attitude level (45.7%), to a good attitude level (39.1%), and finally a poor attitude level (15.2%) respectively. The average score was 44.4 (from a total of 54 score), standard deviation was 4.4 score, the lowest score was 31, and the highest score was 51, as shown in Table 5.

Table 5: Number and percentage of respondents by the level of their attitude towards DHF.

Level of Attitude toward DHF	Number (N=407)	Percentage (100.0)
Good level (47-54 scores)	159	39.1
Fair level (40-46 scores)	186	45.7
Poor level (18-39 scores)	62	15.2
$\bar{X} = 44.4$ S.D. = 4.4	Min = 31	Max = 51

When considering individual item, most of the sample had fair attitudes level; 93.9% agreed that everyone could destroy larvae and breeding sites, 91.4% agreed that everybody had the responsibility to prevent the DHF and control its breeding sites, and 84.8% agreed that larvivorous fish should be used to get rid of larvae. The attitudes that were not correct, including unsure, Activity for the elimination of breeding sites had enough to done only 1 to 2 time per year (43.8%), and following the elimination of breeding sites had high cost (43.5%), eating for healthy person can preventable DHF (39.6%), and thermal fogging is not helpful; the smoke alone cannot eliminate the mosquitoes (68.1%), shown in Table 6.

Table 6: Attitude toward and prevention control against DHF of the sample.

Attitude	Agree	Uncertain	Disagree	Mean	S.D.
The positive statement					
1. Everybody can destroy larvae	93.9	4.2	2.0	2.92	0.34
16. The elimination of <i>Aedes aegypti</i> mosquito breeding source is every person's duty	91.4	4.2	4.4	2.87	0.45
17. Larvivorous fish should be used to eliminate mosquito larvae	84.8	8.6	6.6	2.78	0.55
3. A good preventive and control DHF measurement is elimination of breeding sites and not being bitten by the mosquito	81.8	16.2	2.0	2.80	0.45
11. Students are the most important people in DHF prevention	73.2	14.7	12.0	2.61	0.69
18. It is not difficult to eliminate larvae	73.0	16.2	10.8	2.62	0.67
14. Breeding site elimination is easier than mosquito elimination	69.1	21.1	9.8	2.59	0.66
10. Thermal fogging is not helpful; the smoke alone cannot eliminate the mosquitoes.	31.9	49.9	18.2	2.14	0.70
The negative statement					
2. DHF can cure itself without treatment	4.7	7.9	87.5	2.83	0.49
5. Mosquito nets cause uncomfortable sleep	7.6	6.9	85.5	2.78	0.57
7. Prevention is not needed if the family has no history of DHF infection	10.6	6.1	83.3	2.73	0.64
12. Rash is a normal symptom of DHF	8.6	8.1	83.3	2.75	0.60

Table 6: (cont.) Attitude toward and prevention control against DHF of the sample.

Attitude	Agree	Uncertain	Disagree	Mean	S.D
The negative statement(Cont.)					
8.Breeding site elimination make a lost the time for student's class.	11.5	14.3	74.2	2.63	0.68
9.DHF cannot be prevented					
15.Primary school children have less chance of being infected by DHF than adults	14.5	14.3	71.3	2.57	0.73
	13.8	23.6	62.7	2.49	0.73
13.Diet for complete physical health is effective enough to prevent DHF.	18.7	20.9	60.4	2.42	0.79
4.Elimination of breeding sites cost a lot of money					
6.1 to 2 time/years is enough for breeding site elimination.	17.9	25.6	56.5	2.39	0.77
	16.0	27.8	56.3	2.40	0.75

2.2 Enabling factors in this study consist of parent's income and sufficiency of resources.

2.2.1 parent's income

The majority of sample of parent's income was less than 5,000 Baht per month(58.2%), followed by 5,001-15,000 Baht per month(36.6%), and 5.2% of them with income of 15,000 Baht or more per month. The median of income was 5,000 Baht per month; the lowest income was 700, while 47,000 Baht per month was the highest. (Shown in Table 7)

Table 7: Number and percentage of respondents by level of parents' income.

Parents' Income Level	Number (N=407)	Percentage (100.0)
Parents' Income Level		
High (> 15,000 Baht /month)	21	5.2
Moderate (5,001 - 14,999 Baht /month)	149	36.6
Low (< 5,000 Baht /month)	237	58.2
Median = 5,000 S.D. = 5488.10	Min = 700	Max = 47,000

2.2.2 Sufficiency of resources for prevention and control of DHF

Most of the samples (71.0%) had received insufficient resources for prevention and control of DHF at home and at school; the percentage of samples that received sufficient resource was 29.0%. When considered by item, 29.0% of the respondent had no mosquito nets or an insufficient number of them for the number of family members or the mosquito nets were damaged and not repairable. The covering of stored water containers showed insufficiency at 41.0%, and 41.0% insufficient as did insufficient use of Abate sand, as shown below in Table 8.

Table 8: Number and percentage of respondents by the sufficiency of resources for prevention and control of DHF.

Sufficiency of Resources	Mosquito net		Cover lid		Abate sand		The sufficiency	
	N	%	N	%	N	%	N	%
Sufficient	289	71.0	240	59.0	240	59.0	118	29.0
Insufficient	118	29.0	167	41.0	167	41.0	289	71.0

2.3 Reinforcing factors included social support from teachers, parents and accessibility to information regarding DHF.

2.3.1 Social supports from teachers namely, advise, encouragement, praise, and information on the prevention and control of DHF.

About a half of samples had received social support from their teachers, in the previous semester at a high level, (50.6%), followed by a low level (26.5%), and a moderate level (22.9%), respectively. The average score was 14.57, standard deviation was 5.02, the lowest score was 0 and the highest score was 20. (A total of 20 scores), as show below in Table 9.

Table 9: Number and percentage of the respondents by social supports from teachers.

Reinforcing Factors	Number (N=407)	Percentage (100.0)
Social support from teachers		
High (16 - 20 scores)	206	50.6
Moderate (12-15 scores)	93	22.9
Low (0-11 scores)	108	26.5
\bar{X} = 14.57 S.D. = 5.02	Min = 0	Max = 20

Reinforcing factors regarding social support from teachers by individual item showed a range by percentages as follows:

The best scores of the support from teachers was advising or encouraging to observe breeding sites and removal of the larvae from them or cleaning stored water containers in the bathroom at home, discarding object that may collect water, and

sleeping under a mosquito net or using mosquito sticks both day and night, with 73.2%, 66.8%, and 69.1%, respectively.

Almost a quarter of the respondent never received social support for adding salt or washing powder to the saucer under the food cupboard legs (24.1%), and for changing water in the saucer under flowerpots (22.4%). When considering the aspect of emotional support, 51.8% of the sample stated they had received it more than once, 27.1% had received it only once, and 21.1% said they had never received praise from their teachers. The data is shown in Table 10.

Table 10: Percentages of the respondents on receiving social support from Teachers regard the prevention and control of DHF. (Previous semester)

Reinforcement from Teachers	Never	Once	More than once
Advising or encouraging to...			
1. Observe larvae and cleaned stored water container at home	7.9	18.9	73.2
2. Cover water containers	16.0	24.8	59.2
3. Cleaned area around the house and removed discarded objects	10.6	22.6	66.8
4. Added salt or washing powder to the saucers under the food cupboard	24.1	23.1	52.8
5. Change water in vases and the saucer under flowerpots	22.4	19.9	57.7
6. Clean area around the school and take away discard objects	12.8	16.2	71.0
7. Observe and remove larvae in school toilets	16.7	24.6	58.7
8. Change water in vases at school	19.2	20.8	60.0
9. Sleep under mosquito nets or use mosquito stick both day and night	12.5	18.4	69.1
10. Praise from teachers for prevention of DHF	21.1	27.1	51.8

2.3.2 Social support from parents on the prevention and control of DHF

Most of samples (39.3%) rated a low level of social support from their parents for the prevention and control of DHF, followed by a high level of social

support at 38.8%, and a low level of social support at 21.9%. The average score was 13.03, standard deviation was 5.21, lowest score was 0 and the highest score was 20. (Table 11)

Table 11: Number and percentage of the respondents by the level of social support from parents.

Reinforcing Factors	Number (N=407)	Percentage (100.0)
Social Support from parents		
High (16-20 scores)	158	38.8
Moderate (12 -15 scores)	89	21.9
Low (0 -11 scores)	160	39.3
\bar{X} = 13.03	S.D. = 5.21	Min = 0 Max = 20

When considering each item individually, most samples said they were advised to sleep under mosquito nets or use mosquito stick both day and night (75.9%), clean the areas around the house by eliminating objects that may collect rain water (65.6%) and cover water containers (63.3%). On the lower end, the respondents rated items concerning social support from parent, changing or cleaning the saucer under flowerpots and vases, and adding salt or washing powder to the saucers under food cupboard at 24.3%, 32.7% and 42.3%, respectively.

On the subject of frequently of social support from parents, most samples rated they received it more than once (except item 5). When considering emotional support from parents, 49.4% said they received it more than once, 26.3% only once and 24.3% never received support at home (Table 12).

Table 12: Percentages of the respondents receiving social support from parents regarding the prevention and control of DHF. (Previous semester)

Reinforcement from Parents	Never	Once	More than once
Advising or encouraging to...			
1. Observed larvae and cleaned stored water containers at home	17.0	20.9	62.1
2. Cover all water containers	13.8	22.9	63.3
3. Clean area around the house and remove discarded objects	14.5	19.9	65.6
4. Add salt or washing powder to the saucer under the food cupboard	32.7	23.3	44.0
5. Change water in vases and saucer under flowerpots	42.3	20.1	37.6
6. Clean areas around the school and remove discarded objects	28.3	21.8	49.9
7. Observe and remove larvae in school toilet	25.8	20.9	53.3
8. Change water in vases at school	36.3	19.7	44.0
9. Sleep under mosquito nets or use mosquito sticks at all times	6.9	17.2	75.9
10. Praise and encouragement when they do activities for DHF prevention and control	24.3	26.3	49.4

2.3.3 Accessibility to information about DHF from sources of information in the previous semester.

The most frequently received information on DHF was from television (93.9%), followed by teachers and newspapers (92.1% and 89.9%). The least receipt of information was by posters (40.8%), followed by exhibition boards (57.2%), as shown in Table 13.

Table 13: Number and percentage of sources of information on DHF and prevention control of it, identified by the respondents.

Information sources	Frequently (4 times or more)		Sometime (1 - 3 times)		Never (None)	
	N	%	N	%	N	%
	Television	254	62.4	128	31.4	25
Teacher	255	62.7	120	29.5	32	7.8
Newspaper	216	53.1	150	36.8	41	10.1
Health officer	155	38.1	142	34.9	110	27.0
Radio	101	24.8	170	41.8	136	33.4
Papers and Leaflet	97	23.8	152	37.3	158	38.9
Broadcast	132	32.4	116	28.5	159	39.1
Exhibition Board	112	27.5	121	29.7	174	42.8
Poster	76	18.7	90	22.1	241	59.2

2.4 Preventive and control behaviors against DHF.

Some respondents answered “no container” in items 1, 2, 3, 5, 6.1, 6.2 and 9. Therefore, to analyze the scores between prevention and control behaviors for DHF, the scores were adjusted to the same base (100 scores) by including each score, multiplied by 100 score, and divided by the total score. The study revealed a fair level of prevention and control behavior (66.8%), followed by poor and good behaviors at 33.2% and 30.0%, respectively. The average score was 75.07 (total 100 scores),

standard deviation was 14.85, minimum score was 28, and maximum score was 100, as shown in Table 14 below.

Table 14: Number and percentage of the respondents by the level of preventive and control behaviors against DHF.

Prevention and Control Behaviors	Number (N=407)	Percentage
Good level (85 -100 scores)	122	30.0
Fair level (71-84 scores)	150	66.8
Poor level (28-70 scores)	135	33.2
$\bar{X} = 75.07$ S.D. = 14.85	Min = 28.0	Max = 100

When considering each item individually, the most proper practice was cleaning area around the house (84.3%), followed by observing and eliminating mosquito larvae in water container in the bathroom at home (82.0%), and observing and eliminating mosquito larvae in drinking and utility jar at home (80.3%). The least proper practice was sleeping under mosquito nets (30.7%), followed by using mosquito repellent cream or herbal to prevent mosquito bite (49.4%) and covering water container after use (every times) at home (53.1%), as shown in Table 15.

Table 15: Percentage of proper preventive and control behaviors against DHF of the samples.

behaviors	Percentage
4. Cleaning areas around the house	84.3
2. Observing and eliminate larvae in water containers in the bathroom at home	82.0
1. Observe and eliminate mosquito larvae in drinking and utility jar at home	80.3
9. Changing water in vase for decorative plants or fresh flower at school	79.4
6/6.1. Changing water in vase for decorative plants or fresh flower at home	75.0
7. Observing and removing coconut shell or other discarded objects at school	74.2
11. Using mosquito spray or herb	67.0
6/6.2 Changing water in saucer under flowerpots at home	66.1
8. Observing and eliminate larvae in water containers in the bathroom at school	65.8
5. Adding salt or powder in the water-cup for food storage cupboard at home	59.1
3. Covering water containers after use (every time) at home	53.1
12. Using mosquito repellent cream	49.4
10. Sleeping under mosquito nets	30.7

3. Relationship Between Predisposing, Enabling, and Reinforcing Factors with Preventive and Control Behaviors Against DHF.

3.1 Relationship between predisposing factors with preventive and control behaviors against DHF.

The results showed that the relationship between predisposing factors, which consists of grade level, gender, age, knowledge concern for prevention and control of DHF, and attitude towards DHF and preventive and control behaviors against DHF.

When compared mean scores of preventive and control behaviors against DHF of primary school children grade 4, 5 and 6 it was found that there were significant difference ($p < 0.001$), among these mean scores.

And then, when compared mean scores of preventive and control behaviors against DHF of primary school children between male and female found that there was no significant difference ($p > 0.05$).

And then, when compared mean scores of preventive and control behaviors against DHF of primary school children by father's occupation that was regrouped into two groups: occupation with salary that consist of government officer and employee, the other group: agriculture and own business, it was found that there are no significant difference ($p = 0.811$).

Age showed a significant positive association with the prevention and control behavior ($r = 0.160, p = .001$), as shown in Table 16

To describe the relationship between knowledge and attitude towards prevention and control for DHF, Pearson product-moment correlation coefficient was used; the result were as follows:

Knowledge and preventive and control behaviors against DHF also showed significant positive relationships ($r=0.231$, $p<0.01$). This meant the preventive and control behaviors against DHF would more appropriate if the children had better knowledge of the disease. The attitude towards the disease and preventive and control behaviors showed a significant positive relationship ($r=0.201$, $p<0.01$), and it meant if the children had better attitudes, they would had good preventive and control behaviors, as shown in Table 16.

Table 16: The correlation between age , knowledge, attitude and preventive and control behaviors against DHF.

Variables	preventive and control behaviors against DHF	
	(r)	(p)
Age	0.160	$p = 0.001$
Knowledge	0.231	$p < 0.001$
Attitude	0.201	$p < 0.001$

3.2 Relationship between enabling factors with preventive and control behaviors against DHF.

Parent's income and preventive and control behaviors against DHF were tested for their relationship. The results showed no relationship ($r=0.031$ and $p=0.532$).

When compared mean scores preventive and control behaviors against DHF of primary school children between those with sufficient resource, it was found that there are significant difference ($p < 0.05$), that meant, primary school children who had sufficiency of resources would better mean scores on prevention and control than the insufficient group.

3.3 Relationship between reinforcing factors with preventive control behaviors against DHF.

The association between the reinforcing factors that included social support from parents were tested and the results revealed the following:

Reinforcement from teachers was positive related to preventive and control behaviors against DHF of the children, showed positive significance ($r = 0.285$, $p < 0.001$); this meant the more the children received this reinforcement, the more they would practice prevention and control of the DHF. This was the same as social support from parents ($r = 0.260$, $p < 0.001$), meaning the more reinforcement they receive from their parents, the more the students would practice. These are shown in detail in Table 17.

Table 17: The correlation between reinforcing factors of preventive and control behaviors against DHF.

Variable	preventive and control behavior against DHF	
	(r)	(p)
Parent's income	0.031	p = 0.532
Social support from teacher	0.285	P = 0.000
Social support from parents	0.260	P = 0.000