



CHAPTER IV

RESULTS

This chapter provides a detailed description of the results obtained from the analysis of the survey and the observation. The variables are described as simple percentages, means, and standard deviations etcetera as appropriate depending on the nature of the variables. It starts with the demographic data followed by the responses for each section of the questionnaire. The level of knowledge, attitude and practice score were then presented followed by the results Chi square test used as appropriate, to see whether there is any association between socio demographic characteristics and Practice scores. Lastly correlation was used to see the relationship between Knowledge and Practice and Attitude and Practice scores among the respondents.

4.1 Demographic Information

This study was conducted in Maafannu district of Male', Maldives. Three hundred and seventy four participants (374) completed the survey questionnaire. The majority of the participants were female (60%). The mean age of the participants was 36 years with a standard deviation of 9.63. The age ranged from 20 to 62 years. Table 2 shows that the majority of the respondents (39%) were in the age range of 31 - 40 years, 33% were younger than 31 years, 20% were older than 41 years and only 27 respondents (7.0%) were older than 51 years. More than half of the respondents (86%) were married. Most of them were educated both in primary school (44%) and in secondary school (44%) and most of them were employed (65%). Out of those who

were employed and economically active the common income was above Ruffiyya 3000/month (USD 234/month) (45%). Most of the families had a family size of 1 - 10 people (81%) and most of them (83%) had 0 – 3 kids below 15yrs. 73 (20%) households had the history of dengue fever.

Table 2: Distribution of the respondents by socio-demographic characteristics

Characteristics	Number (n=374)	Percentage
Gender		
Male	149	39.8
Female	225	60.2
Age group (years)		
21-30	125	33.4
31-40	147	39.3
41-50	76	20.3
≥ 51	26	7.0
Mean = 35.89	SD = 9.63	Minimum = 20
		Maximum = 62
Marital Status		
Single	15	4.0
Married	323	86.4
Widowed/Divorced	36	9.6
Education Level		
Primary	164	43.9
Secondary	164	43.9
Graduate/Post graduate	46	12.2

Table 2: (continued) Distribution of the respondents by socio-demographic characteristics

Characteristics	Number (n=374)	Percentage
Employment Status		
Employed	244	65.2
Unemployed	100	26.7
Economically Active	30	8.1
Income (Rufiyya/month)		
None	100	26.7
900- 1500	26	7.0
1501-3000	81	21.7
≥ 3001	167	44.7
Members in the family		
≤ 10	301	80.5
11-20	57	15.2
≥ 21	16	4.3
Mean = 8.31	SD = 5.37	Minimum = 1 Maximum = 40
Children under 15yrs of age		
≤ 3	312	83.4
4-6	57	15.2
≥ 7	5	1.3
Mean = 2.06	SD = 1.67	Minimum = 0 Maximum = 11
History of dengue in the last 2yrs		
Yes	73	19.5
No	301	80.5

4.2 Source of information regarding dengue fever

Among the respondents, 90% had received some sort of information regarding dengue fever while 10% hadn't received any as shown in figure 2.

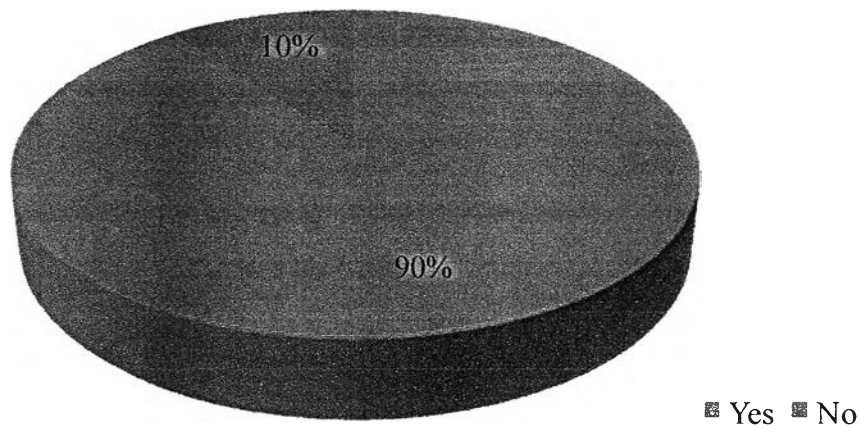


Figure 3: Respondents who received information about dengue fever

Respondents were allowed to select more than one source for received information about dengue fever. Among the 90% who received the information, were from both Television (T.V) and Radio (42%) followed by T.V, Radio and other sources (16.6%). Smaller percentages reported receiving from magazines, leaflets, newspapers or friends as shown in Table 3. Those who have mentioned other sources of information comprised of internet, either because of the profession or one of their family members had a history of dengue fever in the past 2 years.

Table 3: Number and percentages of the sources which the respondents received information regarding dengue fever.

Source of information	Number (n = 374)	Percentage
None	39	10.4
T.V and Radio	157	42
Newspaper	7	1.9
Magazines	1	0.3
Leaflets	6	1.6
Friends	7	1.9
Others	35	9.4
All of the above	50	13.4
Newspaper, Magazines and leaflets	10	2.7
T.V, Radio and others	62	16.6
Total	374	100

4.3 Knowledge on Dengue Fever

Participants answered a total of 14 close ended, multiple choice questions about dengue fever. Each correct response was given one mark with a total of 14 marks. The mean knowledge score for the respondents was 8.60 out of possible 14 points (SD = 2.45). Five of the respondents were able to answer all the questions correctly. The range of knowledge score was 0 - 14 as shown in Table 4.

Distribution of knowledge on dengue fever of the respondents showed that 46% of subjects had “low knowledge” as well as 41% of them had “moderate knowledge” while 13% had “high knowledge”.

Table 4: Distribution of knowledge level on dengue fever.

Level	Number (n=374)	Percentage
High (12-14 scores)	47	12.6
Moderate (9-11 scores)	155	42.4
Low (0-8 scores)	172	46.0
Total	374	100.0
Minimum = 0	Maximum = 14	Mean = 8.60
		SD = 2.45

Response for the 14 knowledge part of the questionnaire was summarized in Table 5. 91.4% of the respondents knew that empty stagnant water from old tires, trash cans, and flower pots can be breeding places for mosquitoes (item 7). The questions with the least number of correctly answered were 29.9% and 31.8%, for the question regarding abates sand (item 11 and 12).

Table 5: Number and percentages of the items on the knowledge of dengue fever answered correctly by the respondents (n = 374).

Items	Number	Percentage
1. The principal mosquito vector for dengue fever is <i>Aedes aegypti</i> .	295	78.9
2. Dengue fever is a severe, flu-like illness that affects infants, young children and adults.	320	85.6
3. Dengue patients have chills, headache, pain upon moving the eyes, and low backache.	263	70.3
4. Rainy season is the only epidemic season for dengue infection.	173	46.3
5. Mosquitoes transmitting dengue infection bites only during day time.	148	39.6
6. The mosquito that transmits dengue infection lays its eggs in dirty sewage water.	216	57.8
7. Empty stagnant water from old tires, trash cans, and flower pots can be breeding places for mosquitoes.	342	91.4
8. Dengue viruses are transmitted to humans through bites of infective female <i>Aedes</i> mosquitoes	198	52.9
9. Only method of controlling dengue infection is to combat the vector mosquitoes.	287	76.7
10. There is no specific treatment for dengue infection and the drug of choice is paracetamol.	197	52.7
11. Abate sand can be beneficial in killing the mosquito larvae.	112	29.9
12. Abate sand, if put in the standing water, can help to prevent the mosquito breeding for 3 months.	119	31.8
13. Stored water containers/tanks for drinking water without being covered should be cleaned every 7days.	324	86.6
14. I am afraid of getting dengue fever if one of my family members has dengue fever.	252	67.4

4.4 Attitudes towards Dengue

Table 6: Distribution of attitude levels towards dengue fever of the respondents

Level	Number (n=374)	Percentage	
Positive (47-60 scores)	159	42.5	
Neutral (41-46 scores)	158	42.2	
Negative (12-40 scores)	57	15.2	
Total	374	100.0	
Mean = 45.63	SD = 5.66	Minimum = 26	Maximum = 58

Participants answered a total of 12 questions which had a total score of 60. Distribution of attitudes on dengue fever of the respondents is shown in Table 6. There were 42.5% of respondents who had “positive attitude”, 42.2% of them had “neutral attitude”, while 15.2% had “negative attitude”. The mean attitude score for all respondents were 45.63 out of a possible 60 points (SD = 5.66). The range of attitude score was 26 and 58 respectively as shown in Table 6.

Table 7: Percentage of the respondents by the attitude towards dengue fever of each individual item.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	\bar{X}
	(%)	(%)	(%)	(%)	(%)	
Positive Statements:						
03. Only method of controlling or preventing DF is to combat the vector mosquitoes.	42.5	36.9	10.4	5.9	4.3	4.07
05. Everybody has a risk of being infected with dengue virus.	53.5	38.5	4.3	2.7	1.1	4.41
07. It is possible to recover completely from dengue infection.	37.4	33.4	17.6	7.8	3.7	3.93
09. Restricting and checking the availability of potential breeding habits should be conducted every 1-2 times/year.	19.8	26.7	18.2	29.9	5.3	3.26
11. Sleeping in mosquito net can prevent DF.	27.8	33.2	16.6	12.6	9.9	3.56
13. You are one of the important people in preventing DF.	63.4	27.0	2.7	2.7	4.3	4.43

Table 7: (continued) Percentage of the respondents by the attitude towards dengue fever of each individual item.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly Disagree	\bar{X}
	(%)	(%)	(%)	(%)	(%)	
Negative Statements:						
01. DF is a disease that cannot be prevented.	7.2	12.6	7.8	36.6	35.8	3.81
02. Eliminating the breeding places is the responsibility of the public health staff and health volunteer.	20.9	15.8	8.0	30.2	25.1	3.23
04. Only smogging is enough to prevent mosquito and no need for other ways.	7.0	6.7	10.2	51.9	24.3	3.80
06. Person who once got dengue infection cannot get dengue infection again.	7.0	14.7	20.9	38.2	19.3	3.48
08. Elimination of larval breeding sources is a waste of time and very complicated.	3.7	7.8	17.6	33.4	37.4	3.93
10. Strong and healthy person will not get dengue infection.	15.0	12.8	8.6	31.6	32.1	3.53

4.5 Practice about dengue fever

In the survey questionnaire, there were 13 questions related to practices against dengue fever prevention. For 5 of the 13 items, distributions of responses did not allow a meaningful assessment in relation to independent variables. The responses regarding each of these items are summarized in Table 8.

Table 8: Number and percentages of items in the households which they have and don't have.

Item	Have		Don't Have	
	Number	(%)	Number	(%)
2. Cover in water tanks.	256	68.4	118	31.6
3. Water tank in the house.	256	68.4	118	31.6
4. Flower pots in the house.	215	57.5	159	42.5
5. Indoor plants in the house.	215	57.5	159	42.5
6. Plates supporting the flower pots.	210	56.15	164	43.9

Out of these five questions and those who have the above items in their household responded in the following ways as shown in Table 9, Figure 4 and Figure 5. Thirty eight percent of the respondents chlorinated their water tanks in order to prevent from mosquito breeding (figure 4). As in figure 5 most of the respondents examined their flower pots for mosquito larvae weekly (38%) and (23%) respondents

drained off the water from the plates supporting the flower pots weekly as shown in Table 9.

Table 9: Frequency and percentages of the times in which the respondents drain water in the plates supporting the flower pots (n = 374).

	Number	Percentages
None	236	63.1
Weekly	86	23.0
Alternate days	9	2.4
Daily	43	11.5
Total	374	100

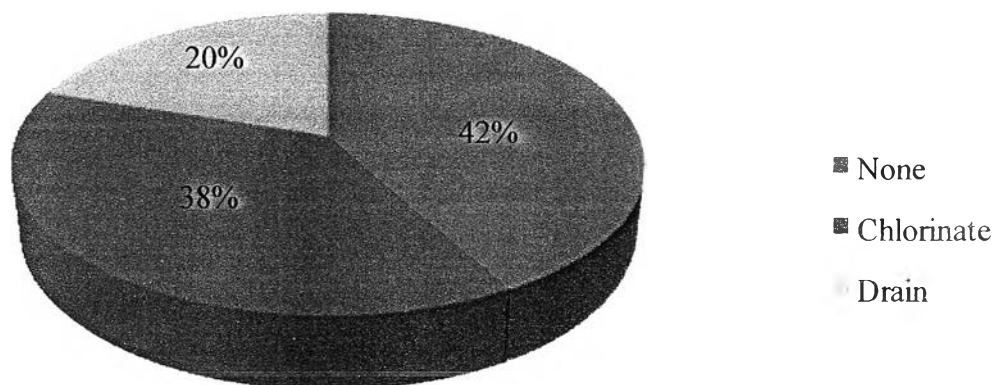


Figure 4: shows the ways in which people do perform in preventing mosquito breeding in water tanks (n = 374).

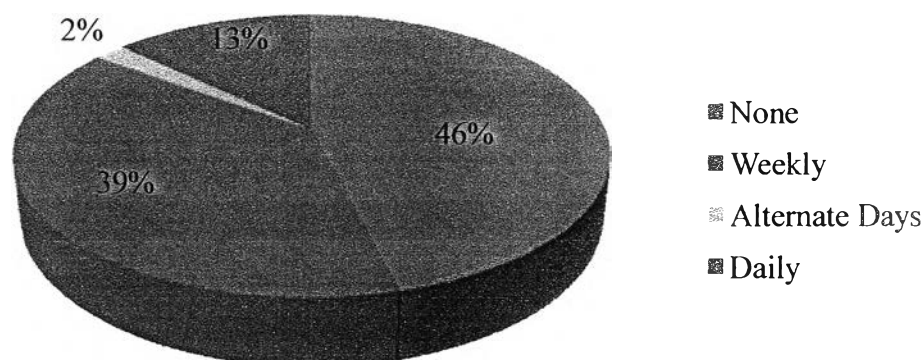


Figure 5: shows how often (in percentages) the respondents examine for mosquito larvae in the flower pots (n = 374).

The remaining 8 analyzable items were all assessed as zero-one indicator variables (dummy variables). Each correct response was given one mark with a total of 8 marks and the score was summed up and set as three levels, poor practice, fair practice and good practice. The mean practice score for the respondents was 4.75 out of possible 8 points (SD = 1.39). As presented in Table 10, majority of the respondents had “fair practice” and 43% had “low practice”, while only 8.8% had “good practice”. Range of the respondent’s practices scores was 1- 8.

Table 10: Distribution of practice levels towards dengue fever prevention.

Level	Number	Percentage	
Good (7-8 scores)	33	8.8	
Fair (5-6 scores)	180	48.1	
High (0-4 scores)	161	43.0	
Total	374	100.0	
Mean = 4.75	SD = 1.39	Minimum = 1	Maximum = 8

Table 11: Number and percentages of the items on the practice of dengue fever prevention answered correctly by the respondents (n = 374).

Items	Number	Percentage
1. Covering water jars after using immediately.	368	98.4
7. Examining discarded item that can hold water around the house.	284	75.9
8. If yes, do you ever put them in the garbage or dispose them.	211	56.4
9. Using mosquito net/mosquito coils in your house.	271	72.5
10. Participation when the community has been sprayed fog.	45	12.0
11. Participation in any campaigns of dengue infection in your community.	59	15.8
12. Examining the mosquito larvae in water containers in the toilet.	293	78.3
13. Checking and cleaning roof gutters in the rainy season.	244	65.2

Table 11 shows a summarized response for the practice part of the questionnaire. Ninety eight percent of the respondents cover the water jars after using it immediately which is a very good practice. The questions with the least number of correctly answered were 12% and 16%, for the question regarding community participation in dengue fever prevention (Item 10 and 11).

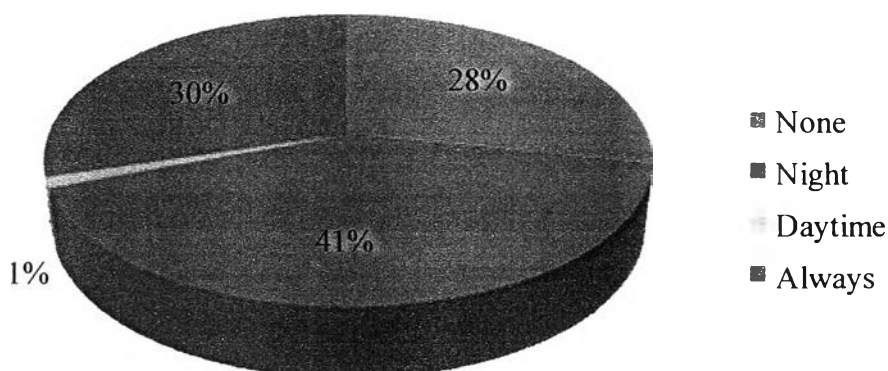


Figure 6: shows the time the respondents use mosquito coils or electric mosquito controllers to prevent from mosquito bites (n = 374).

Majority of the respondents (41%) use during night time only and 28% of the respondents do not use. Thirty percent use day and night time and only one percent use during day time. Twenty eight percent who did not use anything to prevent from mosquito bites might find mosquito bites as of not a nuisance to them. People who were using mosquito coils or mats at night meant that they were not aware of dengue transmitting mosquito as a day biting mosquito.

4.6 Observation Results

Twenty five percent of the households had water collection on the plates supporting flower pots at home and only 5% of the household had stored water containers in the toilet. None of the houses had dirty water in indoor plants.

Of the interviewed households, 59% had dirty housing environment. Most of the houses doors and windows remain closed all the daytime and inside was relatively

dark. This can be a preferable resting place for Adult Aedes mosquitoes. Forty seven percent of the households had empty cans, discarded bottles or anything that can hold water around the house. And 54% of the households had not covered the stored water containers/tanks.

4.7 Comparison of Practice score between the grouping variables

To compare the practice scores between the different groups (age groups, gender, education, occupation, etc), chi-square test was used. No statistically significant difference was found between any of the groups except for the gender and knowledge. Also correlation coefficient test was used between knowledge and attitude with the practice scores treating the variables as continuous variables. The following tables (Table 11 to 21) provide the details of these tests.

Table 12: Association between gender and practices on dengue prevention (n = 374)

Level	Gender			Chi-Square	P value
	Male	Female	Total		
	No. (%)	No. (%)	No. (%)		
Poor Practice	73(49.0)	87(38.7)	160(42.8)	8.11	0.01
Fair Practice	69(46.3)	110(48.9)	179(47.9)		
High Practice	7(4.7)	28(12.4)	35(9.4)		
Total	149(100)	225(100)	374(100)		

Gender had association with level of practice behaviors among the respondents in this study ($p = 0.01$), as shown in Table 12. Females had higher practice behavior than males in prevention of dengue fever.

Table 13: Association between age and level of practice behaviors against dengue fever prevention (n = 374).

Level	Age				Total No. (%)
	20 - 30 No. (%)	31- 40 No. (%)	41 - 50 No. (%)	Above 51 No. (%)	
Poor Practice	56 (44.8)	68 (46.3)	27 (35.5)	9 (34.6)	160 (42.8)
Fair Practice	61 (48.8)	66 (44.9)	39 (51.3)	13 (50.0)	179 (47.9)
Good Practice	8 (6.4)	13 (8.8)	10 (13.2)	4 (15.4)	35 (9.4)
Total	125 (100)	147 (100)	76 (100)	26 (100)	374(100)
$\chi^2 = 5.77$		df = 6		p = 0.45	

As shown in Table 13 there is no association between age and level of practice.

Table 14: Association between marital status and level of practice behaviors against dengue fever prevention (n = 374).

Level	Marital Status			Total No (%)
	Single No. (%)	Married No. (%)	Divorced/ Widowed No. (%)	
Poor Practice	9 (60.0)	133 (41.1)	18 (50.0)	160 (42.8)
Fair Practice	5 (33.3)	162 (50.2)	12 (33.3)	179 (47.9)
Good Practice	1 (6.7)	28 (8.7)	6 (16.7)	35 (9.4)
Total	15 (100.0)	323 (100.0)	36 (100.0)	374 (100.0)
$\chi^2 = 6.47$		df = 6	p = 0.37	

There was no clear association of marital status with practice level (p = 0.37).

Table 15: Association between level of education and level of practice behaviors against dengue fever prevention (n = 374).

Level	Education			Total No (%)
	Primary No. (%)	Secondary No. (%)	Graduate/ Post graduate No. (%)	
Poor Practice	67 (40.9)	70 (42.7)	23 (50.0)	160 (42.8)
Fair Practice	82 (50.0)	76 (46.3)	21 (45.7)	179 (47.9)
Good Practice	15 (9.1)	18 (11.0)	2 (4.3)	35 (9.4)
Total	164 (100.0)	164 (100.0)	46 (100.0)	374 (100.0)
$\chi^2 = 2.67$		df = 4	p = 0.61	

Moreover education was not associated with level of practices behavior of dengue fever prevention.

Table 16: Association between employment status and level of practice behaviors against dengue fever prevention (n = 374).

Level	Employment Status			Total No (%)
	Employed No. (%)	Unemployed No. (%)	Economically Active No. (%)	
Poor Practice	110 (45.1)	38 (38.0)	12(40.0)	160 (42.8)
Fair Practice	113 (46.3)	54 (54.0)	12 (40.0)	179 (47.9)
Good Practice	21 (8.6)	8 (8.0)	6 (20.0)	35 (9.4)
Total	244(100.0)	100 (100.0)	30 (100.0)	374 (100.0)
$\chi^2 = 6.16$	df = 4		p = 0.18	

As shown in Table 16, there was no clear association of employment status with preventive behaviors against dengue fever.

Table 17: Association between number of members in the family and practices of dengue preventive behavior.

Level	No. of family members			
	01 - 10	11 - 20	21 - 40	Total
	No. (%)	No. (%)	No. (%)	No (%)
Poor Practice	134 (44.5)	21 (36.8)	5 (31.3)	160 (42.8)
Fair Practice	139 (46.2)	31 (54.4)	9 (56.3)	179 (47.9)
Good Practice	28 (9.3)	5 (8.8)	2 (12.5)	35 (9.4)
Total	301 (100.0)	57 (100.0)	16 (100.0)	374 (100.0)
$\chi^2 = 2.29$	df = 4		p = 0.68	

As well as number of family members had not association with level of practice behaviors regarding dengue fever prevention.

Table 18: Association between history of dengue in the family members in the last 2yrs and level of practice against dengue fever prevention (n = 374).

Level	Dengue History				Total	
	Yes		No		No.	%
	No.	%	No.	%		
Poor Practice	27	37.0	133	44.2	160	42.8
Fair Practice	41	56.2	138	45.8	179	47.9
High Practice	5	6.8	30	10.0	35	9.4
Total	73	100.0	301	100.0	374	100.0
X² = 2.63		df = 2		p = 0.27		

From the results of association between dengue history among the family members and level of practice behaviors among the respondents found out that there was no significant in association ($p = 0.27$), as shown in Table 18.

Table 19: Association between received information regarding dengue fever and level of practice behaviors against dengue fever prevention (n = 374).

Level	Received dengue information					
	Yes		No		Total	
	No.	%	No.	%	No.	%
Poor Practice	139	41.5	21	53.8	160	42.8
Fair Practice	166	49.6	13	33.3	179	47.9
High Practice	30	9.0	5	12.8	35	9.4
Total	335	100.0	39	100.0	374	100.0
	$\chi^2 = 3.72$		$df = 2$		$p = 0.15$	

There was no significant association between the respondents who received information regarding dengue fever and with the level of practice behaviors about dengue fever among the respondents in this study ($p = 0.15$)

Table 20: Association between knowledge and level of practice behaviors against dengue fever prevention (n = 374).

Level	Knowledge			
	Low	Moderate	High	Total
	No. (%)	No. (%)	No. (%)	No (%)
Poor Practice	85 (49.4)	64 (41.3)	11 (23.4)	160 (42.8)
Fair Practice	72 (42.9)	83 (53.5)	24 (51.10)	179 (47.9)
Good Practice	15 (8.7)	8 (5.2)	12 (25.5)	35 (9.4)
Total	172 (100.0)	172 (100.0)	47 (100.0)	374 (100.0)
$\chi^2 = 24.55$	df = 4		p = 0.00	

Knowledge had highly statistically significant association with level of practice behaviors regarding dengue prevention among the respondents (p = 0.00).

Table 21: Association between attitude and level of practice behaviors against dengue fever prevention (n = 374).

Level	Attitude			Total
	Negative	Neutral	Positive	
	No. (%)	No. (%)	No. (%)	
Poor Practice	27 (47.4)	63 (40.0)	70 (44.0)	160 (42.8)
Fair Practice	21 (36.8)	83 (52.5)	75 (47.2)	179 (47.9)
Good Practice	9 (15.8)	12 (7.5)	14 (8.8)	35 (9.4)
Total	57 (100.0)	158 (100.0)	159 (100.0)	374 (100.0)
$\chi^2 = 6.46$	df = 4		p = 0.17	

Attitude had no association between the levels of practice behaviors against dengue fever prevention among the respondents (Table 21).

Knowledge, Attitude and Practice regarding dengue fever were also treated as continuous variables, and correlation coefficients were computed. Knowledge about dengue fever had significant positive correlation with practices of dengue preventive behavior ($p = 0.000$), meaning people who have high knowledge on dengue fever will have good practices against dengue fever prevention. In comparison, attitude showed no correlation with level of practices against dengue fever prevention ($p = 0.69$), as shown in Table 23. Hence, there was uniformity between chi-square testing and correlation analysis concerning the associations of knowledge and attitude with

practice. This implied that there was no major bias due to the preference of cut off points for classifying the knowledge and attitude.

Table 22: Correlations of total score of practices of dengue preventive behavior with total knowledge score among the participants.

Variables	Practice against dengue	
	r	p
Knowledge	0.183	0.000

Correlation was significant at the 0.01 level.

Table 23: Correlations of total score of practices of dengue preventive behavior with total attitude score among the participants.

Variables	Practice against dengue	
	r	p
Attitude	0.033	0.69

4.8 Summary

This chapter has provided a detailed description of the study findings. The findings from the survey questionnaire and the observations are discussed according to individual items and over all scores obtained from all the items. The overall scores were then tested for any statistically significant relationship between the major demographics of the study participants.

The next chapter will discuss the significance of the study findings, implications for practice as well as research. It will also analyze the study findings with respect to its limitations.