DEPARTMENT OF PUBLIC HEALTH

FACULTY OF HEALTH SCIENCES

THE MALDIVES NATIONAL UNIVERSITY

RESEARCH PROJECT (PUB 401)
KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT DENGUE FEVER AMONG THE AGE GROUP 18-60 YEARS IN GA. GEMANAFUSHI

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THE MALDIVES NATIONAL UNIVERSITY

NOVEMBER, 2015
KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT DENGUE FEVER AMONG THE AGE GROUP 18-60 YEARS IN GA. GEMANAFUSHI

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A project submitted in partial fulfillment of the requirements for the degree of Bachelor in Primary Health Care

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November, 2015
DECLARATION

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I hereby declare that this project is the result of my own work, except for quotations and summaries which have been duly acknowledged.

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KNOWLEDGE, ATTITUDE AND PRACTICE ABOUT DENGUE FEVER AMONG
THE AGE GROUP 18-60 YEARS IN GA.GEMANAFUSHI

MOHAMED IMRAN

November 2015

ABSTRACT

The main purpose of this research is to identify the knowledge, attitude and practice about dengue fever. This study is useful because dengue is the endemic disease in the Maldives and a life threatening communicable disease. The target population of the study (18-60 year’s population) should have enough knowledge on the study area in order to manage the disease condition effectively. In 2011, there was a dengue epidemic in Maldives and 10 cases reported in Gemanafushi. During dengue out-break in June to August of this year, 01 case were reported in Gemanafushi. Therefore, it is important to conduct a study to identify knowledge, attitude and practice of study population on dengue fever. This is a cross-sectional descriptive study conducted on 273 subjects and quantitative research method was used to collect data. Participants overall was 77% of the participants had high-level of the knowledge regarding dengue fever and only 9% of the sample had low-level of the knowledge regarding dengue symptoms, mode of the transmission, dengue mosquitoes, breeding mosquitoes. Almost 90% of the participants agreed that the dengue is a serious illness. Majority of the respondents 77.7% eliminate standing water around the house to reduce mosquitoes once a day and week. More than a half (57.50%) of the respondents used mosquito’s lotion to prevent form bite. In conclusion, overall knowledge, attitude were at a good level, even though some practices need improvement in control of dengue fever. Therefore, additional awareness programs are needed to improve the preventive practice of the community regarding the DF.
AKNOWLEDGEMENT

It would have not been possible to complete this study without the help of all of the individuals who had contributed to this project work directly or indirectly. I put my sincere gratitude to all of them without excluding any one who had involved in making this study a real.

I deeply acknowledge my respectful supervisor, MR: Shaheeb Abdhul Azeez lecturer of Faculty of Health Science, Maldives National University for assisting and guiding me throughout the project with full interest.

I also express my sincere thanks to my whole family members who did countless of work in data collection. In the same platform, I salute all the participants for the appreciation of their full support in completing this study.
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LIST OF ABBREVIATIONS

DF-Dengue fever
D2-Dengue2
D3-Dengue3
D3- Dengue4
DF-Dengue fever
DHF-Dengue hemorrhagic fever
DSS-Dengue shock syndrome
WHO- World Health Organization
Definition of terms

Knowledge: - Participants concepts regarding dengue
Attitude: - participants beliefs about dengue
Practice: - participants practice to prevent from dengue
Dengue:- Vector bone disease, which include DF, DHF and DS
CHAPTER 1

INTRODUCTION

1.1 Background to the study

Dengue fever is the vector borne diseases transmitted by mosquitoes. There are four main types of dengue virus discovered D1, D 2, D3, D 4 (Thisyakorn corresponding & Thisyakorn, 2014). Aedes Egypti and, Aedes Albopictus are the vectors which transmit dengue fever (WHO, Water Sanitation Health, 2015).

1.1.2 Global Burden of Dengue

According the WHO estimation 50 million adults and children were infected/year. In addition, the number of estimated deaths due to dengue fever was 25,000/year (Shazra & Abdulla, Maldives hit by dengue fever in global epidemic, 2010). Moreover, dengue fever is an endemic disease for more than 100 countries of WHO—includes Africa, America, the Eastern Mediterranean, south East Asia and Western Pacific (WHO, Dengue and severe dengue, 2015). There were 22,000 deaths mostly among children due to dengue infection (WHO, Impact of Dengue, 2015).
Figure 1.1 - Average annual number of DF/DHF cases reported to WHO and annual number of countries reporting dengue


According to (WHO, *Impact of Dengue, 2015*) data shown average annual number of DF and DHF cases reported to the WHO from different countries. Compare to 1955 and 2007 number of dengue cases and reported countries are increased year by year.

1.1.3-Burden of Dengue in South East Asia

In Asia dengue fever is one of the main causes of hospitalization and death (Bhatt S, 2015). In according to Palatino, (2013) in 2012, the number of case reported with dengue fever in Philippines was 420,207 and in Malaysia were 103552.
In 2011, it was recorded 21,597 dengue cases and 365 deaths in Pakistan eastern province of Punjab (Shakoor, 2012). In addition, 10,352 cases were recorded in the past six months of 2012 (WHO, Dengue fever in Pakistan, 2014). According to Burke, (2014) in India dengue cases estimated was 6m in between 2006 and 2012 this amount is 300 times greater than reported cases.

1.1.3- Dengue fever in Maldives

Dengue has become an endemic in Maldives since 1979. In 2006, 2,768 dengue cases and 10 deaths were reported (Ahmed, 2008).

According to Maldives health profile 2014; in 2010, 920 cases were reported. But, in 2012, 2909 cases were reported and in 2013, 1083 cases were reported (Health Protection Agency, 2014, p. 08). In July 2015 first week 155 cases were reported however, in the second week 125 cases were reported. (Junaid, 2015, p. para4). In this year total four people had died due to dengue infection (Nizar, 2015 para1).

1.1.4- Dengue fever in GA atoll

According to (WHO, Dengue outbreak in Maldives, 2015), in GA Atoll, 46 cases were reported 1st June to 3rd September 2011
According to Haveeru online Nizar, (2015 para1) five years old boy also died undergoing treatment of dengue in GA.villigili Hospital in 2015.

1.1.5 Dengue in GA. Gemanafushi

In 2010, 02 cases were reported, in 2011 this figure was increased to 10, 2013 there were 02 dengue cases and 2015, 03 cases were reported (Gemanafushi Health center, 2015).

1.2 Problem Statement

This study is useful because dengue is the endemic disease in the Maldives and a life threatening communicable disease. The target population of the study (18-60 year’s
population) should have enough knowledge on the study area in order to manage the disease condition effectively.

A research done in Male, revealed that the age between 18-60 years population had less knowledge on dengue fever; only less than half 46% of the participants had fair level of knowledge on dengue fever (Ahmed, 2008). In 2011, there was a dengue epidemic in Maldives and 10 cases reported in Gemanafushi. During dengue out-break in June to August of this year, 01 case were reported in Gemanafushi. Therefore, it is important to conduct a study to identify knowledge, attitude and practice of study population on dengue fever.

1.3 Purpose of the study

The main purpose of this research is to identify the knowledge, attitude and practice on dengue fever in 18-60 years in GA Gemanafushi.

1.4 Objectives of study

1.4.1 General Objective

To identify the knowledge, attitude and practice concerning dengue fever.

1.4.2 Specific Objectives

- To identify Knowledge of the participants regarding the dengue fever.
- To know the attitude of the participants about dengue fever.
- To find out preventive practice of the participants against the dengue fever.

1.5 Research Question

What are the knowledge, attitude and practice on dengue fever?
CHAPTER 2

REVIEW OF LITERATURE

2.0-INTRODUCTION

In this chapter it contains literature about the dengue, which contains mainly fourth parts. The first part will provide literature for the situation of the dengue; the second part will contain sign and symptoms, incubation period and classification of dengue. Third part contains about dengue virus, complication of DF, dengue mosquitos’ life cycle, impact of dengue fever in health care system, mosquitoes breeding sites, climate change and dengue fever, prevention against dengue moreover, preventive measures taken for biting of mosquitoes. Fourth part contains treatment and home care given for dengue fever moreover past findings regarding to the dengue fever.

2.1-Dengue fever sign, symptoms, incubation period and classification

Dengue is a common vector borne disease in the world. Aedes aegypti mosquito is the vector which spreads dengue. Causative agent of dengue is Dengue virus belongs I the family of flaviviridae. There are four types of dengue Virus are DENV-1, DENV-2, DENV-3 and DENV-4. Dengue hemorrhagic fever (DHF) is the sever type of dengue fever. Two main forms of dengue are DF and DHF (Sohler, 2015, p. 698) . Signs and symptoms of dengue fever are; Fever, body aches, headache, chills rash, swollen
lymphnode, pain behind the eyes, vomiting, abdominal pain, etc. Incubation period of dengue fever is 3-15 days after biting the vector (Davis, 2014, p. 2). Dengue hemorrhagic fever (DHF) is more severe type of dengue characterized by bleeding and a drop of blood pressure that can cause the dengue shock syndrome and death. Infants, small children and elders are the groups in risk of hemorrhagic fever, which is caused by same viruses as dengue. Sign and symptoms of dengue fever are acute fever, frequent vomiting, and black stool, bleeding from under the skin, nose, mouth, coldness of the skin etc. However, Dengue Shock Syndrome (DSS) is similar to DHF in additional sign include weak pulse and narrow pulse pressure (Krucik, 2015).

2.2-Dengue virus

There are four different types of dengue virus are discovered. These virus are originated from the family flavivirade and genus Flavivirus. The serotypes are termed DENV-1, DENV-2, DENV-3 and DENV-4 (Murray, 2013).

2.3-Complication of dengue fever

Dengue fever is a serious complicated infection some of the complication of dengue fever includes as follows:-

- Vomiting
- Dehydration
- Febrile convulsion

(Normandin, 2012).
In addition, complications of dengue include severe pain in abdomen, myalgia, fluid accumulation in the liver, hemorrhages, nausea, fluid accumulation in the chest, vascular permeability, dehydration, myocardial dysfunction, development of shock and even multi-organ failure (WHO, Dengue fever-treatment and prevention, 2014).

2.4-Impact of dengue fever in health care system

Castaneda, Diaz, & Guzman (2011) conducted a research to find out burden of dengue fever and associated coast of dengue fever in Columbia, they found 2011-2012, 1851 cases of severe dengue, and 205 deaths. In addition, they have identified that to manage dengue cases 52.2$ and 61.0$ million spent in the year 2011. They also revealed that 56,998 dengue cases were aided with medical care (22,799 ambulatory and 34,199 hospitalized) during the period of the study. Health economist Professor or Donald Shepard said “the total cost of dengue cost of dengue is estimated at $ 2.5 billion per this amount is paid by governments, households, employers, and insurers to support healthcare systems, treat affected populations and compensate for lost productivity” (Bodo, 2014).

2.5-Dengue Vector

Aedes aegypti mosquito is the vector which will spread dengue. It looks like small white lyre shaped marking and banded legs. Most commonly found in tropical and sub-tropical areas of the world. Male adults feed on nectar of plants but female mosquitoes feed on blood in order to produce eggs and mosquitos’ active during the day time. It bites not only for humans also bit dogs and other domestic animals, mostly mammals.
These mosquitoes can bite people without being notice such as ankles, elbows...etc. Eggs lay inside water containers, lava feed small aquatic organism such as algae and particles of plants and animal materials in water filled containers (Centr for Disease Control, 2014).

2.6-Dengue mosquito’s life cycle

Adult dengue mosquitoes can live an average two weeks, however, dengue mosquitoes life depends on their environment, life span can range two weeks to month (WHO, Tips for privention of breeding of Aedes mosqitoe in your urban neighbourhood, 2011). The eggs can survive for 9 months and in its favorable condition (Centre for Disease control and prevention, 2015). Dengue mosquitoes lay eggs on the top of water filled container. Female mosquito’s lay average 3-4 batches of eggs in a lifetime. Each batch contains 70-80 eggs/batches. Eggs will take 08 days to become an adult (Anil, 2011).

The mosquito life cycle is classified into 4 stages they are:-

![Figure 2.1- Life cycle of dengue mosquito](image)

Source: (Anil, 2011)
2.7- Most common mosquitoes breeding sites around the home

- Dumping abounds home such as tin, can, plastic containers, tires or other containers which standing in water etc.
- Wheelbarrow or other containers with standing on water.
- Leaves from surrounding trees
- Roof gutters
- Bird birth

(Mahmood, 2013).

2.8- Climate change and dengue fever

Morin (2013) conducted laboratory studies he found climate change will increase spreading of the dengue fever. Association between climate change and factors that affect dengue spread are compound. Both directly and indirectly climate affect the causative agent and vector of the dengue. Rain falls directly increase the habit of the dengue vector. Indirectly, rainfall, temperature and humidity influence land cover and land use which increase the population of vector. Precipitation influence habit availability for dengue vector. Temperature increase is associated virus replication faster. Furthermore, climate change is one of the factors to increased dengue vector some other also mentioned such as urbanization, globalization and vector mutation (Weisenbacher, 2015). Fischer (2015) conducted a study to assess the importance of temperature and egg mortality in determining the differences in the oviposition dynamics of Aedes Egypti between favorable and less favorable areas in Buenos Aires City, Argentina. The results showed
greater temperature and lower everyday egg death at the site where higher oviposition activity was noted

2.9-Dengue prevention

Awareness for the prevention of mosquito bites is the preventive measures for prevention of dengue fever. It is important to visit everyone to identify their knowledge in order to make them ready to protect themselves before visiting common areas of dengue fever. Indeed, prevention is better than cure ( SHAH, 2013, p. 20).

2.9.1-Awareness

Giving awareness to people about dengue fever is the first step in prevention. Knowledge is the main source of prevention, if we have enough knowledge we are prepared for it in advance. Therefore, taking preventive measures before it occurs is the best way of getting protected from any disease condition ( Herriman, 2015).

2.9.2-Vector control

Aedes aegypti laid eggs commonly on the surfaces of the water filled container such as unsealed septic tanks, discarded tires, bottles or boats and other vehicles that may filled accumulate water (Ananya, 2014).

Some of the measures to put against mosquito breeding sites include:-

- Pouring a Mosquito-eating fish into the well
- Change water from bird birth and bowel regularly
- Remove water from flower pot plates on regularly

(Potter, Townsend, & Knapp, 2013)

2.9.3-Measures taken against mosquitoes bite

Some of the preventive measures to take against mosquitoes bite includes:-

- Using a mosquito net
- Wearing a cloth which will cover the whole body
- Using an insect repellent
- Mosquito coils
- Electric rackets

(Anand, Kumar, Saini, & Meena, 2014)

2.9.4-Dengue treatment

There is no specific antiviral treatment available for dengue fever. Treatment is based on symptomatic such as fluid replacement, paracetamol is given for relief of fever and bed rest is necessary for dengue. Aspirin, nonsteroidal anti-inflammatory drugs (NSAIDs), and corticosteroids should be avoided. Management of severe dengue needs careful attention to fluid supervision and proactive treatment of hemorrhage (Shepherd, 2015).
2.3-Home care given for dengue fever

According to Davis, (2015) the following are the home remedy for dengue fever:-

**Control high fever**

Fever is control by giving paracetmol or Panadol. Avoid giving steroid and NSAID such as brufen, voltran and plenty of oral fluid. There is no home treatment for dengue hemorrhagic fever.

- Do not given voltran, ibuprofen
- Tepid sponging

**Prevent dehydration**

- Plenty of oral fluid and check any sign of dehydration such as dry mouth decrease in urination.

**Prevent spread of dengue inside your home**

- Use a mosquito’s lotion for others to prevent from mosquitoes bite and place screen.

2.4-Past findings knowledge, attitude and practice regarding the DF

A KAP survey carried in India, Chennai city of 640 houses to assess the community knowledge, attitude and practice on dengue states that 34.1% were aware of dengue, 3.3% knows causative agent of dengue is a virus and 60% did not know the biting behaviors of the dengue vector (Kumar, 2010). Additionally, another study conducted in Nepal to find the KAP of dengue, the study revealed that only 12% of the sample had good knowledge regarding DF and 77% (599 participants) of sample heard of dengue.
Therefore, above mentioned researches claims that the knowledge of DF was very low among the population of central Nepal.

Similarly, a KAP study conducted in Pakistan in the year 2015 to assess the knowledge, attitude and practice regarding DF among local population describes that out of 100 % respondent, 92% of the sample had positive attitude about disease, overall practice was 90% and knowledge is below 60% about DF (Khan, 2015). Exploratory study conducted in Jamaica in 2011 to find community KAP about dengue, main findings revealed that the general knowledge on dengue symptoms and preventive practice was very low (Stoler, 2011).

According to Ahmed (2008), in her study on dengue fever in Maldives resulted that (46%) had less knowledge, 41.4% had moderate level of knowledge and 12.6% of sample had high level of knowledge. Further results showed that, 42.5% of the respondents had positive attitude, 15.2% had negative attitude and 42.2% had a neutral attitude regarding dengue fever. Practice score were 9% and 43% for those who had good and bad practices regarding dengue fever respectively. One percent of the respondent protected themselves from mosquitoes. Most of them used mosquito mats to prevent from bite. Observational results were 25% of the house hold had water collection on the plates and 5% had stored water containers in the toilet.

A KAP study conducted in Park-Ngum district- a peri-urban area of Vientiane capital of Laos to find out knowledge, attitudes and practices (KAP) among the public regarding
dengue, all of them believed that dengue was preventable, 94.1% of them knew that mosquitoes is the vector of the disease, 93.3% knew Aedes Egypti was the specific mosquito but, less than 10% recognized that indoor containers (forest area, sewage, drains, dirty water and stagnant water) were also potential breeding sites. Approximately half of the participants reported that they cover water containers and just less than half reported that they clean water container to prevent breeding. They would use mosquito nets to protect them from mosquitoes bite (Mayxay, 2013, p.56).

According to research carried out in Malaysia to examine demographic, economic and behavioral factors and their association with the SERO prevalence of dengue, resulted that there was associated with high house hold monthly income, high-rise residential building type, high surrounding vegetation density, rural loyalty and susceptibility. However, they found the knowledge and attitude 37% of respondents (3500 of 944) did not examine mosquito breeding places in surrounding, 20% (167 of 849) did not cover, their water storage containers and 9% (86 out of 959) did not periodically change water stored at home. Moreover, low means knowledge score was associated with a lower like hood of seropositive of dengue IgG (AbuBakar & Chinna, 2014, p.1-4).

A descriptive cross-sectional study conducted for mother’s knowledge, attitude and practice (KAP) on dengue fever, before and after health education of dengue hemorrhagic fever (DHF). The study was carried out in four communes in Southern Vietnam. The result shows that health education had made a strong impact on the mothers’ KAP of DHF. Proportion of Knowledge before educating or pretest period was 55.3%. Bleeding
manifestation such as epitaxies’, gum bleeding, hematemesis and melena were mentioned by the only 15.3% of the mothers but after had been educated this amount also raised (Tram & Anh, 2014).

Yboa & Labrague (2013, p. 1) conducted cross-sectional study to investigate correlation between of knowledge and practices regarding dengue infection among rural residents in Samar province in Philippines, they found no correlation between knowledge about dengue and preventive practices (P=0.75). Similarly, a KAP study conducted by central Nepal to obtain information regarding dengue according to this survey there was a positive correlation among knowledge, attitude and practice (P<0.001) (Aryal, Dhimal, & Dhimal, 2014).

Pracheth (2015, p.21-25) conducted a cross-sectional study to evaluate knowledge, attitude regarding dengue among adult he found a high prevalence of insufficient knowledge related to dengue fever. Other key findings include; majority of them (77.90) mentioned mosquitoes bite is the mode of disease spread, 56.22% mentioned fever is the common symptoms, 50.64% were aware that dengue mosquitoes in artificial water collection.

Castro (2013, p.6) conducted a cross-sectional study in 780 households in La Lisa, Havana, Cuba to find out the relationship between demographic factors and practice; they found direct relation of economic status with Knowledge on dengue, but not with risk perception and practices. Approximately 50% of the subjects involved the age range of 35-59 years old and 60% of them had completed secondary school. Furthermore, 39% of
them respondents thought they are not having a risk of dengue. A similar study conducted among Malaysian public aged 18–60 years to examine the demographic factors, theoretical constructs of the Health Belief Model and knowledge about dengue and how these influence the practice of dengue prevention. Result of the study shown; (n = 2,465; 98.1%) were aware mosquitoes is the vector of the dengue fever, 91.8% (n = 2,308) of them knew the name of the dengue vector. Moreover, 90.0% aware fever is the symptoms of the dengue (Wong, & et al., 2015).

Huthmaker (2015, P.60-75) conducted a survey to find out KAP on dengue fever in primary school children in Florida through animation. She did a pre and post-test after during health education. The result of the study shows overall knowledge score of dengue pre and after evolution as follows:

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<tr>
<td>Pretest knowledge score</td>
<td>12.89+/-0.457SE</td>
</tr>
<tr>
<td>Post-test knowledge score</td>
<td>24.15+/-0.603 SE</td>
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</table>

Exploratory study conducted for KAP of young people regarding dengue fever and the extent of community involvement in vector control of the disease in Trinidad and Tobago .Finding of the study shows all participants had some knowledge about dengue fever. Moreover, most of the participants knew mode of transmission of the dengue and all of them did vector control activities ( Sapi, 2012).

A descriptive-cross-sectional study carried out to assess the knowledge and preventive practices of dengue among medical students and engineering students in Bahawalpur City
of Pakistan. The results of the study includes; More than 90% in both group has followed had knowledge personal protective measures against dengue. >85% while this knowledge with regard to covering of collected water, disposal of broken bottles and tins, daily change of water in room cooler and space spray was 50% or less. However, knowledge of biological control for mosquito breed with regard to use of snail was very poor i.e. 20% or less. Compare of these two groups repellents are used more in medical students (10%) then engineering students (8%), 45% of the medical students used long trousers but, engineering students used 40% of them. Moreover, compare to knowledge regarding dengue fever is also medical students are better than engineering. 12% of the medical students had the poor knowledge and 18% of the engineering students had poor knowledge, 40% of the medical students had good knowledge, 20% of the engineering student had good knowledge. According to the mentioned study compare to general population needs to improve knowledge among professional students (Badar, 2011).

Prospective study conducted for Sri Lanka to determine the knowledge attitudes and practices (KAP) regarding dengue fever in a sub-urban population in the Colombo District. The result of the study shows; 98% of them heard dengue fever and 58% of the subject had satisfactory knowledge on symptoms. Majority of them had good practice towards the dengue and 37% of the sample population had satisfactory attitude. This study proves gaps in knowledge and poor attitude which might affect the level and rate of preventive practices (Gunasekara, 2012).
Furthermore, a study conducted to assess the level of knowledge, attitude and practice regarding dengue and its vector among the rural communities in the Kuala Kangsar district. The result revealed that 82.0% of them gain information from television and radio. According to the mention research there is significant association between knowledge of dengue and attitude towards dengue vector control (p=0.047). It was also found good knowledge is not essentially lead to good practice. Majority (95.5%) of them hard dengue vector, 81 (90.5%) of them knew standing water storage containers are the breeding site of the mosquitoes and (94.0%) of the respondents had knowledge of eliminating breeding site. Moreover, 96.0% of them thought dengue is the serious disease and 93.3% frequently changed the stored water (Hairi, 2014, P1-7).
Chapter 3

METHODOLOGY

3.0 Introduction

This chapter contains research design, target population, sampling techniques, sample size, research instrument, pre-testing, and validity and reliability.

3.1 Research Design

This is a cross-sectional descriptive study and data was collect using quantitative research method. The main advantage of cross-sectional study is easy to determine the current situation in a short period of time.

3.2 Target Population

The target population was citizens of GA. Gemanafushi whose age group is between 18 to 60 years. According to Secretariat of Ga. Gemanafushi Council (2015)-there are 932 people belong to this age group in the island.
3.3-Sampling Techniques

Sample size was calculated by using Raosoft sample size calculator with a 95% confidence interval and 5% margin error. It projects 273 as a minimum sample to be used in this study. I have chosen convenience sampling to select sample from the target population. Convenience sample is the sample select from a group you have easy access to Convenience sampling is the sampling techniques choose from a group you may easy to determine (Kowalczyk, 2015).

3.4- Research Instruments

In order to obtain the data, a structured self-administered questionnaire was used. The questionnaire was developed using local language to make that all the participants understood the questions before they select the appropriate answers. Also this will minimize the language bias. The questionnaire was divided into 4 different sections as follows:-

3.4.1-Section – A: Demographic information

This section contained total four questions to get general information about the person like age, sex, education, employment.

3.4.2-Section – B: Information about dengue fever

This section contained total 08 questions. These 08 questions were based on knowledge about dengue fever includes; sign and symptoms of the dengue, transmission of dengue, breeding side of dengue vector and prevention. Dichotomous questions were used.
Marks were classified into three levels: high, moderate, and low. The range of knowledge score was 0-8.

*Table: 3.1 - Range of knowledge score*

<table>
<thead>
<tr>
<th>Level</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Level</td>
<td>7-8 Marks</td>
</tr>
<tr>
<td>Moderate Level</td>
<td>5-6 Marks</td>
</tr>
<tr>
<td>Low Level</td>
<td>0-4 Marks</td>
</tr>
</tbody>
</table>

### 3.4.3-Section – C: Attitude regarding dengue fever

In this section contains total three questions. Questions were based on attitude towards dengue fever includes; measure participants attitude about seriousness of the disease, risk of the disease and prevention. All of the three questions were dichotomous.

### 3.4.4-Section- D: Preventive practice regarding to the dengue fever

In this part of the questionnaire contains four questions regarding practices towards dengue fever. Question number one and four was multiple choice type and 2, 3 was dichotomous type.

### 3.5 Data collection procedures

The questionnaire was pre-tested by using 20 subjects from a selected sample group. The data obtained from pilot test was analyzed by using SPSS statistic software and Microsoft Excel-2010. After pilot test some question was adjusted according the comments of the
participants. To collect the data, survey team visited to the sampling units and information was collected by given the questionnaire to the participants.

3.6 Data analysis

Data’s was analyzed by using Statistical Packages for Social Science (SPSS) and Microsoft Exel-2010 software. Descriptive statistics was used to analyze the data frequencies, percentage and mean. Analyzed data’s were shown as table in the Chapter 4.

3.7 Validity and reliability

Reliability, in simple term is the repeatability and uniformity of a test (Shuttleworth, 2015). Pilot study was conducted out to improve the validity and reliability. To increase the validity and reliability questioners was dependent on the according the findings.

3.8 Ethical consideration

Before filling the questionnaire participants was given a written consent (Appendix- 1). The consent is to ensure that the participants take a voluntary participation in the study. It also ensures that the information collect through the questionnaire is only for the study purpose. This will increase the confidence of the participants and their motivation will be increased towards participation of the study. As mentioned before voluntary participation and if the participant wishes to withdraw from the study he/she has the right.
3.9-Conceptual frame work

Independents variable: - knowledge, attitude and practice

Dependent variable: - Dengue fever.

Figure 3.1-Conceptual frame work
CHAPTER 4-

DATA ANALYSIS AND RESULTS

4.1. Introduction
This chapter is based on research survey done in GA.Gemanafushi for, knowledge, attitude and practice on dengue fever in 18-60 years population. The results of this research study are as follows.

4.2. Demographic information
A total of 273 participants participated in the study. The mean age of the participants was 35. The number of males participated in this study is 112(41%) while female participation is 161 (59%) of the sample frame. It shows that the female participation is more compare with male (18%). When participant’s education level was evaluated; 27% of them had basic education, 93(34.1%) of them had completed secondary school, 7(2.6%) had completed higher secondary education and remaining 44(16.1%) had completed university education. Most of them were employed 170(62.3%), among them 66(24.2%) were working in the government, 25(9.2%) of them were working private sector and remaining 79(28.9%) of them were doing own work. However, 103 (37.7%) of the survey population were unemploy
Table 4.1 illustrates the results of demographic information;

<table>
<thead>
<tr>
<th>Demographic factors</th>
<th>Frequency</th>
<th>Valid Percent</th>
<th>Total Frequency</th>
<th>Valid Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-23</td>
<td>54</td>
<td>19.5</td>
<td>273</td>
<td>100</td>
</tr>
<tr>
<td>24-29</td>
<td>62</td>
<td>22.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30-35</td>
<td>52</td>
<td>19.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36-41</td>
<td>33</td>
<td>12.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42-47</td>
<td>24</td>
<td>8.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>48-53</td>
<td>22</td>
<td>8.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>54-60</td>
<td>26</td>
<td>9.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>112</td>
<td>41.0</td>
<td>273</td>
<td>100</td>
</tr>
<tr>
<td>Females</td>
<td>161</td>
<td>59.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic Education (Only able to read and write)</td>
<td>74</td>
<td>27.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 1-7</td>
<td>55</td>
<td>20.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 8-10</td>
<td>93</td>
<td>34.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 11-12</td>
<td>7</td>
<td>2.6</td>
<td>273</td>
<td>100</td>
</tr>
<tr>
<td>University course (advance, above diploma)</td>
<td>44</td>
<td>16.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Employment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>103</td>
<td>37.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Job</td>
<td>66</td>
<td>24.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private company</td>
<td>25</td>
<td>9.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own work</td>
<td>79</td>
<td>28.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3. Knowledge on dengue fever

To evaluate participant’s knowledge about dengue 8 questions are formulated. In that dichotomous questions and 1 a multiple choice question (question 4). Marks were allocated as each correct score 1 mark, and maximum score 8 marks. Distribution of knowledge on dengue fever of the respondents 9% of the sample had low knowledge, 15% of them had moderate knowledge and 77% of the subject had high knowledge. Table 2 and Table 3 below represent how participants respond for these questions;

Table:4. 2: Participants respond for knowledge questions

<table>
<thead>
<tr>
<th>Level</th>
<th>Range</th>
<th>frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>low</td>
<td>0-4</td>
<td>24</td>
<td>9</td>
</tr>
<tr>
<td>moderate</td>
<td>5-6</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>high</td>
<td>7-8</td>
<td>209</td>
<td>77</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>273</td>
<td>100</td>
</tr>
</tbody>
</table>

According to the Table 3, most of them agreed that they have enough information about dengue fever while some of the participants do not respond some question as in the above table. In addition few participants do not have enough information about dengue fever (Table 3 – Don’t know). The questions were based on basic information about dengue Participants were asked about dengue fever; 91.6% know about it, while 8.1% do not know about and 0.4% does not respond to the question. They were separately asked about the symptoms and signs of the diseases; 88.6% agreed that they know signs and
symptoms of the disease, 3.3% do not know about it while 8.1 do not respond to the question. When participants were asked about disease transmission; 253 (92.7%) of them no dengue is transmit from mosquito and 7.3% of them were non-respondents. However, a question was asked to test their knowledge on mosquito biting in day times; 202 of them agreed bites on day time, 2 of them do not know about it and remaining 37 participants do not respond to the question. Regarding mosquito breeding; 81% of the surveyed population agreed it breeds on clear water while 8.1% do not respond to the question. Regarding prevention; 91% agreed that removal of water collections and application mosquito spray/repellent can prevent dengue fever and 7.3% do not respond to the question.
Table: 4.3 Knowledge question and answers by participants

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Respondents</th>
<th>Non-respondents</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Don't know</td>
</tr>
<tr>
<td></td>
<td>frequency</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>1-Do you know anything about dengue?</td>
<td>(250)</td>
<td>91.6</td>
<td>22</td>
</tr>
<tr>
<td>2-Fever, headache and body aches are the symptoms of the dengue fever</td>
<td>(242)</td>
<td>88.60</td>
<td>9</td>
</tr>
<tr>
<td>3-Does a mosquito transmit dengue fever?</td>
<td>(253)</td>
<td>92.7</td>
<td>0</td>
</tr>
<tr>
<td>4-Do the Anopheles mosquitoes transmit Dengue fever?</td>
<td>103</td>
<td>37.7</td>
<td>(134)</td>
</tr>
<tr>
<td>5-Dengue mosquitoes bit a day time?</td>
<td>(202)</td>
<td>74.0</td>
<td>32</td>
</tr>
<tr>
<td>6-Dengue mosquitoes breed in clear water?</td>
<td>(221)</td>
<td>81.00</td>
<td>30</td>
</tr>
<tr>
<td>7-Insecticides sprays reduce mosquitoes and prevent Dengue</td>
<td>(249)</td>
<td>91.2</td>
<td>4</td>
</tr>
<tr>
<td>8-Removal of water collections and applying mosquito lotion can prevent DF</td>
<td>(250)</td>
<td>91.60</td>
<td>3</td>
</tr>
</tbody>
</table>

*Correct answers marked ( ). *Wrong answers are not bracket.
4.4. Attitude towards dengue

According to the table 4, the participants were asked whether dengue fever is a serious illness; almost 90% agreed with it while 1.8% said no. They were asked separately about whether they were at risk of getting dengue fever; 69% agreed while 21.2% of them do not agree and the remaining 9.2% do not respond to the question. Finally, they were asked dengue fever can be prevented; almost 88% (240) said ‘yes’ while 4.8 (13) of them said ‘no’ and remaining 7.3 (20) of them do not respond to the question. Based on the findings, it is evident that the participants are having a positive attitude towards the disease condition; thus they are aware of the disease. The table 4 illustrates the details;

Table 4.4: Participants attitude towards dengue fever

<table>
<thead>
<tr>
<th>Attitude</th>
<th>Frequency</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td><strong>1-Dengue fever is a serious illness?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>(245)</td>
<td>89.70</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>1.8</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>23</td>
<td>8.4</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>100</td>
</tr>
<tr>
<td><strong>2-You are at risk of getting dengue?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>(190)</td>
<td>69.6</td>
</tr>
<tr>
<td>No</td>
<td>58</td>
<td>21.2</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>25</td>
<td>9.2</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>100</td>
</tr>
<tr>
<td><strong>3-Dengue fever can be prevented?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>(240)</td>
<td>87.9</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>4.8</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>20</td>
<td>7.3</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*correct answers marked ( )
4.5. Practice about dengue fever

According to the table-5, 30.8 % of the respondents eliminating standing water around the house to reduce the mosquitoes, 46.9% of the respondents, told once a day and while 36% were told once a month and 9.2% of the participants were does not respondent for this question. Mosquitos’ nets were used 33.0% of them and 57.50% of the subjects was used mosquito lotion from prevent of mosquitoes bit. There were 81.0% of them were told if they suspect to get a dengue fever they were going to consultant for doctors.

Based on the findings it is evident that the participants are having a good practice towards the disease condition. The table 4 illustrates the details;

*Table 4.5: participants practice towards the dengue*

<table>
<thead>
<tr>
<th>Practice</th>
<th>frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>1-Eliminating standing water around the house to reduce mosquitoes</td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td></td>
</tr>
<tr>
<td>Once a day</td>
<td>128</td>
</tr>
<tr>
<td>Once a week</td>
<td>84</td>
</tr>
<tr>
<td>Once a month</td>
<td>36</td>
</tr>
<tr>
<td>Non-Respondents</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
</tr>
<tr>
<td>2-Use mosquitoes nets to reduce mosquitoes</td>
<td></td>
</tr>
<tr>
<td>Responders</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91</td>
</tr>
<tr>
<td>No</td>
<td>162</td>
</tr>
<tr>
<td>Non-Respondents</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
</tr>
<tr>
<td>3-Use mosquitoes lotion to reduce mosquitoes</td>
<td></td>
</tr>
<tr>
<td>Responders</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>157</td>
</tr>
<tr>
<td>No</td>
<td>95</td>
</tr>
<tr>
<td>Non-Respondents</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
</tr>
<tr>
<td>4-What to do if you suspect for getting a dengue fever</td>
<td></td>
</tr>
<tr>
<td>Respondents</td>
<td></td>
</tr>
<tr>
<td>Taking a Panadol</td>
<td>32</td>
</tr>
<tr>
<td>Go to consultant for a medical officer</td>
<td>221</td>
</tr>
<tr>
<td>Non-Respondents</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
</tr>
</tbody>
</table>
CHAPTER 5

DISCUSSION AND CONCLUSION

5.1-Introduction
This chapter contains summary of the main findings, discussion and limitation of the study and direction for future research.

5.2-Discussion
This study based on descriptive cross-sectional study conducted with a convenient sample of 273 people from the age group of 18-60 years residents in GA.Gemanafushi. The main purpose of this research was to identify the knowledge, attitude and practice concerning dengue fever. The result of this study was mentioned below;

Mean age group of the respondents were for this study was 34 years this age was belong to the age range of 24-29 years old, 62(22.7%)0. Most frequent respondents were females 161(59.0%) compare to males 112(41.0%). Majority of them were completed secondary school 93(34.1%) and 74(27.1%) of them completed. More thanes half of the respondents were employed 170(62.3%). Among that 66(24.2%) of them were working government, 104(12%) of them were working private sector and their own work. Moreover, 103(37.7%) of them were unemployed. Overall knowledge, attitude and practice score of this study was mentioned below;
5.3-Knowledge

Participants overall knowledge was approximately 209(77%) of them had high-level, 40(15%) of them had moderate-level and 24(9%) of them had low-level knowledge regarding dengue sign and symptom (fever, headache and body ach), mode of transmission, vector, biting time of the vector, dengue mosquitoes breeding places, eliminating of the mosquitoes breeding site and personal preventive practice of knowledge.

5.3.1-Parts of high-level of knowledge

The maximum highest percentage scored by the respondents was the question on whether removal of water collection and applying mosquito’s lotion can prevent from dengue fever. The responses indicate that (91.6%) 250 of them were aware collection of water containers can be the mosquitoes breeding site and applying mosquito’s lotion was the preventive actions taken against the biting of the mosquitoes. Furthermore, respondent’s gained good percentage question about insecticides sprays reduce dengue mosquitoes and prevent dengue 249 (91.2%) of them told “yes” correct answer. Most of the respondents knew dengue mosquitoes breed in clear water 221 (81%) (Refer to Table-2).

5.3.2-Parts of low-level of knowledge

Most weak area was question which was related to the name of the dengue vector 103 (37.7%) of the respondents given wrong answer for this question. They were told name of
the dengue mosquitoes was Anopheles but they knew breeding habit of the mosquitoes and personal preventive practice knowledge about dengue and 2.2% of the respondents told they don’t know the name of the dengue vector. Fewer thanes half 134 (49.1%). of the respondents knew mention the name of the dengue mosquitoes and remains 30 (11%) of them were non-respondents. Most of them knew the biting habit of the dengue mosquitoes but, this amount was 74% of the respondents and remained 34 (12.4%) of them didn’t know the biting habit of the dengue mosquitoes. Fourteen percent of them were non-respondents.

When compare to a a study conducted in Male’ by Ahmed (2008) shows that fewer percenatge of sample had a high level of knowledge, which is in contrast with this study. Only 12.6% of the participants had high level knowledge as per the study of Ahmed (2008). This study shows that 77% of respondents are having high level of knowledge. I believe that the differences were due to the time or period of the year in which the study had been conducted. Generally, Male’ population are more access to resources and knowledge than other islands of the Maldives. If a study had been conducted in Gemanfushi in that year or period, I assume that the percentage of population with the knowledge would be much less compare to Male’ population in that time.

When matching this study with other parts of the same regions, in Malasia a study conducted by Mayxay (2013) states that 94.1% of the respondents knew dengue is the mosquito born disease. Compare to this research above the amount was very nearest for the result generated from this. There were 92.7% of the respondents knew dengue fever is the mosquito born disease.
(Kumar, 2010) Conducted a similar research in India, Chennai result of the study shown 60% of the respondents did not know the biting behavior of the dengue compare to this research this amount is more only 12.4% of the respondents did not know the biting behavior of the dengue mosquitoes. Furthermore, a similar research conducted a research for among Malaysian public aged 18–60 years Wong, & et al., (2015) they founds 91.8% (n = 2,308) of them knew the name of the dengue vector however, in this study 49.1% of the respondents knew mention the exactly name of the dengue mosquitoes this result was generated may be they confused mention the name of the mosquito.

5.4-Attitude

Majority of the respondents had positive attitude regarding dengue 90% of the respondents agreed dengue fever is a serious illness and only 1.8% of the respondents had a negative attitude they said dengue fever is a not serious illness. More than half 69% of the respondents agreed they were having risk of getting dengue and 21.1% of them told they does not have a risk of getting dengue.

More than half 87.9% of the respondents told “yes” agreed dengue fever are a preventable disease and 4.8% of the respondents said “no” dengue is not preventable disease (refer table-4).

Gunasekara, (2012) conducted study for Sri Lanka to determine the knowledge attitudes and practices (KAP) regarding dengue fever in a sub-urban population in the Colombo District. He found only less than half (37%) of sample had satisfactory attitude compare to this research they had poor attitude. In this study most of them had positive attitude 89.70% of the sample believed dengue is a serious illness. Furthermore, Castro (2013,
p.6) found 39% of them respondents thought they are not having a risk of dengue compare this amount of percentile is huge compare to the result generated from this study 21.2% of the respondents told they were not having a risk of dengue and 69.6 % of the respondents thought they are having a risk of dengue.

5.5-Practice

Majority of the respondents 212 (77.7%) were told they eliminate standing water around the house to reduce mosquitoes once a day and week. More than half 157 (57.50%) of the respondents were used mosquitoes lotion to prevent form bite. Most frequent areas respondents had well of practice was if they suspect to get a dengue fever 221(81%) of them told they will go to consultant for the medical officer. Most less frequently used mosquitos’ nets .There were (33.30%) 91 of the respondents used mosquitoes nets and remains 162 (59.3%) of them were told they doesn’t used mosquitoes net and remains were non-respondents 21 ( 7.7%) of them were non-respondents. Another weak area was question based on preventive personal practice 57.50% of the respondents were used mosquitoes lotion and 34.8 % of them were didn’t used mosquitoes lotion. There were 7.7% of them were non-respondents (refer table-6).

When compare to this study a study conducted Malaysia AbuBakar & Chinna,( 2014, p.1-4) they found low preventive practice37% of the respondents did not eliminate mosquitoes breeding places in surrounding however in this research, 77.7% of the respondents remove water collection once a week and once a day.
5.6-Limitation of the study

5.6.1-Selection bias

Sample was selected convenience which could affect the result of the study. Also, equal representation of the age groups, race and gender were difficult. In this study the female samples are 161(59%) which is more compare to male 112(41%). Also, each age group between 42-47, 48-53 and 54-60 represent only 8 or 9 percent of the sample respectively. Compare to convenience sample simple random sampling is better for this study. Taking a simple random sample would help to cover whole population in a general manner.

5.6.2-Research tools

Dengue is a very enormous topic some of the questions related with dengue fever was limited from the questioners such as sources of information on dengue fever, knowledge about home care for the dengue fever and open ended questions were not include so limited information were collected. Another limitation of the questioners was observation part was not included. Observation is very important to detect practice of the participants. Without observing the living environment practice related answers were maybe not accurate.

5.6.3-Research design

Cross-sectional descriptive study describes current situation of the target population so, in this study was not generalized except target population and only applied the age group of 18-60 years population of the GA.Gemanafushi. This study was not generalized beyond the age of 18 years and above 60 years population.
5.6.3-Data collection procedure

Data were collected through a self-administered questioner, which may have led to some biases. Some participants may be careless in filling questioner and most accurate answers may not have been generated.

5.7-Conclusion

Cross-sectional descriptive study conducted to identify knowledge, attitude and practice about dengue fever. There 273 samples were selected conveniently the age between 18-60 years population from the GA.Gemanafushi. Overall knowledge score of the DF was majority of the participants had high-level of knowledge 209 (77%) regarding dengue and 12.4% of the respondent don’t know the biting time of the dengue mosquitoes. The participants were asked whether dengue fever is a serious illness; almost 90% agreed with it and 77% of the respondents daily and weekly once eliminate standing water around the house to reduce the mosquitoes and 13.2% of the respondents once a month they had eliminate standing water. Few percentage of poor preventive practice may also increase dengue mosquitoes breeding sites and also exposure the community for the dengue infection. Therefore, needs to more awareness programs to aware preventive practice of the community regarding the DF.

5.8-Future research direction

Due to time and budget limitation this research was conducted only GA.Gemanafushi and it is only applied the population of the gemanafushi. In future more studies will be carried out to others islands and atolls to find out knowledge, attitude and practice regarding
dengue and also important to find out relation between two variables such as knowledge and practice.

5.9-Recommendations

According to the findings of the study following preventive action should be necessary:

- Necessary for developed guidelines regarding dengue vector breeding sites and major behavior of the mosquitoes.
- Developed Island level team to implement vector control activities.
- Awareness programs are needed for to improve awareness for the community.
6.0-Reference


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Dengue in India. (2014). *Banyan*.


HPA. (2014). COMMUNICABLE DISEASE CONTROL. In M. o. Gender, *Maldives Health Profile* (p. 8).


Appendix 1

मंगलगिरी, श्रीमंगल रोड, मुंबई - 7636486
## Appendix 2

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