**Science research project competition 2017**

**Considering the breeding ability of mosquitoes**

**Due to the climate changes**

**Abstract**

This project representing the enhancing of breeding ability of dengue mosquitoes due to low temperature. We saw the Dengue epidemic increases year by year rapidly in Sri Lanka. Therefore we conducted a survey in our school to find out why the dengue epidemic is increasing ?. Due to the result of the survey , and with moral support of Dr. Anil Samaranayaka we got facts about the changes of temperature and diffusion of the Dengue patients to focus these two facts are either overlap or not.

**Table of content**

Abstract

Table of content

Acknowledgement

Project team

Section 1 - Introduction

Background information

Problem identified

Hypothesis

Objectives

Section 2 – Materials and Methodology

Materials

Methodology

Section 3 - Results

Section 4 - Discussion

Section 5 -Conclusion

Section 6 -References

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*abeysekaraupeksha@gmail.com*

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**Our team**

1.Nishen Malinda

2.Vimukthi Deshan

3.Nilanga Gayashan

4.Lathishka Hirushan

**Section 1 – Introduction**

1. Background

Dengue is the most harmful arthropod-borne viral illness in Sri Lanka. It is transmitted by mosquitoes of the species *Aedes aygypti*. When considering the data, there shows a great increase of this virus epidemic year by year. The female mosquito lays eggs on dump surfaces in areas likely to temporarily flood, such as tree holes and man-made containers like drums,jars,pots and etc.

When considering the breeding ability of the dengue mosquitoes it shows a great enhance in the low temperature.

In the Colombo district , it’s outstanding.

After the survey we have arranged the research with the support of others and they helped us to collect facts on this research.

1.2 problem identified

 Whether the breeding ability of mosquito is enhancing due to

 The low temperature or only female mosquitoes lays eggs

 In low temperature.

1.3 hypothesis

* Their breeding ability is rapidly enhance due to the low or high temperature
* Only Female mosquitoes lays eggs in low temperature
* They adapt for the changes of the temperature

1.4 objectives

* Specific object: to find out whether mosquitoes are keen to lay eggs due to the low temperature
* Overall objective: to prevent the spreading of the disease

Section 2 – materials and methods

Materials:

* Sheets and pens
* A laptop
* A printing machine
* The software – MS Word, MS Excel

 Methodology

* Collected the facts about the high and low temperature variation in Colombo district.
* Studied the distribution of dengue patients with in five years.
* Considered whether these two facts are overlaps on each other or not
* Considered the reason of overlaps of the facts and discussed the hypothesis by comparing charts

Section 3 – results

1. The high temperature variation

(figure 1)

(figure 2)

(figure 3)

(figure 4)

(figure 5)

1. The low temperature variation

(figure 6)

(figure 7)

(figure 7)

(figure 8)

(figure 9)

1. The variations of the patients who felt with the dengue virus

 (figure 10)

 (figure 11)

 (figure 12)

 (figure 13)

 (figure 14)

1. The overlap of the two facts

(figure 16) (considering the result of 2012 )

(figure 17) (considering the result of 2014)

(figure 18) (considering the result of 2016)

Section 4 – discussion

* Above charts are representing the variations of the high and low temperature .
* And also compared them with the chart which representing the distribution of the dengue patients .
* When considering the charts some of them are overlap as the hypothesized and some of them aren’t.
* The reason was; the sample that we taken has been spread in small range and it representing only about the area where near by our school location.
* When considering about island wide variations of temperature and the patients it’s proves the hypothesis that we have hypothesized.
* Through the research it seems the laying eggs of female mosquitoes are increase due to the low temperature. In the high temperature the graphs shows a decrease of the dengue patients.
* Usually mosquitoes require to remain active are temperatures over 55 F (12.7 celsius) and also they are keen to live in a warm and specially wet area to breed and lay eggs. In Colombo we can find locations which are wet and warm through the year and it causes for the variations of the charts and as a result of some of them are departure of the hypothesize of the low temperature and the dengue patients.(some of the charts are showing high increase of patients in high temperature)
* The reason of they laying eggs in low temperature, when in the high temperature the water is evaporating and the places are insufficient to lay eggs and usually female mosquitoes are laying eggs in pure water also.
* With that reason in high temperature, charts shows a decrease of dengue patients.
* The reason to the departure of the hypothesis is, in the urban areas also we can find some sumps which are filled with water through the year and they are not evaporated and female mosquitoes are use to lay eggs such places in urban areas.
* And also mosquitoes are cool – blooded arthropods, it’s effects for the life cycle of them and to their ability of breeding also. According to this fact they keen to stay at a low temperature.

Section 5 – conclusion

* Usually female mosquitoes are laying about 100 to 200 eggs for one time but it’s depends on the proteins which most important for the nutrition for the eggs and it reduced when the nutrition is less
* Mosquitoes are cool-blooded arthropods
* Mainly they lays eggs in low temperature and some times it’s departure due to the urbanization.
* Their ability of breeding also increased when the temperature going low
* With this fact, dengue patients are also getting increasing in low temperature
* According to the research we considered that when the climate changing mosquitoes’ life cycle also adapt on it.