Malaria and Nutritional Status in Children Living in Endemic Areas of Kamrup Metropolitan District, Assam, India.

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Abstract: The aim of the study was to find out the status of nutritional status of children below (=<15) years between the asymptomatic and symptomatic malaria-prone village of Kamrup metropolitan District of Assam, India and to find out the association of malaria with nutritional status by measuring Body Mass Index (BMI) of children. The result was found that 49 and 55 nos. of children had normal BMI in symptomatic and asymptomatic malaria-prone villages respectively. 0-5 years had more normal BMI in both the village which may be due to breastfeeding habits and proper care. Association of malaria with nutritional status was not so clear.

Keywords: Asymptomatic, Body Mass Index (BMI), association.

1. INTRODUCTION

One of the major cause of children morbidity and mortality is due to health-related issues or disease. Malaria and malnutrition are considered as an issue among these [1] [2]. It is also always debatable about its disease effect for which it causes malnutrition leading to mortality [5] [7] [14]. Studies show acute weight loss due to Plasmodium falciparum [10]. There are many supportive studies available which shows a relationship between malnutrition and malaria [3] and others show no association [11]. The present study was carried out in Kamrup Metropolitan District of Assam, keeping in the view that if there any relationship between malaria-infected children and healthy children of <= 15 years. Various factors like socio-economic, demographic, gender role, health awareness is related to transmission and epidemics of malaria.

2. MATERIALS AND METHODS

2.1 Study area

Two malaria endemic villages of Kamrup Metropolitan District of Assam were considered for the study. One was Suwali Lukua village, comprising of three small villages of total populations 359. Asymptomatic malaria cases were reported by this village and were considered as study village. Another village called Hazongbari, symptomatic malaria prevalent village, of total populations 749, was considered as control village.

2.2 Study design

A total of 200 children, 100 numbers of each village was chosen for the study. Both malaria-infected and healthy children were measured their height and weight by measuring tape and Nova BGS-1231 digital weighing machine. The measurements were noted in centimeter and kilograms. Body mass index (BMI), which was considered as the measurement for nutritional status, also measured and compared according to the World Health Organization [15] (BMI of 18.5 to 25: normal, 25 to 30: overweight, over 30: obese and less than 18.5 is considered underweight). Further the age group were divided into three groups.

2.3 Data analysis

The data obtained were plotted in an excel sheet and analyzed and categorized accordingly as per WHO standards.

3. RESULT

The result was found that the control village was more normal in BMI than study village (55 & 49 nos.) and study village more undernourished and severely undernourished than control village. The boys were found as more normal BMI than the girls in both the villages. Age distribution on BMI status
was shown that 0-5 years had normal BMI in both the village. Association of malaria with BMI was not much clearer. The results were shown in Table 1, 2 and Figure 2, 3.

### Table 1: BMI comparison of study and control

<table>
<thead>
<tr>
<th>BMI Area</th>
<th>Normal</th>
<th>Moderate</th>
<th>Severe</th>
<th>Overweight</th>
<th>Obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>49</td>
<td>21</td>
<td>21</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>55</td>
<td>18</td>
<td>9</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

*A=A=Study village, B=Control village

### Table 2: Association of BMI with Malaria

<table>
<thead>
<tr>
<th>Area</th>
<th>With Malaria</th>
<th>without Malaria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Normal BMI</td>
<td>&lt;BMI</td>
</tr>
<tr>
<td>A</td>
<td>53</td>
<td>29</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

*A=A=Study village, B=Control village

### Figure 1. Age distribution of BMI in Study village

> Median -2SD to +<1 1 SD: Normal, Median < -2SD to > -3SD: Moderate undernutrition, Median > + 1SD to < + 3SD: Overweight, > + 3SD: Obesity

**Fig. 1. Age distribution of BMI in Study village**

> Median -2SD to +<1 1 SD: Normal, Median < -2SD to > -3SD: Moderate undernutrition, Median > + 1SD to < + 3SD: Obesity

**Fig. 2. Age distribution of BMI in Control village**

> Median -2SD to +<1 1 SD: Normal, Median < -2SD to > -3SD: Moderate undernutrition, Median > + 1SD to < + 3SD: Obesity

**Fig. 2. Age distribution of BMI in Control village**

4. **DISCUSSION**

The finding on the study shows that asymptomatic malaria cases of study village were greater in a number of children having malaria with normal BMI than without malaria. On the other hand, the control village was found almost equal results.

5. **CONCLUSION**

The study of young children’s living in the malaria-endemic village(study) where asymptomatic cases reported, had a large number of malnourished children (21 moderately and 21 severely malnourished) than control village (18 moderately and 9 severely malnourished). The result was found that normal BMI with malaria-infected children had more (53) than below normal (23) in study villages. Whereas in symptomatic malaria village(control) was
found an almost equal relationship with malaria infection and BMI (5 normal and 6 below normal).

From the above result, it can be concluded that for improvement of nutritional status and to reduce malaria incidence it is suggested to take increase health awareness and to adopt preventive measures to fight against any disease. In both villages, it was found that in the group of 0-5 years had more numbers of normal BMI children (20 and 38) in study and control villages as that is the age when a child is taken care of.

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REFERENCES


