

ABSTRACT

“A Study on the Tolerance to Malarial Parasite in Relation to Nutrition and Socio-economic Status of Rural Communities in Kamrup Metropolitan District, Assam, India.”

Malaria is one of humanity's oldest diseases. Malaria is linked with many complexes of society that determined by different factors with nutrition. This study has been carried out in Hazongbari sub-center under Sonapur block. The Study Village comprised of three villages namely Khilingkhok, Suali Lukua and Sampothar, totaling 359 population is considered as a Study Village and another village namely Hazongbari village totaling of 748 population is considered as Control Village. The objective of this research is to study the prevalence of malaria, socioeconomic status and to evaluate nutritional studies of rural communities.

In the Study Village, totaling 116(32.3%) people were found positive for malaria without any sign and symptoms. The highest age group affected in 5-14 years (14.2%), followed by 15> years (10.9%) and 5< (7.2%) in the Study Village. They were healthy but anemic. All the age groups were found to be affected. However, in the Control Villages, 31(0.82%) people were with malaria symptoms. The highest case affected is 15> years, followed by 5-14 and <5 years.

Socioeconomic status showed the highest proportion of the population studied up to elementary education and community of Study Village was found highest (75%). Whereas, Control Village showed more literate. More matriculate, Higher Secondary, and graduate were observed (27.5%, 15%, and 2.5%) in Control Village than Study Village (6%, 1% and 0). Occupation pattern showed most members were engaged in cultivation (65.2%) in Study Village than Control Village (40%). In other words, Control Village population also have service holders, business and retired persons (5% each category). The proportion of ST was higher in Study Village (98%) than Control Village (70%). The lowest income category was (up to Rs. 12000/ and above) in both the village and the highest income category was in (i.e. Rs. 3000/ and 3001-6000) in

Study and Control Village respectively. In Marital status category, 80% and 45.2% in Study Village and 32% and 17.5% in Control Village, married and unmarried men were found. The highest percent of Remedial Measures were taken by the Control Village (77.2%) provided by the government and 63% of traditional methods were taken by Study Village. 40.6% were taken health seeking behavior by the Control Villagers compared to Study Villagers (32%).

In both, the villages the highest normal BMI was observed in 0-5 years, i.e. 42.1% in Study Village and 57.6% in Control Villages. More malnourished children were observed in Study Villages (47.3%) compared to Control Village (41.3%). BMI criteria with sex distribution showed boys of Control Village were more (31) healthier than Study Village (25). The results showed that the asymptomatic malaria cases of Study Village had a greater number of children with malaria having normal BMI was 53 nos. and <BMI was 29 nos. However, the Control Village showed almost equal results. Normal BMI was found 5 nos. and <BMI was 6 nos. Whereas, without malaria, Control Village had a greater number of children had normal BMI (60) than Study Villages (6). It was seen that there is no correlation between BMI and malaria infection.

The results showed the contents in moisture, ash, proteins, carbohydrates, fats and of dishes expressed in grams per 100 gm of dry weight (% d.w) except the moisture content is expressed in grams per 100 gm of fresh weight (% f.w). The energy derived from the food varieties is reflected as Kcal per 100 gm. The results presented here are the average values for each variety. The results are given in the form: mean \pm standard deviation. In the Study Village, the moisture content ranged from 7.83% in sesame to 92.4% in Colocasia items, ash content 0.38% in Bean to 16.33% in fermented fish. Protein ranged from 37.2% in fermented fish to 1.1% in Banana flower and carbohydrate 73.74% in rice to 1.42% in fermented fish. In the Control Village, fat content ranged from 0.04% to 36.26% in Colocasia stem and various pork items. Carbohydrate 1.33% to 72.3% in Black gram and in Aijong Rice, the moisture 22.56% in fermented fish to 92.93% in Black gram gravy, ash content

0.45% in Mix green vegetables to 5.56% in Ginger and proteins ranged from 0.03% in Colocasia stem to 51.98% in fermented fish.

The ash and moisture content were found to be comparatively higher in Study Village than Control Village and protein, fats and carbohydrate higher in Control Village. Though in Control Village, a higher amount of energy was derived from dishes, the amount of nutrients needed for human health to resist disease is less due to use of higher amount of animal proteins, and lesser amount of green vegetables and derivatives.

The common diets of Study Village are derived from locally grown plants such as *Carica papaya*, *Manihot esculentum*, *Aka colocasia*, *Musa paradisiaca* L, families of Zingiberaceae, families of Poaceae. The comparative study between Study and Control Village showed that flavonoids levels of diet constituents were significant at ($0.01 \leq p \leq 0.05$) compared to Control Village. This high content of flavonoids in Study Village diet may have contributed to the anti-malarial response, which was also well documented by other literature reviews. Moreover, alkaloids, saponins, and flavonoids have been implicated to be responsible for antimalarial activity as these secondary metabolites elicit bioactivity wholly or in combination with other plants. The study also showed that good number of respondents still rely on traditional herbal remedies. The people of Study Village consume such plants either raw as salad or cooked on daily basis and are self-cultivated, which may help to tolerate parasitic disease like malaria and remain in a latent period without showing proper symptoms.

The study reflected the insight nutritional compositions of diets of rural communities and therapeutic potentials. The presence of nutrients and phytochemically-active components in the plant samples might be responsible for malaria tolerance. The future molecular level of study of plants dietary actions may reflect the actual factors related with the parasite and host mechanism may use as a biological tool for malaria and other vector borne control measures.