



Nutritional Status of Flood Affected Population near Bank of Brahmaputra, Assam: A Case Study

Chandrama Baruah and Daisy Sharma*

Assam downtown University, Guwahati, Assam

*Corresponding Author E-mail: daisysharma8991@gmail.com

Received: 10.04.2019 | Revised: 16.05.2019 | Accepted: 21.05.2019

ABSTRACT

The present study was carried out in Flood affected population near bank of brahmaputra, Assam to assess their nutritional status of who are mostly engaged in agricultural fields playing an important role in the nation's productivity. Nutritional was accessed through a correlation of information obtained through careful medical and dietary history, through physical examination. An assessment of nutritional status in a community is the most important modern tool in finding out the type, severity and extent of malnutrition. The village is under developed and the people are mostly malnourished. They do not have any proper drinking water facilities or a proper sanitation like drainages, dustbins, washrooms, etc. The factories nearby their homes and river bank, is polluting the environment leaving them no fresh air to breathe which may later result them in many health problems. The road is not properly constructed and it serves only half of the village, whereas for the half one needs to walk to manage whole of the village. The occupations of most of the people are daily wage earners, drivers, brick factory workers etc. Women generally manage the household chores, whereas some they work at the factories near by the river bank. There is one primary school where the children of the village go to attend it. Most of the houses are not built properly and the village is flood affected area. The development of the nation lies in the health and nutritional status of its population. Hence nutrition security through enhancing the nutritional knowledge of the people may prove to be a path towards building healthy nation.

Key words: Nutrition, Public health, Malnutrition, Population

INTRODUCTION

India is the second populous country represents almost 17.85% of the world's population. Malnutrition is an important public health and development challenge despite overall growth and development of a country. Community nutrition is being increasingly recognized as an important determinant for

future nutritional security. Community nutrition is the whole of nutritional aspect applied to the consumer or a group of individual. Generally, at household level cultural norms and practices and socio-economic factors determine the extent of nutritional status among communities.

Cite this article: Baruah, C. and Sharma, D., Nutritional Status of Flood Affected Population near Bank of Brahmaputra, Assam: A Case Study, *Int. J. Pure App. Biosci.* 7(3): 122-132 (2019). doi: <http://dx.doi.org/10.18782/2320-7051.7442>

National Nutrition Monitoring Bureau (NNMB) has been carrying out regular surveys on diet and nutritional status of different population. The study by NNMB revealed inadequate dietary intake, especially micronutrient deficiency (hidden hunger) among different age groups. The present study was carried out in Flood affected population near bank of brahmaputra, assam to assess their nutritional status of who are mostly engaged in agricultural fields playing an important role in the nation's productivity. The up-liftment of nutritional status of these people is essential in context of national development.

MATERIAL AND METHODS

Sample selection

The survey was carried out in 111 households of Rajabari Village. The information was collected and data was coded and tabulated.

Socio-Economic Survey

This type of survey deals with questions regarding the size of the family, their literacy rate, income, food intake pattern, hygiene and sanitation etc. this type of survey helps to provide valuable guidelines for assessing the nutritional status of an individual.

An interview schedule developed for this purpose which consists of a set of questions. The interviewer noted the answer provided by the respondent. The results are compiled and computed.

Food Frequency Questionnaire (FFQ)

FFQ is the most commonly used method in epidemiological studies to assess the diet and

its relation to chronic disease. The goals of diet assessment in epidemiologic studies are to obtain a major of usual rather than current diet, and rank people by intake, in contrast to clinical settings where current absolute is more important. The FFQ has been developed with these purposes in mind and has become the standard method to collect dietary data in studies of chronic diseases all over the world.

This method is either self administered or recorded by the trained worker. The participants in the study are asked to report the frequency of consumption and amount of food usually consumed over a definite period of time e.g. Last week, last month, last year etc. Period of recall should be kept minimum but different seasons can be included to get intakes in one year e.g. summer, rainy and winter. Additional information on number of food items purchased preparation methods, helps further refine the accuracy or actual amounts consumed.

RESULTS AND DISCUSSIONS

The study of the following is discussed under the following headings:

SOCIO ECONOMIC STATUS

The socio economic survey was done in Rajabari near Panikhaiti, Guwahati to know the economic background of the population. In the survey conducted, it was observed that the people in this village are socio-economically backward. The information and data collected was coded and tabulated as follows:

Table 1: Percentage of population of different age group

PARAMETERS	Number of people	Percentage
AGE		
a. 0-2 years	23	3%
b. 3-6years	58	9%
c. 7-12 years	90	14%
d. 13-18 yrs	88	13.66%
e. 18-45 yrs	306	47.51%
f. 45-60 yrs	52	8%
g. Above 60 yrs	27	4.1%

From the data tabulated above, it was found that in the village of Rajabari, highest no. of population lies in the age group 18-45 years i.e. 47.51%. And the least no. of population is in the age group 0-2years i.e. 3%. Therefore it is seen that Adult population are more in number in the village.

Another survey conducted on Shiromoni village located in the Jamalpur

block of Burdwan district, west Bengal, it was also found that the highest number of population in the village falls under the age group of 15-44, i.e. 44.18%, but contradictory to our report where the age group of 0-2 years was the least, there the age group above 60 years of age constituted the least percent of people in the whole population, i.e. 8.60%.

Table 2: Percentage of Gender

GENDER	Number	Percentage
a. Male	292	45%
b. Female	352	54%

In Rajabari village it was found that the number of female population is more as compared to the male population i.e. 54%. Whereas in a study conducted at Shiromoni village there was more number of males than

female in their village. The male constituted 55.48% of the population, whereas the female constituted 44.51% of the total population of the village.

Table 3: Percentage of Education Qualification

EDUCATIONAL QUALIFICATION		
a. Illiterate	146	22.6%
b. Primary education	151	23.4%
c. High School	43	6.6%
d. HSLC passed	27	4.19%
e. Up to HS	13	2.01%

From the above data, it can be seen that higher number of population in this village is either illiterate or has studied only up to the Primary level. And only few villagers have educational qualification up to HSLC level.

In another survey conducted in the Kakopather village in Tinsukia district of Assam, it was found that the illiteracy rate was 15% with 73% high school and 7% graduate

population¹¹. The literacy rate of Kakopather village is higher than the literacy rate of Rajabari village as there is lower percent of high school completed population i.e. 6.6% as compared to 73% which is a huge difference. It can also be seen that there is no one up to graduate level in Rajabari village whereas there is 7% in Kakopather village in Tinsukia district.

Table 4: Percentage of Marital Status

MARITAL STATUS		
a. Married	191	29.65%
b. Unmarried	138	21.4%

From this table no.4, it was found that 29.65% of the villagers are married and 21.4% are unmarried. A study conducted in the rural areas of Chennai, India reported that out of 100

households surveyed, there were 74 married, 20 unmarried and 6 widow/widower households.

Table 5: Percentage for family type

FAMILY TYPE		
a. Nuclear	53	47.75%
b. Joint	57	51.35%
c. Extended	1	0.9%

From the above table no.5, it is found that maximum population belongs to joint family i.e., 51.35% and only 0.9% of the population belongs to the extended family type.

The survey conducted in Kakopather block of Tinsukia district shows that there are more nuclear family structure i.e. 70.3% and a much

lower percent family with joint family structure i.e. 29.7%¹¹. Whereas in contradiction, the study we conducted in Rajabari village had more percentage of family living in joint family structure i.e. 51.35% and 47.75% in nuclear family structure.

Table 6: Percentage of social category

CATEGORY		
a. General	10	9.01%
b. SC	84	75.67%
c. ST	09	8.1%
d. OBC	08	7.2%

The above data shows that majority of the population falls under the SC category i.e., 75.67% and the category that has the least number of people is the OBC category i.e. 7.2%.

Similar to our report where SC category had the highest number of people, the

SC category in Shiromoni village constituted the highest percent i.e. 35.41% and was followed by general category (34.23%) which is in contradiction with our report having the lowest percent i.e. 9.01%.

Table 7: Percentage of Religion.

RELIGION		
a. Hindu	111	100%
b. Others	0	0%

This table shows that the whole population of Rajabari village is Hindu. A survey of the Kamrup district Assam conducted by Omeo Kumar Das, found that out of the total 900

sample households of 30 identified villages 53% were Hindu households, nearly 41% were Muslim and a little more than 1% were Christian household.

Table 8: Percentage of occupation

OCCUPATIONS		
a. Daily wages	36	32.4%
b. Farmer	19	17.11%
c. Business	35	31.53%
d. Govt. service	1	0.9%
e. Driver	13	11.71%
f. Others	7	6.3%

From the above tabulated data, it was seen that majority of the population works as a daily wages labourers in various sectors. And only a

very few of them i.e. 0.9% are under Govt. service.

In the survey conducted in Shiromoni village more than half of the population, i.e. 52% were into farming as an occupation, whereas in

contradiction to the village we surveyed there were no households earning money through farming.

Table 9: Percentage of Monthly Income

MONTHLY INCOME			
a.	0-5000	36	28.34%
b.	5001-10000	79	62.2%
c.	10001-20000	06	4.72%
d.	Above 20000	06	4.72%

The above data shows that monthly income of majority of the population i.e. 62.2% comes under the range of Rs. 5001-10,000. In Shiromoni village the people had relatively lower income in comparison to Rajabari village where we conducted our survey. There 25.86% households earned below 1,000 rupees

per month and 15.51% of the households of Shiromoni village earned between Rs. 1001-Rs. 2000 per month being the least. The major population of Rajabari village had a better income than the population of Shiromoni village.

Table 10: Percentage of types of Houses

TYPES OF HOUSES			
a.	Kachcha	57	50.89%
b.	Pucca	45	40.17%
c.	Thatched	10	8.92%
d.	Stilt house	0	0%

The above data shows that half of the population in the village are living in Kachcha Houses. In the survey conducted by Sikha *et al*¹¹, the villagers of Kakopather mostly lived

in kachcha house i.e. 50% and 40% lived in pucca houses similar to the study conducted by us on Rajabari village.

Table 11: Percentage of Transport Facilities

TRANSPORTATION FACILITIES			
a)	Bus	09	8.1%
b)	Winger	10	9%
c)	Auto Rickshaw	02	1.8%
d)	Cycle	35	31.53%
e)	Own vehicles	12	10.81%
f)	Others	41	36.93%

This table shows that, majority of the people in Rajabari Village uses bicycle as their means of transport. According to the census of India 2011, out of 53, 74,553 households in rural Assam, 56.9% of the population used bicycle as a means of transport and 41.1% of the total

population did not have any means of transport such as bicycle, motorcycle and car. Only 2.1% of the rural population owned cars/jeep/van and 7.6% of the rural Assam population had scooter/motorcycle.

Table No. 12: Percentage of Livestock

LIVESTOCK	No.	PERCENTAGE
Cow	170	51.98%
Poultry	56	17.12%
Pig	7	2.14%
Goat	32	9.87%
Others	62	18.96%

The above data shows that more than half of the population have cows as their livestock.

In another survey conducted in the village of Kameshwaram, Tamil Nadu¹⁰ in a total of

1005 families there were 559 goats owned by them as their livestock followed by chicken and cow, 128 and 127 respectively.

Table 13: Percentage of Illness

ILLNESS	NUMBER	PERCENTAGE
Acute respiratory infection	1	0.15%
Dwarfism	1	0.15%
Paralysis	1	0.15%
Tumor	1	0.15%
Nerve problem	4	0.62%
Thalassemia	1	0.15%
Nose bleeding	1	0.15%

The data above shows that percentage of people having Nerve Problem is more in number.

In the survey of Kameshwaram village, there were no major sickness other

than fever, and minor accidents. The major causes of death were cancer heart disease and diabetes.

DIET SURVEY

Table 14: FOOD GROUPS

Food Groups	Numbers	Percentage
1. Cereals and Millets		
a. Daily	82	91.1%
b. Alternately	8	8.89%
2. Pulses (e.g. Beans & Lentils)		
a. Daily	53	58.8%
b. Alternately	21	23.3%
c. Once in a week	13	14.4%
d. Rarely	1	1.1%
e. Once in a month	2	2.2%
3. Red meats		
a. Daily	3	3.3%
b. Alternately	8	8.8%
c. Once in a week	18	20%
d. Once in a month	21	23.3%
e. Rarely	40	44.4%
4. Chicken		
a. Daily	3	3.33%
b. Alternately	27	30%
c. Once in a week	46	51.19%
d. Once in a month	12	13.3%
e. Rarely	2	2.22%

5. Fish		
a. Daily	13	14.44%
b. Alternately	42	46.66%
c. Once in a week	26	28.88%
d. Once in a month	6	6.66%
e. Rarely	3	3.44%
6. Milk and Milk products		
a. Daily	41	45.5
b. Alternately	13	14.4
c. Once in a week	16	17.7%
d. Once in a month	6	6.6%
e. Rarely	14	15.5%
7. Roots and tubers		
a. Daily	86	95.5%
b. Alternately	3	3.3%
c. Once in a week	1	1.1%
d. Once in a month	-	-
e. Rarely	-	-
8. Green Leafy Vegetables		
a. Daily	37	41.11%
b. Alternately	18	20%
c. Once in a week	25	27.78%
d. Once in a month	4	4.44%
e. Rarely	6	6.67%
9. Other vegetables		
a. Daily	27	30%
b. Alternately	26	28.89%
c. Once in a week	19	21.11%
d. Once in a month	9	10%
e. Rarely	9	10%
10. Fruits		
a. Daily	4	4.44%
b. Alternately	11	12.22%
c. Once in a week	38	42.22%
d. Once in a month	19	21.11%
e. Rarely	18	20%
11. Sugar and Jaggery		
a. Daily	82	91.1%
b. Alternately	8	8.89%
12. Fats and oils		
a. Daily	76	84.45%
b. Alternately	2	2.22%
c. Once in a week	7	7.87%
d. Once in a month	5	5.56%
e. Rarely	-	-
13. Tobacco and alcohol		
a. Daily	45	50%
b. Alternately	4	4%
c. Once in a week	24	27%
d. Once in a month	7	7%
e. Rarely	10	12%

This table shows that the consumption of Cereals, Pulses, Roots and Leafy vegetables, Milk and milk products, fats and oils, sugar and jaggery, tobacco and alcohol on daily basis are more in number. Chicken, fish and Junk foods are consumed once in a week by majority of the people. And fish is consumed in alternative days by most people. And red meat is consumed very rarely by most number of the people.

From the above survey we got that consumption of cereals and pulses are highest though they still lack in nutrition. This may be due to lack of other nutrients in the diet or else, maybe due to improper cooking practices. To combat malnutrition, incorporation of different pulses and cereals are needed that serve as food staple crops for population in the country or world. Before, the ratio of cereal grains to pulses to meet nutritional requirement was 2:1; however, over the last 60 years both production and consumption patterns, globally, have changed to 8:1.

Meat is one of the nutrient-dense food and meat and meat products are an important source for a wide range of nutrients³. The consumption of white meat is more than the red meat in the Rajabari village but due to its economic condition, they hardly can support the minimum portion of consumption of white meat in building nutrients in the body.

Milk is a necessary product one should take in day to day life to prevent many diseases. Though from the survey, we can relate that people below 50% of the population hardly have milk and milk products. They only have milk when they drink tea, which is hampering its nutrient needed in the diet. Comparing to other rural areas in India, intake of milk and milk products have doubled along with fats and edible oils, and even vegetables during 2011-12. Whereas, green leafy vegetable intake is in same frequency as milk intake in the Rajabari village even though they take it regularly, half of the village almost 95% take roots and tubers more than that of green leafy vegetables or other vegetables.

This may affect them in lack of vitamins and micro-nutrients in the diet, which results in malnutrition and other diseases. Fruits are barely taken by the people in the village due to their ignorance and lack of knowledge about healthy food, which needs to boost our body mechanism. Fruits go hand in hand with the vegetables in aiding nutrients that will enhance a person's health and prevent from certain diseases. Like mangoes with a higher β -carotene contribute to meeting daily requirement even if consumed in small quantities⁷.

According to Deaton and Dreze⁴, fats and oils consumption was higher in the west and lower in the east, and low-fat zones retreating eastward over time. But comparing to the survey done in Rajabari village, the fats and oils consumption is higher to almost 85% of the population. Sometimes, excessive consumption of food can lead to deficient of the nutrients in the body. Thus, one should have limited amount to use fats and oils while cooking.

Consumption alcohol, tobacco and smoking are 50% of the total population, where it affects the person who is an active smoker or passive. In India, out of more than 2.2 million cancer patients, tobacco related cancers account for half the cancers among men and 20% among women and about 0.7 million die each year⁶. Substance use may also influence by cultural practices and religious faith, which are unique in India². These results more to the consumption of unwanted substances that are hampering one's own health and villages lack in proper education about it.

TABLE 2: FOOD HABITS

This table shows that majority of the population in that village are Non vegetarian and consume their meals thrice in a day. And more than half of the population consume Alcohol. And it is also seen that a high no. of population i.e. 81.11% are involved in tobacco consumption. And 44.44% of people in that village smoke.

Table 15: FOOD HABITS

Parameters	Numbers	Percentage
1. Food habits		
a. Vegetarian	2	4.44%
b. Non vegetarian	88	95.5%
2. Number of meals per day		
a. Two	12	13.3%
b. Three	68	75.5%
c. Four	6	6.6%
d. Five	4	4.4%
3. Alcohol consumption		
a. Yes	43	47.78%
b. No	47	52.22%
4. Tobacco consumption		
a. Yes	73	81.11%
b. No	17	18.89%
5. Smoking		
a. Yes	40	44.47%
b. No	50	55.56%

The food habit of Rajabari village is more of non-vegetarian than that of vegetarian which is 95% and 5% respectively. People from Guwahati and Shillong take non-vegetarian in the diet, and diabetic patients' intake with edible food group like-primal rice, tomatoes garden peas, etc can give 301.65µg of Zinc and 169.02µg of Manganese on the daily diet¹. Meal pattern of all the Indian regions have 5-6 times a day which includes breakfast, mid-morning, lunch, evening snacks and dinner, even bed time snacks too⁵. Comparing to the surveyed village, maximum population of 74% takes meal 3 times a day and the least of 4% have 4 times per day. Therefore, comparing the studies one can easily say that the people living in the village due to its food habits and its frequency of taking meals is leading them to malnutrition.

As per the above explanation, tobacco consumption is more in rural areas than the urban areas due to its cultural variances. In the surveyed village consumption of alcohol and smoking is a lower than of consuming tobacco which is 82%. Thus, through their daily habits the intake of tobacco as substance use is more than that of alcohol and smoking which may relate in many diseases like tuberculosis, cancer, etc.

NUTRITION EDUCATION

A nutrition education programme was also conducted at the end of the study period. The topics that were covered are about malnutrition and anaemia, since it is the most prevalent and occurring disease in adolescent girls. Apart from this, a short skit was done on the theme malnutrition and hygiene & sanitation.

MALNUTRITION

Malnutrition occurs everywhere in the developing world. Women and children are the most effected due to malnutrition, as it can be due to lifestyle, economic problems, lack of knowledge, being ignorant to health, etc. Cycle of malnutrition revolves around women specially, where she being an undernourished gives a malnourished child and eventually the cycle goes on. Symptoms and diets about malnutrition were also given for them to be aware and to take necessary steps in benefitting their own health.

ANEMIA

Same goes for Anaemia, the talk on this topic was given based on the health benefits, cause, symptoms and prevention. Prevention of anaemia is done by diet, supplementation, education and fortification. Foods to be include and excluded in the diet were also explained briefly to the adolescent girls, as it is

the criteria of having good foods that will benefit their health during that stage.

SKIT ON- MALNOURISHED CHILD

A skit based on malnutrition was played with the adolescent girls of the village about how the child, who stays in a village becomes malnourished due to ignorant about healthy

food and how her parents were lacking knowledge about it. A doctor and dietician conveyed message on how to prevent malnutrition and to have a proper food with supplementations given by the government. Hygiene and sanitation also plays an important role in the environment.

PHOTO GALLERY



Plate 1: Rajabari Primary School



Plate 2: Village Head talking about the village



Plate 3: PRA map of Rajabari village

CONCLUSION

The survey conducted in the Rajabari village, which is situated nearby the Guwahati city

have many problems regarding the society, hygiene and sanitation, proper facilities and education; and even malnutrition. People are

either illiterate or studied only up to the primary level, where they lack much knowledge in developing the society as well as their own health too. The village is under developed and the people are mostly malnourished. They do not have any proper drinking water facilities or a proper sanitation like drainages, dustbins, washrooms, etc. The factories nearby their homes and river bank, is polluting the environment leaving them no fresh air to breathe which may later result them in many health problems. The road is not properly constructed and it serves only half of the village, whereas for the half one needs to walk to manage whole of the village.

The occupations of most of the people are daily wage earners, drivers, brick factory workers etc. Women generally manage the household chores, whereas some they work at the factories near by the river bank. There is one primary school where the children of the village go to attend it. Most of the houses are not built properly and the village is flood affected area. They do farming for their own daily consumption and do not have market or grocery shops to buy their own needs. Public transportation is not there nearby the village, as they have to walk about 2 km from the main road. The development of the nation lies in the health and nutritional status of its population. Hence nutrition security through enhancing the nutritional knowledge of the people may prove to be a path towards building healthy nation.

REFERENCES

1. Chakraborty, R., Dey, S., Dhkar, P. S., Thabah, C. R., Rynjah, W., Diabetics of Northeast India are at high risk of Zinc and Manganese deficiency: Possible improvement through consumption of some traditional edibles or edibles of limited popularity, *International journal of Diabetes in developing countries* **30**: Pp 201-207 (2010).
2. Chaturvedi, H.K., Phukan, R.K., Mahanta, J., The association of selected socio-demographic factors and differences in pattern of substance use: a pilot study in selected areas of northeast India. *Substance Use Misuse* **38**: 1305-22 (2003).
3. Cosgrove, M., Flynn, A., Kiely, M., Consumption of red meat, white meat and processed meat in Irish adults in relation to dietary quality, *British Journal of Nutrition* **93**: Pp 933-942 (2005).
4. Deaton, A., Dreze, J., Food and Nutrition in India: Facts and interpretations, *Economic & Political* **7**, Pp 42-65 (2009).
5. Green, R., Milner, J., Joy, E. J. M., Agrawal, S., Dangour, A. D., Dietary patterns in India: a systematic review, *British Journal of Nutrition* **116**: Pp 142-148 (2016).
6. Kotwal, A., Thakur, R., Seth, T., Correlates of tobacco-use pattern amongst adolescents in two schools of New Delhi, India. *Indian J Med Sci* **59**: 243-252 (2005).
7. Pritwani, R., Mathur, P., β -carotene Content of Some Commonly Consumed Vegetables and Fruits Available in Delhi, India, *Journal of Nutrition & Food Sciences* **7**: 5 (2017)
8. Census of india houses and household amenities and assests. (2011).
9. Omeo Kumar Das Institute of Social Change and Development: Guwahati, Baseline Survey of Minority Concentrated Districts, Kamrup, Assam.
10. Shyama, V., Ramani, A Socio-economic survey on the Village of Kameshwaram, Tamil Nadu. (2012).
11. Sikha Deka, Nath, R.K., Sehgal, M., Barbora, A.C., Kakati, R.K. and Ahuja, D.B., Socio economic status of tribal farmers of Tinsukia district: A Case Study. *Int. J. Curr. Microbiol. App. Sci.* **6(9)**: 2244-2248 (2017).
12. Singh, A. K., Satish Prasad, Surapneni Krishna Mohan, Joshi, A.,: *water and sanitation hygiene knowledge, attitude and practices among household members in rural setting of India*; www.researchgate.net/publication/283696489.