

A COMPARATIVE STUDY BETWEEN NUTRITIONAL STATUS AND DIETARY INTAKE OF THE FISHERMEN AND OFFICE WORKERS IN G-PLOT AREA OF SOUTH 24 PARGANAS, WEST BENGAL**Trisha Sarkar***

Assistant Professor, Department of Nutrition, Mahishadal Girls' College, Vidyasagar University.

***Corresponding Author: Trisha Sarkar**

Assistant Professor, Department of Nutrition, Mahishadal Girls' College, Vidyasagar University.

Article Received on 28/07/2019

Article Revised on 17/08/2019

Article Accepted on 08/09/2019

ABSTRACT

People residing at the coastal regions of Bengal are dependent on pisciculture for the living, which is an energy demanding task and requires physical efficacy, however very less data is available on the health and nutritional status of people residing at the coastal regions of Southern part of Bengal, hence this study was conducted in G Plot village of South 24 Parganas district, West Bengal, India. This study aims to find the nutritional status and dietary intake of the fishermen residing in this area and compare the findings to the office workers of the same area, thus the present study was conducted to assess the physical parameters (height, weight, BMI, body fat percentage), anthropometrical parameters (waist circumference, hip circumference, waist to hip ratio) and mean dietary intake of macronutrients (Energy, Carbohydrate, Protein and Fat) of both the groups and also discuss the underlying factors.

KEYWORDS: Fishermen, Nutritional Status, Office workers, Diet Survey, Dietary Intake, Anthropometric Measurements, G-Plot, Pathar Pratima Block, South 24 Parganas.

INTRODUCTION

G-plot is a village in Pathar Pratima Block in 24 Parganas South District of West Bengal State, India. It is surrounded by Namkhana Block, Kak Dwip Block and Sagar Block towards west and Mathurapur II block towards North.^[1] It is near to Bay of Bengal.^[2] People here are mainly engaged in agriculture and fishery.^[3] The people residing in the coastal regions engage in pisciculture which is an energy-demanding occupation and requires skill. On the other hand, people who goes to office, generally leads a sedentary life that does not involve heavy physical activities and can potentially contribute to ill health and many preventable cause of death.^[4] However there are very less data available on the health and nutritional status of the fishermen and office workers residing in this area.

Aims of the Study

Thus the main aim of this investigation was to find the health and nutritional status of the fishermen and office workers residing at this area. As both the occupation demands different energy needs and physical efficiency, their anthropometric measurements and nutritional status was also compared.

METHODOLOGY

This was a longitudinal study of one month. Fifteen fishermen (mean age 39.86 ±2.72) and fifteen male

office workers (mean age 40.06± 2.73) were selected at random from G-Plot village. The experimental protocols were explained to all the participants and their consent was taken before conducting the study. All the experiments were carried out and measurements were taken in temperature of 20°-25°C and relative humidity of about 45-50% in winter season in India (December 2018), to avoid seasonal influence on fitness pattern. Each measurement was taken for three times and the mean was represented as final result to avoid any error.

The weight and height of the subjects were measured using standard calibrated digital weighing machine and anthropometric rod respectively. The Body Mass Index (BMI) was measured by the following formula: $BMI = \text{mass (kg)}/\text{Height (m)}^2$ ^[5] and subjects were classified as per World Health Organisation(WHO) guidelines.^[6] Adult body fat percentage measured according to the formula: $\text{Adult body fat \%} = (1.20 \times BMI) + (0.23 \times \text{Age}) - 10.8$ -5.4 (for male subjects).^[7]

The waist circumference was measured using a measuring tape at a level midway between the lowest rib and the iliac crest.^[8] The hip circumference was measured at the level of maximum posterior extension of the buttocks. The waist to hip ratio was then calculated by dividing the waist circumference by hip

circumference.^[8] These circumferences can be a good indicator of fat content in the body.^[8]

Dietary intake was assessed using 24 Hr recall method. In this method an in-depth interview was conducted and typically required 15 to 20 minutes to complete a single day recall. The amounts of each food consumed were estimated in reference to a common size container (e.g., bowls, cups, and glasses), standard measuring cups and spoons. It was done for seven consecutive days.^[9] The consumption was then converted into Energy, Carbohydrate, Protein and Fat respectively.^[10]

RESULT

The results of physical parameters, anthropometrical parameters and mean dietary intake are represented in the table below. Among the physical parameters, weight showed significant difference. The anthropometric parameters reflects the nutritional status^[11,12,13,14] of both the groups, in these parameters no significant differences were found. The mean dietary intake reflected the food consumption patterns of both the group, significant differences were found in Energy, Carbohydrate, Protein and Fat consumptions.

Table 1: Comparative Parameters between the fishermen group (n=15) and office workers (n=15) using t-test and p value.

Parameters	Fishermen		Office Workers		P value
	Mean	SD	Mean	SD	
Physical Parameters					
Height (cm)	164.86	2.59	162.33	2.82	0.25
Weight(kg)	67.13	4.56	57.33	2.09	0.03
Body Mass Index (kg/m ²)	24.79	2.26	21.82	1.57	0.058
Body Fat %	22.71	7.56	19.20	3.34	0.056
Anthropometric parameters					
Waist circumference (cm)	93.43	3.99	86.06	1.89	0.055
Hip circumference(cm)	98.33	3.46	92.86	1.87	0.08
Waist-to-hip ratio	0.94	0.04	0.92	0.04	0.089
Mean Dietary Intake					
Energy(Kcal)	2029.92	466.21	1387.10	401.68	0.0001
Carbohydrates (gm/day)	310.59	97.45	240.85	79.64	0.02
Protein(gm/day)	81.40	15.64	41.31	8.98	0.0001
Fat(gm/day)	50.53	12.41	28.27	8.05	0.0001

DISCUSSION

This study was based on small scale random sample of office workers and fishermen residing at the G-Plot village in Sunderban area. The total sample size was thirty where fifteen office workers (male) and fifteen fishermen between at age of thirty five to forty five were selected randomly. The fishermen has to face adverse working conditions, hence needs a better level of fitness than person doing office work, hence physical parameters such as height, weight, BMI, body fat percentage were checked between both the groups, However there were no significant difference found apart from the body weight. The mean BMI of both the groups were normal as per the WHO guidelines. The body weight of the fishermen group were higher compared to the office workers of the same area, this may be attributed to the higher dietary consumption of the former group. All the fishermen were either heavy or moderate worker, but the office folks had a sedentary lifestyle. Among the anthropometric measurements, no significant differences were found between both the groups.

The mean dietary intakes were also calculated and it was found that the fishermen group data differed significantly with the office workers. Consumption of carbohydrate, protein, fat and energy were significantly higher in the

fishermen community. They consumed high amount of protein in form in fresh and sun dried fish, however protein from other sources such as lentils, meat, fruits, milk and milk product were found lacking in their diet. Similar results were found in a study conducted by Bay of Bengal Program (BOBP) in Nochikuppam and Ayodyakuppam marine fishing hamlets in Madras city.^[15] Another BOBP study revealed that most of the fish were served to men and very less or nothing are left for the women and children of the family^[16] hence the nutritional status of the men in the family is better.^[17]

The mean energy and carbohydrate consumption were also higher in the fishermen group as their jobs are more physically demanding. The fishes that are consumed by them were rich in essential fatty acids, hence the fat consumptions were also higher among the fishermen folks.

The office workers who were surveyed consumed less calories, carbohydrate, protein and fat. Their mean waist circumference, hip circumference, waist to hip ratio, Body Fat percentage and BMI were lower than the fishermen group, however did not differ significantly.

CONCLUSION

The present study indicates that the fishermen and office workers residing at the G Plot village has similar anthropometry, the physical parameter that differed significantly was only the body weight. However, the macronutrients consumption of the fishermen group was better than the office workers because they consumed large amount of fish which somehow met their nutritional needs. However according to ICMR recommendations^[18] there is a massive deficiency of energy in both groups which may lead to health complications related to chronic malnutrition. It may be concluded that the people residing in this area are not getting adequate supply of nutrients to carry on their day to day life; further investigations are needed in order to get a better understanding of the situation.

REFERENCES

1. G-Plot, Patharpratima. Wikipedia <https://en.wikipedia.org/wiki/Patharpratima>.
2. District Statistical Hand Book, Government of West Bengal (Year- 2007- 2011).
3. Census Data, South 2011, 24 Parganas, Government of West Bengal,.
4. Mark, A.E, Jonson, I. Relationship between screen time and metabolic syndrome on adolescents. *Journal of public Health*, 2008.
5. Keys A, Fidanza F, Karvonen MJ, Kimura N, Taylor HL. Indices of relative weight and obesity. *J Chronic Dis.*, 1972; 25: 329–43.
6. Lancet, 2004. WHO Appropriate Body Mass Index for Asian populations and its implications for policy and intervention strategies, 363: 157-63
7. Deurenberg P, Westrate JA, Seidell JC. Body mass index as a measure of body fatness: Age- and sex-specific prediction formulas. *Br J Nutr.*, 1991;65: 105–14.
8. Roy JS. Toronto: Cambridge University Press; Body composition in biological anthropology. *Cambridge Studies in Biological and Evolutionary Anthropology Series*, 1991.
9. Biro, G, Hulshof, KFAM, Ovesen, L, et al. Selection of methodology to assess food intake. *Eur J Clin Nutr.*, 2002; 56(2): S25–S32.
10. Gopalan, C., Ramasastry, B.V., Balasubramanyam, S.C., Narasinga Rao, B.S., Deosthale, Y.G. and Panth, K.V. Nutritive Value of Indian Foods. NIN, Hyderabad, India, 2007.
11. Bharati, S., M. Pal, B.N. Bhattacharya and P. Bharati. "Prevalence and causes of chronic energy deficiency and obesity in Indian women." *Human Biology*, 2007; 79: 395–412.
12. Bisai, S. and K. Bose. "Body Mass Index and Chronic Energy Deficiency among Adult Tribal Populations of West Bengal: A Review." *Tribes and Tribals*, 2008; 2: 87-94.
13. Misra, A., R. Sharma, R.M. Pandey and N. Khanna. "Adverse profile of dietary nutrients, anthropometry and lipids in urban slum dwellers of northern India." *European Journal of Clinical Nutrition*, 2001; 55: 727–34.
14. Rao, K.M., A. Laxmaiah, K. Venkaiah and G.N. Brahmam. "Diet and nutritional status of adolescent tribal population in nine states of India." *Asia Pacific Journal of Clinical Nutrition*, 2006; 15: 64–71.
15. Dorothy, Jayam and Sundari. Report on the study of health in relation to socio-economic status of fishing communities in the city of Madras. Prepared for the workshop on NFE Trainers' Manual Development, 16-23 April, 1983, Madras conducted by BOBP.
16. Karuna Anbarasan. Factors that influence the role and status of fisherwomen. Madras: BOBP, 1985. (BOBP/WP/33).
17. K. Kumarakuru *, Haripriya Sundaramoorthy. Nutritional Status and Dietary Pattern of Fisher Women in Puducherry, *The Indian Journal of Nutrition and Dietetics*, July-September, 2015; 52(3).
18. ICMR, Nutrient Requirement and Recommended Dietary Allowances for Indians. NIN, Hyderabad, India, 2010.