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A Study on Nutritional Status Among the Fishermen of Barrackpore I Block, North 24 Parganas, West Bengal

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Abstract:

- **Background:** Fishery is an important sector in most of the developed and developing countries of the world from the stand point of income and employment generation. Usually Indian fishermen are used to do moderate work in their profession and they need a proper nutritional support.

- **Objectives:** To find out the overall nutritional status and socio economic condition of fishermen of Barrackpore I Block, North 24 Parganas. To find out the association if any between their nutritional status and some socioeconomic variables and also with addiction and health hazard.

- **Methods:**An Observational type of Cross sectional study was conducted on 99 fishermen of Barrackpore I block, North 24 parganas, West Bengal from April to September, 2018**.**
- **Results:**4.0% of study population were underweight, 33.3% were overweight and 8.1% were found to be obese. 19.2% had increased and 3.0% had substantially increased waist circumference. 63.6% had increased waist hip ratio among the study population. 53.1% of fishermen had very high body fat percentage in the age group of 20 to 39 years whereas 56.0% of fishermen had very high body fat percentage in the age group of 40 to 59 year age group. Various clinical signs were observed like anaemia (23.2%), Oedema (8.1%), dental caries (11.1%), pale tongue (19.2%) etc among fishermen also.

▪ **Conclusions:** Nutritional status of the population studied was not satisfactory. Low socio-economic condition was common picture in the population. Also addiction to alcohol and tobacco had a great impact on their health status.

Keywords: Nutritional status, Fisher men, West Bengal.

Introduction:

The coastal area of West Bengal is the home of some poorest people, living in some of the least served and remote areas of the state; the three coastal districts i.e., South and North 24 Parganas and Purba (East) Midnapore. [1]

Because of abundant rivers, creeks, khals (manmade water channels) and bills, fisheries of the North 24 Parganas has flourished. Many people earn their livelihood by catching fishes. Fishes are not only distributed among various parts of the state but also are exported to the other parts of the country. 430,570 number of persons of this district are engaged in the fishing profession, where the total population of North 24 Parganas is 10,009,781.[2]

According to a Pilot Survey (2012-2013) in Barrackpore-I Block, North 24 Parganas conducted by Office of the Director of Fisheries [ME & MS], Government of West of West Bengal, total area of the block is 76.49 sq. Km. and total family number in Barrackpore-I Block is 34858 consists a population of 155270. 862 families of this block are involved in fishery activity among the total 3565 number of families. The block has 677 numbers of water body covering 162.49 hect. area and annual fish production of the block is 397.215 ton. This block has thirteen fish seed production hatcheries.There are two Fishermen Co-operative society. There is one whole sale fish market which is situated in Basudebpur.The total number of whole sale fish seller of this block is 14.Annual fish sold from markets are 54.932 ton (150.5 Kg/day) and annual fish consumption of the block are 2585.317 ton (per capita 16.65 Kg). [3]

Materials &methods:

This cross sectional observational and descriptive community-based study was carried out in Barrackpore-I block of North 24 Parganas district, West Bengal during April to September,2018.

Barrackpore-I block contains 8 gram panchayats. Out of which 5 gram panchayats had fishermen. 2 gram panchayats were selected by simple random sampling method from these 5 and the list of the fishermen of 2 gram panchayats were done.

The sample size was 100 (based on previous study and non-response) using the formula $Z_\alpha^2 pq/d^2$ considering prevalence of malnutrition among fishermen (from previous study) = 43.5% .[4]At 95% confidence interval (1-α), and 10% allowable error (d), the minimum sample size estimated to be 95 by using formula $Z_\alpha^2 pq/d^2$ where, p = 43.5% , q = (100 - 43.5) = 56.5 %, d= 10%. $n = (1.96)^2(43.5\times56.5)/(10)^2 = 94.4169 \approx 95$(approximately)

Now, as there may be cases of non-response, 5% extra has been taken into account. So, the sample size becomes 95+5% of 95 = 99.75 ≈100. Due to some inconvenience one schedule could not be completed, so finally 99 fishermen were taken for analysis.

All the fishermen were listed, from the list the sample size was drawn by simple random sampling method and the equal number of fishermen (50) were taken from each gram panchayat. Fishermen in between 20 – 59 years of age were included in the study. All the willing participants were included in the study. Any fishermen of the age group less than 20 years and above than 59 years were excluded from the study. Also unwilling and ill candidates were excluded from the study.

A predesigned, validated and pretested schedule was used to collect data about socio economic condition through FACE TO FACE INTERVIEW (after verbal informed consent emphasizing anonymity and confidentiality) and OBSERVATION [Height was measured (nearest millimetre) by using Anthropometric rod, Body weight was measured (nearest 100gm) by Digital weighing machine (Salter Balance), Body fat was measured by OMRON Body Fat Analyser and Non Elastic Measuring Tape was used for measurement of Waist and Hip Circumference. Clinical Examination was done in a well illuminated place and the subjects were examined from head to foot to detect the sign and symptoms indicating nutritional deficiencies.]

Data thus collected was tabulated and analysed by using appropriate statistical method. Chi square test was done by using Vassar stat. The confidence interval is taken as 95% .

Results:

Table No – 1

Distribution of fishermen according to their Socio Economic Characteristics:[n=99]

Characteristics	Categories	Number(%)
AGE (YEARS)	20-29	29(29.3%)
	30-39	20(20.2%)
	40-49	13(13.1%)
	50-59	37(37.4%)
MARITAL STATUS	UNMARRIED	29(29.3%)
	MARRIED	70(70.7%)
EDUCATIONAL LEVEL	ILLITERATE	31(31.3%)
	JUST LITERATE	17(17.2%)
	PRIMARY LEVEL	17(17.2%)
	SECONDARY LEVEL	22(22.2%)
	HIGHER SECONDARY LEVEL AND UPWARDS	12(12.1%)
RELIGION	HINDU	88(88.9%)
	MUSLIM	11(11.1%)
CASTE	SC	51(51.5%)
	ST	11(11.1%)
	OBC-A AND OBC-B	16(16.2%)
	GENERAL	21(21.2%)
	6574 AND ABOVE	3(3.0%)

PER CAPITA INCOME (BY USING BG PRASAD SCALE,2018) (in Rs./Month)	3287-6573	12(12.1%)
	1972-3286	28(28.3%)
	986-197	39(39.4%)
	985 AND BELOW	17(17.2%)
DURATION OF PRESENT WORK	<1 YEAR	10(10.1%)
	1-5 YEARS	28(28.3%)
	5-10 YEARS	16(16.2%)
	>10 YEARS	45(45.4%)

Table – 2

Distribution of fishermen according to their Addiction habit: [n=99]

ADDICTION	YES	76(76.8%)
	NO	23(23.2%)
TYPE OF ADDICTION (n=76)	SMOKING	32(42.1%)
	TOBACCO CHEWING	33(43.4%)
	ALCOHOL	11(14.5%)

Table –3

Distribution of fishermen according to their Nutritional Status: [n=99]

Characteristics	Categories	Number(%)
BMI (By using WHO International Classification of BMI)	SEVERE UNDERWEIGHT [<16KG/M²]	1(1.0%)
	MODERATE UNDERWEIGHT [16-16.9 KG/M²]	1(1.0%)
	MILD UNDERWEIGHT [17-18.49 KG/M²]	2(2.0%)
	NORMAL [18.5-24.9 KG/M²]	54(54.6%)
	OVERWEIGHT [25-29.9 KG/M²]	33(33.3%)
	OBESE I [30-34.9 KG/M²]	7(7.1%)
	OBESE II [35-39.9 KG/M²]	1(1.0%)
WAIST CIRCUMFERENCE by using WHO classification (Increased)	≤ 94 cm	80(80.8%)
	>94 cm	19(19.2%)

WAIST CIRCUMFERENCE by using WHO classification (Substantially Increased):	≤102 cm		96(97.0%)
	>102 cm		3(3.0%)
WAIST – HIP RATIO by using WHO classification	<0.90 cm		36(36.4%)
	≥0.90 cm		63(63.6%)
BODY FAT PERCENTAGE by using cut-off point proposed by Gallagher et al.	AGE (20-39 YEARS) [n=49]	NORMAL	15(30.6%)
		HIGH	8(16.3%)
		VERY HIGH	26(53.1%)
	AGE(40-59 YEARS) [n=50]	NORMAL	6(12.0%)
		HIGH	16(32.0%)
		VERY HIGH	28(56.0%)

Table – 4

Distribution of fishermen according to their Clinical Examination: [n=99]

- Among the 99 fishermen no one had Conjunctival xerosis.
- Among the 99 fishermen no one had Corneal xerosis.
- All the 99 fishermen were free from Night blindness.
- All the 99 fishermen had normal condition of thyroid gland.

Characteristics	Categories	Number(%)
CONDITION OF LIPS	NORMAL	97(98.0%)
	ANGULAR STOMATITIS (MILD)	2(2.0%)
COLOUR OF TONGUE	NORMAL	78(78.8%)
	PALE	19(19.2%)
	RED	2(2.0%)
SURFACE OF TONGUE	NORMAL	98(99.0%)
	ULCERATED	1(1.0%)
CONDITION OF GUM	NORMAL	97(98.0%)
	BLEEDING GUM	2(2.0%)
CONDITION OF TEETH	NORMAL	88(88.9%)
	PRESENCE OF DENTAL CARIES	11(11.1%)
TEXTURE OF HAIR	NORMAL	78(78.8%)
	LOSS OF LUSTRE	18(18.2%)
	BRITTLE	3(3.0%)
SURFACE OF SKIN	NORMAL	74(74.8%)
	LESS LUSTROUS	17(17.2%)
	DRY AND ROUGH	8(8.0%)
ELASTICITY OF SKIN	NORMAL	89(89.9%)

	DIMINISHED ELASTICITY	10(10.1%)
PRESENCE OF OEDEMA	PRESENT (FACE AND DOWN PART)	7(7.1%)
	PRESENT (WHOLE BODY)	1(1.0%)
	ABSENT	91(91.9%)
BONE CONDITION	NORMAL	98(99.0%)
	STIGMA OF PAST SIGN OF RICKET	1(1.0%)
PRESENCE OF ANAEMIA	PRESENT	23(23.2%)
	ABSENT	76(76.8%)
CALF MUSCLE TENDERNESS	PRESENT	2(2.0%)
	ABSENT	97(98%)

Table – 5

Association of Nutritional Status with Socio Demographic variables: [n=99]

[Figures within the parenthesis indicate percentage]

WAIST CIRCUMFERENCE	LITERACY LEVEL		TOTAL	Chi Square Value	p Value
	LITERATE	ILLETERATE AND JUST LITERATE			
≤94cm	47(92.2)	33(68.8)	80(80.8)	8.7355	0.003121 **(p < 0.05)**
>94cm	4(7.8)	15(31.2)	19(19.2)		
TOTAL	51(100)	48(100)	99(100)		

WAIST HIP RATIO	LITERACY LEVEL		TOTAL	Chi Square Value	p Value
	LITERATE	ILLETERATE AND JUST LITERATE			
<0.90cm	25(49.0)	11(22.9)	36(36.4)	7.2809	0.006969 **(p < 0.05)**
≥0.90cm	26(51.0)	37(77.1)	63(63.6)		
TOTAL	51(100)	48(100)	99(100)		

WAIST HIP RATIO	PER CAPITA INCOME (in Rs./Month)		TOTAL	Chi Square Value	p Value
	1972 AND ABOVE	1971 AND BELOW			
<0.90cm	7(16.3)	29(51.8)	36(36.4)	13.2516	0.000272 **(p < 0.05)**
≥0.90cm	36(83.7)	27(48.2)	63(63.6)		
TOTAL	43(100)	56(100)	99(100)		

BODY FAT PERCENTAGE	PER CAPITA INCOME (in Rs./Month)		TOTAL	Chi Square Value	p Value
	1972 AND ABOVE	1971 AND BELOW			
NORMAL	1(2.3)	20(35.7)	21(21.2)	16.2247	0.000056 **(p < 0.05)**
HIGH & VERY HIGH	42(97.7)	36(64.3)	78(78.8)		
TOTAL	43(100)	56(100)	99(100)		

Table - 7

Association of various variables of Socio demographic condition: [n=99]

[Figures within the parenthesis indicate percentage]

ADDICTION	LITERACY RATE		TOTAL	Chi Square Value	p Value
	LITERATE	ILLETERATE AND JUST LITERATE			
ADDICTED	32(62.7)	44(91.7)	76(76.8)	11.5971	0.000661 **(p < 0.05)**
NOT ADDICTED	19(37.3)	4(8.3)	23(23.2)		
TOTAL	51(100)	48(100)	99(100)		

Table - 8

Association of Clinical conditions with Socio Demographic variables:[n=99]

[Figures within the parenthesis indicate percentage]

ANAEMIA	CONSUMPTION OF ALCOHOL		TOTAL	Chi Square Value	p Value
	YES	NO			
PRESENT	8(72.7)	15(17.0)	23(23.2)	16.9979	0.000037 **(p < 0.05)**
ABSENT	3(27.3)	73(83.0)	76(76.8)		
TOTAL	11(100)	88(100)	99(100)		

OEDEMA	CONSUMPTION OF ALCOHOL		TOTAL	Chi Square Value	p Value
	YES	NO			
PRESENT	7(63.6)	1(1.1)	8(8.1)	51.4208	0.00001 **(p < 0.05)**
ABSENT	4(36.4)	87(98.9)	91(91.9)		
TOTAL	11(100)	88(100)	99(100)		

TOOTH DECAY	TOBACCO CHEWING		TOTAL	Chi Square Value	p Value
	YES	NO			
PRESENT	10(30.3)	1(1.5)	11(11.1)	18.4602	0.000017 **(p < 0.05)**
ABSENT	23(69.7)	65(98.5)	88(88.9)		
TOTAL	33(100)	66(100)	99(100)		

Discussion:

In present study, 49.5% fishermen were of the age between 20-39years, and 50.5% were of the age between 40-59 years. According to Ghosh et al.(2015) in Teknaf, 88.87% fishermen were below 39 years of age which was double than the present study, and the remaining (11.13%) were more than 40 years of age which was approximately five times lower than the present study. The result indicated that the middle age groups are involved in the fishing activities. Ahmed et al.(1999) in coastal region reported 66% were under 40 years of age which was higher than the present study result.[5]

In the present study, 17.2% fishermen were just literate who could sign only and 17.2% had education up to primary level, number of illiterate were 31.3% , 22.2% were educated up to secondary level and 12.1% were higher educated. According to Ghosh et al.(2015) in Teknaf, 62.96% were found to be illiterate and could not write their names which was double than the present study result, 18.51% were semi-literate who could only write their names which was similar with present study, 14.81% had received education up to primary level, this result was also almost similar with the present study , 3.70% had received secondary education respectively which was lesser than the present study result.[5] Rahman et al. (2012) reported that among 100 fishermen 66.66% were illiterate which was almost double than the present study while 16.66% had Primary education, similar with the present study result and another 16.66% could sign only in the Nijhum island under Hatiyaupazilla of Noakhali district in Bangladesh which was almost same with the present study result . [5]

In present study only 14.5% fishermen were alcohol addicted. Maximum number of fishermen were habituated with smoking (42.1%) and tobacco chewing (43.4%) . Joseph studied in Kerala (2015) and reported that most of the fishermen were severely addicted to alcohol and drugs. More than 50% of fishermen in Thiruvananthapuram and Alappuzha districts were habitual drinkers which was almost four times higher than the present study result. [7]

In present study, 54.6% had BMI in normal range, 4.0% were underweight, 33.3% were overweight and 8.1% had obesity. According to Sengupta et al. (2011) in West Bengal, mean BMI of fishermen was 19.2 Kg/m^2 which is in normal range. [9] In our present study, mean BMI of fishermen of Barrackpore-I block is 24.33Kg/m^2 which is in normal range. But there is an increasing risk of being Overweight among the study population.

In present study, among the age between 20-39 years, 16.3% had high and 53.1% had very high body fat percentage. Among the age between 40-59 years, 32.0% had high and 56.0% had very high body fat percentage. More than half of our study population is belong to the Very high Body fat percentage. So there is an increasing risk of obesity among the study populations. According to Sengupta et al. (2011) in West Bengal, mean body fat percentage was 17.7% in the study population and the young fishermen were found to have less body fat percentage than sedentary population [8]

In present study, 19.2% had increased and 3.0% had substantially increased waist circumference and 63.6% had increased waist hip ratio. No data is obtained on the waist circumference and waist hip ratio among fishermen in previous studies.

In present study, 2.0% fishermen had angular stomatitis which may be due to vitamin B_2 deficiency might have occurred due to alcohol addiction. 19.2% fishermen had pale tongue and 2.0% had red tongue. 1.0%

had ulcerated tongue this may be also due to vitamin B complex deficiency. 2.0% had bleeding gum which may be occurred due to tobacco chewing or Vitamin C deficiency. 11.1% population had dental caries which may be due to tobacco chewing or vitamin D deficiency 8.1% were suffering from oedema which may be due to alcohol addiction. 1.0% had past sign of ricket which is a sign of vitamin D deficiency. 23.2% had anaemia, may be due to severe alcohol consumption and lack of iron containing food stuffs in regular diet. 2.0% had calf muscle tenderness. There is no study containing data on clinical examination which is an important part of nutritional status assessment so there is no chance to compare present study result with the previous studies.

Conclusion:

The implication of this study is that the socioeconomic conditions of fishermen in Barrackpore-I block were not satisfactory. A major population (56.6%) belonged to social class IV(per capita income Rs.986-1971/Month) and social class V(per capita income Rs.985 and below/Month). This lower social class, poverty and lower literacy rate had a clear impact on poor nutritional status of fishermen. The chances of increased waist circumference and increased waist-hip ratio is very common among the illiterate and just literate population. Addiction became a great threat to this illiterate and just literate fishermen community. Consumption of alcohol was causing various nutrient deficiency disorder like anaemia, oedema etc. Tobacco chewing is a great cause of tooth decay among the fishermen population. High prevalence rate of smoking and alcohol consumption were evident example of the spoilage of money, less nutritional and health awareness at a low literacy level.

Reference:

1.The International Fund for Agricultural Development (IFAD) Report. Republic of India: West Bengal Coastal Areas Development Project-Inception Phase. India, IFAD,2007.

2.*https://censusindia.gov.in*, date of access 17th September,2018.

3. Report of Complete enumeration of fishery resources pilot survey 2012-2013, Barrackpore-I, North 24 Parganas, Office of the Joint Director of Fisheries (ME & MS), Government of West Bengal.

4. Pal B, Seal B, Roy S K. Nutritional status of Fishermen communities: validation of conventional methods with discriminant function analysis. Bulletin of Mathematical Sciences and Application2014;Vol 8,PP 49-59

5.Ghosh S K, Ahmmed M K, Ahmed S I, Ahsan M K, Kamal M. Study on the socio-economic conditions of the fishermen in Teknaf. Res.Agric.Livest.Fish 2015;Vol.2,No.3:483-489

6. Ramachandran M. Nutritional and health status of fishing communities in the Uttan-Gorai area with special emphasis on women. Institute for community organisation research 2011;pp 1-41

7. Joseph A B J. The quality of life of fishermen community, a micro level study in Kerala 2015.

8. Sengupta P, Sahoo S. A fitness assessment study among young fishermen of coastal areas of East Midnapore, district of West Bengal, India. South east Asia journal of public health 2011;Vol.1,pp 28-34.