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**in Coastal Ecosystem of Andhra Pradesh,
Karnataka, Kerala and Tamilnadu**

THE COASTAL ECOSYSTEM OF
ANDHRA PRADESH, KARNATAKA, KERALA
AND TAMILNADU
ON
13th & 14th OCTOBER 2003
AT
UNIVERSITY AUDITORIUM
P. N. G. RANGA AGRICULTURAL UNIVERSITY
RAJENDRANAGAR, HYDERABAD - 500 002



**ANGRAU Auditorium, Rajendranagar, Hyderabad
13th & 14th October 2003**

NUTRITIONAL STATUS OF FISHERWOMEN

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Abstract

Most fisher women were taking rice as it was their staple food. The mean consumption of rice was 330 gm/ day. The consumption of pulses was 18-25 gm/ day. The consumption of green leafy vegetables was found to be less and was observed to be 12 gm/ day. The consumption of other vegetables was also less. Consumption of fish was found to be more as it was easily available for them. Cereal consumption was found to be high in Andhra Pradesh followed by Kerala, Karnataka, and Tamilnadu. Pulse consumption was high in Kerala when compared to other states in which survey was done. Fisher women of Kerala consumed higher amount of other vegetables, fruits, sugar & Jaggery, fish, milk & milk products. Low intake of all the food groups was observed among the fisher women of Karnataka. The overall energy intake of the fisherwomen was found to be 1827 K.cal / day, protein intake was found to be 50.6 gm / day, CHO – 343.5 gm/ day and fats was found to be 27 gm/ day. The mean intake of micro nutrients was found to be lower than RDA.

Introduction

Diet is a vital determinant of health and nutritional status of people. The dietary habits of people / families / communities vary according to socio – economic factors, regional constraints and traditions. Precise information on food consumption pattern of people, through application of appropriate methodology is often needed not only for elucidating the relationship of nutrient intake with deficiency as well as degenerative diseases.

Energy, Protein, CHO and Fats are major nutrients, i.e Energy, protein, vitamins and minerals are needed in different amounts to grow, live & thrive. In planning a diet, foods should be chosen in proper amounts. Such a diet should be eaten in sufficient quantity daily to provide the needed energy and also to ensure supply of at least a minimal quantity of essential nutrients to maintain the body functions in proper working order. The requirements of all these nutrients depend on age and sex of the individual.

Food Consumption

Information on food consumption pattern is also essential for assessing the food needs of population groups. At national / regional level, no realistic policies on food production, procurement and distribution can be formulated without a thorough knowledge of food habits of the people.

Quantitative information on diet is also needed for fixing minimum wages and organizing rationing and mass community feeding programmes. In recent years, economists are making use of dietary energy data for defining poverty levels of population groups.

Methodology

To elicit the information on the food consumption of preschool children and fisher women in the selected villages, a detailed information on the food consumed and frequency and amount purchased were noted and the total amounts of each food consumed for a period of one month was noted. 24 hour recall method combined with one day weighing was employed to assess the nutritional status of fisherwomen and preschool children (1-5years).

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The purpose of diet survey was explained thoroughly. i.e food items served in plate before eating are noted. The cooked ingredients were measured through cups and were than converted to raw ingredients.

Standardization of cups for volume

Take a set of the diet survey cups and mark the edges of all cups to a particular level. Fill each of the cup with water and measure the water in each cup with measuring cylinder to know the volume of the cups.

Standardization of cups for weight

Take a set of 12 diet survey cups and rank the edges of all cups to a particulars level. Fill each of the cups in a uniform way with cooked rice and weigh. Deduct the weight of the empty vessel.

The mean intake in forms of raw equivalents from intake of cooked amounts were calculated using the formula (Thimmayamma , 1986)

Individual intake of items in raw equivalents (gm/ ml)	=	$\frac{\text{total raw amount of each Ingredient used in preparation} \times \text{Individual in take cooked amount}}{\text{Total cooked amount of each preparation g/ ml.}}$
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The nutritive values of foods consumed were calculated using the nutritive value of Indian (Gopalan et al., 1989) foods.

Statistical analysis

The data generated has been utilized to meet the objectives of the study. Frequency distributions, Mean and Standard Deviations and tests of significance were utilized and the results are provided for each of the variables studied. Analysis variance, Chisquare test and multiple comparision 't' test procedureds were utilized and the results are been provided in the chapters (Visveswara Rao, 1996)

Result and Discussion

a) Food intake of fisher women

Details of food consumption among fisherwomen are provided in table 1. Cereal consumption was high among the fisher women of Andhra Pradesh, followed by Kerala, Karnataka and Tamilnadu. This is because cereal grains (rice) form the major proportion of their Diet.

Table 1: Food intake of fisherwomen (gm/ Capita / day)

S. No	State	Cereals	Pulses	Green leafy vegetable	Other. vegetable.	Fat & oil	Fruits	Sugar & Jaggery	Milk & Milk prod.	Poultry	Fish
1	A.P	469 +124.0	19.5 +9.0	21.6 +12.7	23.19 +17.7	19.1 +6.7	25.0 +8.7	19.81 +7.3	38.4 +30.7	15.4 +23.7	14.2 +42.5
2	Karnataka	246 + 20.8	7.13 +5.4	3.6 +5.8	11.61 +4.41	8.3 +2.13	7.21 +10.6	8.0 +2.3	8.82 +2.9	12.31 +9.42	92 +10.8
3	Kerala	384 +11.4	31 +3.5	15 +4.1	71 +20.1	16.0 +3.8	31.0 +4.2	17.0 +2.4	111 +38.7	129 +19.49	163 +71
4	Tamilnadu	224 +52.8	15.0 +3.0	8.2 +1.3	14.2 +2.3	12.2 +1.9	12.2 +1.9	21.7 +3.4	40.0 +8.0	12.0 +2.5	147 + 56
	Overall	330	18.15	12.0	30	13.9	20.8	16.64	49.5	22.1	136
	RDA	300	40	100	100	20	120	20	200	-	-

Note: Figures given are mean \pm SD, RDA: Recommended dietary allowance, ICMR (1998)

Overall mean intake of pulses was found to be 18 gm / day. Consumption of pulses was high among the fisher women of Kerala followed by Andhra Pradesh. Green leafy vegetable consumption was very low. Consumption of other vegetables was high in women of Kerala. Oil consumption was high in fisherwomen of Andhra Pradesh, followed by Kerala. Consumption of sugar and Jaggery, milk and milk products, poultry and fish was high among the women of Kerala, followed by A.P. The low consumption of vegetables by the fisher women might be due to the preference of women for fish. All the food items except cereals are observed lower than the recommended dietary allowances.

Nutrient Intake

Macro nutrient intake

From table 2, it was observed that average energy intake by the fisherwomen in the surveyed states was found to be 1820 kcal / day. The intakes of protein, CHO and fat were found to be 50.6gm/ day, 343.5 gm/ day and 27 gm/ day respectively.

Higher intake of energy, CHO, Protein and fat was found among the fisher women of Kerala followed by Tamil Nadu and Andhra Pradesh. Percentage adequacy of macronutrients in each of the states as well as for all the states is given in Fig. No. 1 & 2. Karnataka fisherwomen had lowest intakes.

Table 2: Macro Nutrient intake by the fisherwomen (per capita/day)

Sl.No	State	Energy(K.cal)	Protein(gm)	CHO(gm)	Fat(gm)
1	Andhra Pradesh	1470 (376)	35.6 (9.2)	289.0 (60.4)	19.0 (4.6)
2	Karnataka	1053 (99)	20.4 (2.7)	220.4 (20.0)	10.0 (2.2)
3	Kerala	2967 (414)	97.0 (24.0)	512.0 (20.1)	59.0 (11.6)
4	Tamilnadu	1786 (254)	49.3 (13.9)	352.7	19.8 (5.3)
5	Mean	1820.0	50.6	343.5	27.0
6	RDA	2225	50.0		20.0

Note: Figures with in the bracket indicate SD values

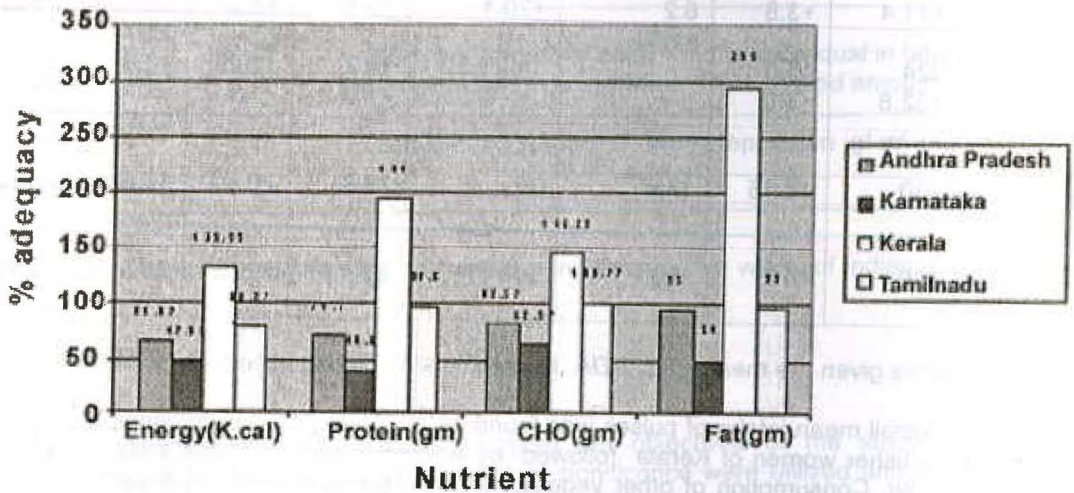


Fig. 1: Percent adequacy of macro nutrient intake by the fisher women in all different states studied

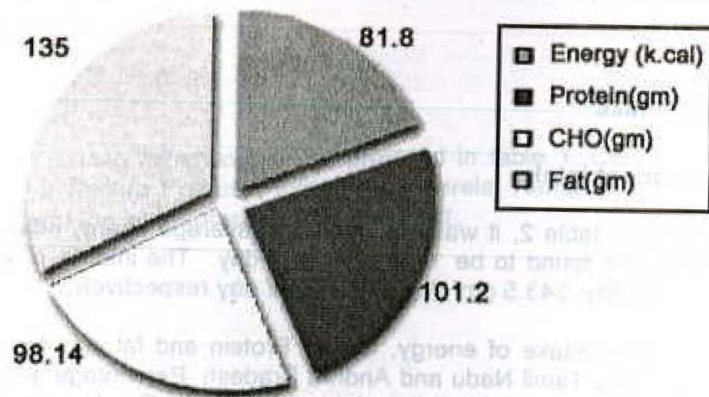


Fig.2 : Percent adequacy of macro nutrient intake in all states studied

Macro nutrient intake by the fisher women

Vitamins

It was observed that the overall intake of B1, B2, Niacin and Vit C was 0.74mg, 0.63 mg, 13.1mg and 26.7 mg per day respectively which was lower than the RDA (Table 3)

High intake of Macro nutrient intake observed among the fisher women of Kerala, followed by Tamilnadu. This might be because of the parboiled rice consumed in that region. Lower intake of vitamins was observed among the fisherwomen of Karnataka.

Table 3: Vitamin intake of fisher women (per capita/day)

Sl.No	State	B1(mg)	B2 (mg)	Niacin (mg)	Vit C(mg)
1	Andhra Pradesh	0.57 (0.2)	0.59 (0.2)	10.62 (2.9)	29.1(6.9)
2	Karnataka	0.56 (0.05)	0.16(0.02)	10.30 (5.1)	4.9 (5.9)
3	Kerala	1.0 (0.0)	1.00 (0.0)	19.00 (4.5)	35.0 (29.3)
4	Tamilnadu	0.84(0.20)	0.80(0.5)	12.80 (2.6)	37.9 (4.0)
5	Over all Mean	0.74	0.63	13.19	26.73
6	RDA	1.1	1.3	14	40

Note: Figures with in the bracket indicate SD values

RDA: Recommended dietary allowances , ICMR (IPPP)

Percent adequacy of vitamins in different states as well as in all the states is given in Figures 3 & 4

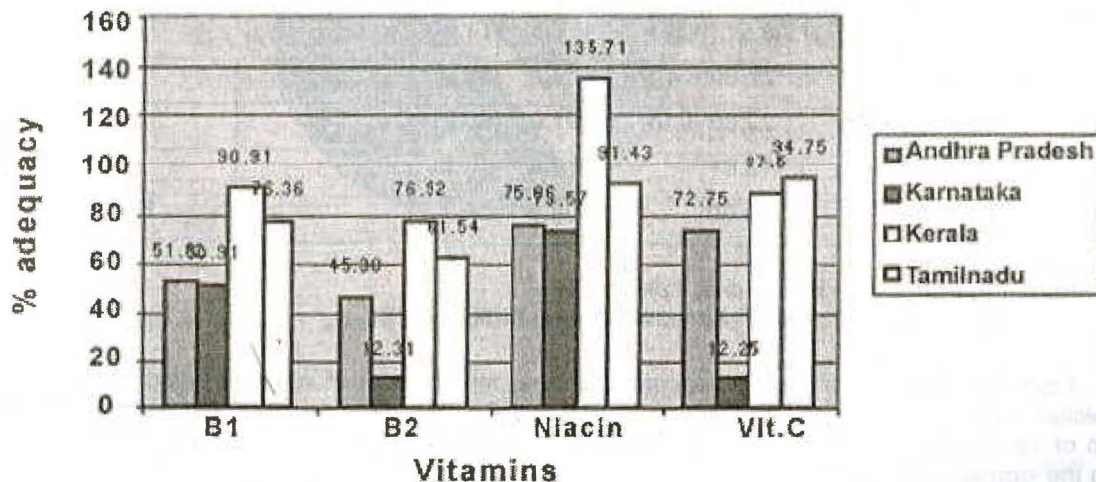


Fig. No. 3 Adequacy of Vitamin intake of the fisher women in different states

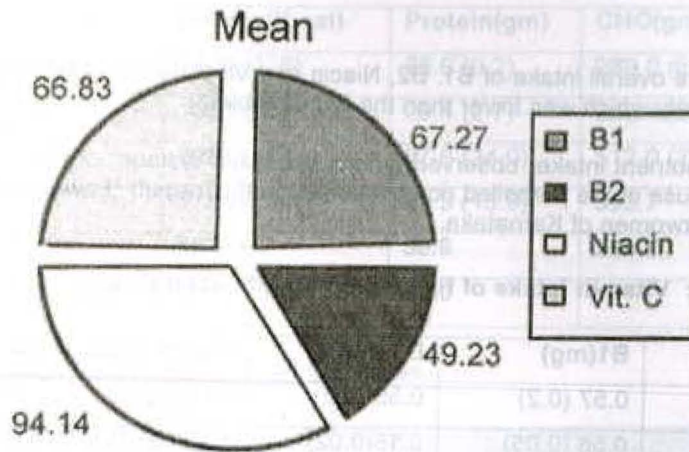


Fig. 4: Percent adequacy of vitamin intake of fisher women in all the selected states

Mineral Intake

Table 4: Mineral intake of fisher women (per capita/day)

Sl.No	State	Iron (mg)	Calcium (mg)	Total ranks	Mean of the relative ranks
1	Andhra Pradesh	20.33 (5.1)	415 .8 (129.0)	5	2.5
2	Karnataka	3.51 (0.56)	155.3 (74.0)	8	4.0
3	Kerala	27.80(8.4)	539.0 (85.0)	2	1.0
4	Tamilnadu	22.80 (9.0)	391.0 (90.0)	5	2.5
5	Overall Mean	18.61	375.3		
6	RDA	30.00	400.0		27.80

Note: Figures with in the bracket indicate SD
 RDA: Recommended dietary allowances, ICMR, (IPPP)

From the above table - 4 it was found that the mean intake of iron was found to be 18.6 mg and calcium was found to be 375 mg/ day. High intake of iron was observed among the fisher women of Tamilnadu followed by Kerala and Andhra Pradesh. Low intake of minerals was observed among the women of Karnataka.

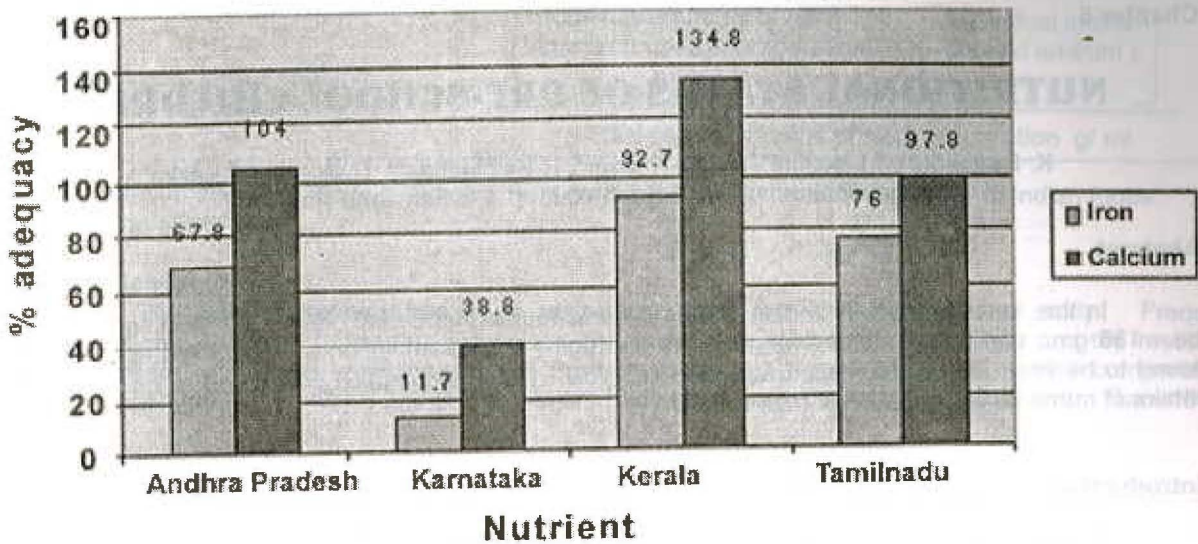


Fig. 5: Adequacy of Mineral intake by the fisher women of different states

The adequacy of mineral intake of the fisherwomen in all the different states as well as in all the states is given in Figures 5 & 6

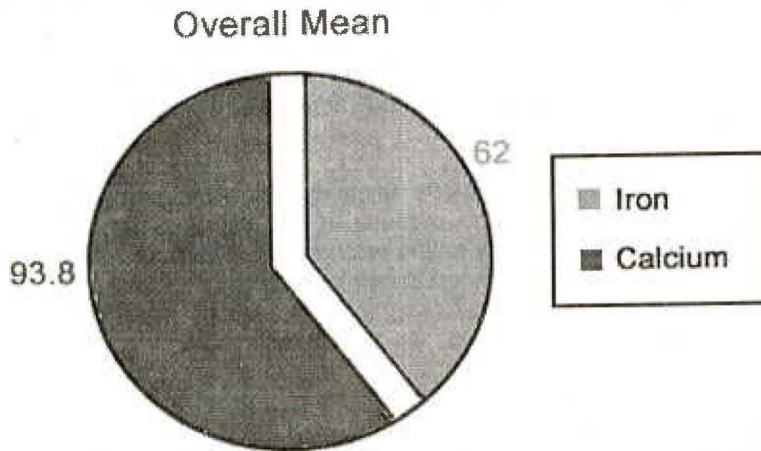


Fig. 6: Adequacy of Mineral intake by the fisher women of all states

Conclusion

The consumption of cereals was high in Andhra Pradesh as it was a staple food and also people of coastal Andhra Pradesh preferred rice than other cereal grains. The consumption of pulses was high among the women of Kerala, followed Andhra Pradesh. Consumption of other vegetables like roots & tubers, brinjal, ladies finger etc. was high as their availability was more and cost less. Consumption of oil, milk & milk products, meat was observed to be high among the women of Kerala followed by Andhra Pradesh. Consumption of macronutrients, vitamins and minerals are high in Kerala followed by Tamilnadu, Andhra Pradesh and Karnataka.