Contribution of Meat towards Nutritional Security an Analysis through Consumption of Different Food Items among Meat and Non-Meat Consumers in Karnataka

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ABSTRACT

Human diet and nutritional status have undergone a sequence of major shifts, stated as the nutrition transition. The present study was conducted to explore the contribution of meat towards nutritional security among rural, semi-urban and urban households in Karnataka with the sample size of 90 meat eating respondents and 30 non-meat eating respondents. Conventional analyses like mean and percentages were used for the present study. Apart from these analyses, the calorie and protein intake based on the respondents intake of food items of plant source, non-meat animal source and meat animal sources was worked out and discussed. As a whole, calorie and protein intake per consumption unit per day was found high in urban area followed by semi-urban area and awareness on calorie and protein intake among rural area in Karnataka was proposed.

Key words : *Meat consumption, Calorie, Protein, Nutritional Security*

The world wide, meat consumption has attracted much attention not only for the nutritionists but also agricultural and food economists in recent years (Schroeter and Carlson, 2013). The reasons are that changing meat consumption patterns not only have effects on the nutritional and health status of people but also on different food market. The consumption of meat is increasing in India and agriculture is considered as the back bone of majority of people. Livestock plays a significant role and poultry and dairy are the major sectors contributing to economic development. Increase in meat production and its demand is expected to increase mainly in developing countries. India remains home to the highest number of food insecure people (Charles, 2012).

The study was therefore undertaken to assess the meat consumption behaviour among the rural, semi-urban and urban community by collecting information from the meat consumers and non-meat consumers on demographical parameters and consumer preferences.

METHODOLOGY

A total of 90 respondents were selected as meat consumers and 30 respondents were selected as non-meat consumers. Conventional analysis like mean and percentage were used for the present study. Apart from these analyses the average consumption unit for the present study was arrived at by the procedure adopted by Khare (1968) and followed by Swaminathan (2013) was used for the present study as detailed below :

Consumption unit of household

Categories	Consumption unit
Adult male above 14 years	1.00
Adult female above 14 years	0.83
Children between 10.1-14 years	0.73
Children between 6-10 years	0.50
Children below 6 years	0.50

The scores obtained in each item were summed up to arrive at the consumption unit of the household. The average of household in rural, semi-urban and urban was worked out to arrive at the average family size. The calorie intake and protein intake of the respondents were calculated by using Atwater and Woods (1989) conversion factor that is 1 gram of protein produces 4 calories and 1 gram of fat produces 9 calories and also by using the NSSO nutritional chart values as detailed below

$$\textbf{Calorie intake} = \frac{\text{Quantity of meat food items purchased (Number of calorie produced by food items + Number of grams of fat produced by food items x 9 + Number of grams of protein produced by food items x 4)}}{\text{Average consumption unit}}$$

$$\textbf{Protein intake} = \frac{\text{Quantity of meat purchase x Number of grams of protein produced by food item}}{\text{Average consumption unit}}$$

Data with respect to quantity of food items purchased from plant source, non-meat animal source and meat animal source were ascertained and average quantity purchased were given in 'kilograms' for meat and vegetables and other items, in terms of 'numbers' for egg and in 'liters' for milk and oil. Based on the price per unit the total expenditure was worked out. The calorie intake per consumption unit was worked out based on Atwater conversion factor and NSSO nutritional chart values. Also the protein intake was arrived at by ascertaining the quantity of food items purchased from plant source, non-meat animal source and meat animal source consumed, which was converted into protein intake as per the Atwater conversion factor and NSSO nutritional chart values.

RESULTS AND DISCUSSION

The information on quantity of food consumed at different locations enables the measurement of calorie and protein intake of the respondents. Based on the category of food consumed by the meat consuming respondents and the results obtained are presented in the Table 1.

The Table 1 revealed that, in rural area the calorie intake per day was 1729.33 calories per consumption unit per day and the protein intake was 35.60 grams from the plant food sources. Whereas, from non-meat animal source, the calorie intake was 147.10 and the protein intake was 5.70 grams. The calorie intake per day of food from meat animal source was 143.63 and protein intake was 13.92 grams. In semi-urban area, the calorie intake per day was 1925.11 calories per consumption unit per day and the protein intake was 48.10 grams from the plant food sources. Whereas from non-meat animal source, the calorie intake was 210.96 and protein intake was 7.35 grams. In case of food from meat animal source, the calorie intake per day was 198.68 and the protein intake was 19.57 grams. In urban area, the food from plant source was providing 1867.21 calories per consumption unit per day and the protein intake was 49.06 grams whereas, the food from non-meat animal source contributed 194.65 calories per consumption unit per day and 7.09 grams of protein intake. The food from meat animal source was contributing 343.52 calories per consumption unit per day and protein intake was

Table 1
Contribution of meat towards nutritional security – Analysis through consumption of different food items per consumption unit among meat consumers

Study area		Rural households(n=30)					Semi-urban households (n=30)					Urban households(n=30)				
Food items	Category of Food	QPM	PPU	TE	CCPU	PI	QPM	PPU	TE	CCPU	PI	QPM	PPU	TE	CCPU	PI
Plant source	Cereals	14.00	23.67	93.62	436.21	12.78	15.00	47.35	272.13	633.91	18.58	16.00	95.59	642.62	692.08	20.90
	Pulses	11.00	57.39	178.33	454.50	22.78	105	114.78	461.76	588.43	20.50	10.00	234.81	986.60	573.59	28.76
	Edible Oil	4.50	64.20	81.61	762.71	0.00	3.00	128.41	147.60	689.66	0.00	2.50	258.63	271.67	588.24	0.00
	Vegetables	3.50	37.78	37.35	0.84	0.02	1.00	75.56	28.95	0.33	0.00	0.75	402.93	126.97	0.25	0.01
	Fruits	1.00	28.92	8.16	0.05	0.00	0.75	57.84	16.62	0.06	0.00	0.25	131.89	13.85	0.02	0.00
	Sugar	2.00	3.41	1.92	75.02	0.00	0.25	6.82	0.65	12.72	0.00	0.25	13.95	1.47	13.02	0.00
	Spices	0.125	47.35	1.67	0.00	0.00	0.12	94.71	4.45	0.01	0.00	0.12	197.10	9.94	0.01	0.00
	Total			**402.69**	**1729.33**	**35.60**			**932.24**	**1925.11**	**48.10**			**2053.11**	**1867.21**	**49.06**
Non-meat animal source	Milk	6.00	3.96	6.71	101.12	2.25	7.00	7.92	21.24	160.03	3.57	6.00	18.20	32.79	140.40	3.14
	Egg	2.00	0.45	0.25	3.84	0.15	2.00	0.91	0.70	5.21	0.20	0.25	1.89	1.59	7.47	0.29
	Fish	2.50	9.22	9.07	42.13	3.29	2.00	18.45	14.14	45.72	3.57	0.12	34.74	20.81	46.80	3.66
	Total			**15.77**	**147.10**	**5.70**			**36.08**	**210.96**	**7.35**			**55.19**	**194.65**	**7.09**
	Subtotal(A)			**418.74**	**1876.47**	**41.31**			**968.32**	**2136.07**	**55.45**			**2108.31**	**2061.86**	**56.15**
Meat animal source	Chicken	1.55	113.66	49.76	31.81	3.78	2.00	250.00	191.83	55.68	6.61	3.25	250.34	244.33	92.61	11.00
	Mutton	1.23	400.63	139.20	27.33	2.47	1.33	450.00	229.48	40.09	3.63	3.25	450.34	439.52	100.20	9.09
	Chevon	1.54	359.43	156.36	34.22	3.10	1.23	400.00	188.67	37.07	3.36	1.50	400.34	180.33	46.27	4.20
	Beef	1.20	112.32	38.074	25.74	2.00	1.14	150.00	65.67	33.17	3.29	1.50	150.34	67.72	44.67	4.43
	Pork	1.14	115.34	37.14	24.51	2.55	1.12	186.00	78.89	32.67	2.67	2.00	186.13	111.79	59.71	4.89
	Total(B)			**420.54**	**143.63**	**13.92**			**755.46**	**198.68**	**19.57**			**1043.70**	**343.52**	**33.61**
	Grand Total (A+B)			**839.29**	**2020.10**	**55.23**			**1723.78**	**2334.75**	**75.03**			**3152.00**	**2405.39**	**89.76**

QPM : Quantity of food items purchase in a month in a household; PPU: Price per unit ; TE: Total Expenditure (in rupees per consumption unit) ;

CCPU : Calorie intake per consumption unit per day; PI: Protein intake per consumption unit (in grams)

33.61 grams. Overall, the calorie intake per consumption unit per day in urban was 2405.39 calories followed by 2334.75 calories in semi-urban area and 2020.10 calories in rural area. Whereas, the protein intake per day in urban area was 89.76 grams followed by 75.03 grams in semi-urban area and 55.23 grams in rural area.

The study revealed that, the calorie intake among the respondents of urban area was found to be high when compared to semi-urban and rural area. The study also revealed that, in rural area the calorie intake was less than the recommended level of calorie intake per consumer. Which indicated that the awareness on calorie intake through various food items including meat is less among the respondents. Whereas, the protein intake was found to be high in urban area than the semi-urban and rural area. It is also evident that, in rural area the protein intake was lesser than the recommended level, which indicated that the respondents of rural area not getting adequate quantity of protein. Thus, the meat consuming respondents of rural area requires more awareness towards consumption of protein rich food items including meat.

Table 2
Contribution of meat towards nutritional security – Analysis through consumption of

Study area		Rural households(n=10)					Semi-urban households (n=10)					Urban households(n=10)				
Food items	**Category of Food**	**QPM**	**PPU**	**TE**	**CCPU**	**PI**	**QPM**	**PPU**	**TE**	**CCPU**	**PI**	**QPM**	**PPU**	**TE**	**CCPU**	**PI**
Plant source	Cereals	19.00	23.67	101.54	473.00	13.80	21.00	47.34	278.47	648.82	19.01	22.00	94.59	584.54	681.63	19.98
	Pulses	19.00	57.39	246.14	627.30	31.45	19.00	113.78	605.55	778.45	39.02	20.00	233.80	1313.48	821.72	41.19
	Edible Oil	3.00	64.20	57.97	541.70	0.00	2.25	128.41	80.93	378.15	0.00	2.15	257.73	155.65	365.36	0.00
	Vegetables	4.50	37.78	38.37	0.87	0.02	5.00	75.56	105.82	1.20	0.02	5.00	400.75	562.85	1.21	0.02
	Fruits	3.00	28.92	19.58	0.13	0.00	3.00	57.84	48.60	0.16	0.005	4.00	130.89	147.67	0.22	0.007
	Sugar	3.00	3.41	2.30	89.93	0.21	3.00	6.82	5.73	111.59	0.02	3.00	12.95	10.91	111.91	0.028
	Spices	0.12	47.35	1.33	0.00	0.00	0.12	94.71	3.31	0.00	0.00	0.12	195.10	6.85	0.01	0.000
	Total			**467.26**	**1733.10**	**45.37**			**1191.37**	**1918.39**	**58.11**			**2781.36**	**1979.05**	**61.24**
Non-meat animal source	Milk	18.00	3.96	16.0	242.43	6.69	18.00	7.92	39.93	300.54	6.72	20.00	17.21	96.69	335.21	7.49
	Grand Total			**483.35**	**1975.54**	**52.37**			**1231.31**	**2219.23**	**64.83**			**2878.05**	**2314.26**	**68.73**

QPM : Quantity of food items purchase in a month in a household; PPU: Price per unit ; TE:

The Table 2 revealed that, in rural area the calorie intake per day was 1733.10 calories per consumption unit per day and the protein intake was 45.37 grams from the plant food sources. Whereas, from non-meat animal source, the calorie intake was 1975.54 and the protein intake was 52.37 grams. In semi-urban area, the calorie intake per day was 1918.39 calories per consumption unit per day and the protein intake was 58.11 grams from the plant food sources. Whereas, from non-meat animal source, the calorie intake was 2219.23 and protein intake was 64.83 grams. In urban area, the food from plant source was providing 1979.05 calories per consumption unit per day and the protein intake was 61.24 grams whereas the food from non-meat animal source contributed 2314.26 calories per consumption unit per day and 68.73 grams of protein intake. Overall, the calorie intake per consumption unit per day was 2314.26 calories in urban area followed by 2219.23 calories in semi-urban area and 1975.54 in rural area. Whereas, the protein intake per consumption unit per day was 68.73 grams in urban area followed by 64.83 grams in semi-urban area and 52.37 grams in rural area.

The study revealed that the calorie intake and protein intake per consumption unit per day were found to be high in urban area followed by semi-urban area.

The study also revealed that, in rural area the calorie intake and protein intake were less than the recommended level of calorie intake per consumer. Which indicated that the awareness on calorie and protein intake through various food items including meat is less among the respondents.

CONCLUSION

As a whole the study revealed that, the calorie intake per consumption unit per day was high in urban area

(2930.41) followed by semi-urban and rural areas. The study also revealed that the protein intake was also found to be high in urban area (98.38 grams) followed by semi-urban and urban area. Efforts may be taken to popularise the nutritional standards of food items and meat consumption by the extension agencies. Further, display of the nutrition and calories of meat in the packages and meat shop would pave the way in educating rural meat consumers and make India healthy.

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