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### **Consumption Pattern of Animal Protein Foods - Eggs, Meat and Sea Food**

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#### **ABSTRACT**

In order to ascertain the consumption pattern of animal protein foods (eggs, meat and seafood) in Hyderabad, a survey was conducted with a sample size of 240 households belonging to middle-income group. Majority are Nuclear families (86.1%) Most of them belong to middle age group 20-50 years ( 86.2%) they have family size of five to seven members ( 86.6 %), all of them are educated undergraduates constitute (17.3%), graduates ( 40.5%) post graduates (25.6% ), engineers (13.7%) and doctors (2.9%). Consumption of eggs is by 80.9 percent, chicken 69.0 percent, mutton 80 percent and Beef by 31.7 percent. Preference for mutton is more in winter, followed by rainy season and then summer. Mostly people take on Sundays or Wednesdays, other days they go with eggs. When it comes to place of purchase, they preferred retail shops. Consumption at home is reported by 89.9% percent, 10.1 % preferred going to restaurant for celebrations like birthday, wedding anniversary or any other event. Many (85%) reported purchasing curries from curry points - chicken, egg, or mutton and fish, even dhal and vegetable preparations. The survey indicated a larger group shifting to non-vegetarian foods especially eggs and chicken and while fish is seldom used.

**KEYWORDS:** consumption pattern, meat, seafood, fish, eggs.

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## **INTRODUCTION**

Indians eat too much carbohydrates, sugars, junk foods but not enough protein foods even when they have economic means to eat healthier and better<sup>1</sup>. Rapid growth in the demand for foods of animal origin is increasing<sup>2</sup> There is reduction of whole grains pulses, fruits and vegetables in India while intake of meat products increased<sup>3,4,5</sup>. The question is what is better – animal protein or vegetable protein. Animal proteins provide all the nine essential amino acids. The protein rich animal foods are fish, eggs, red meat, and poultry – chicken. On the other hand, plant products lack one or more essential amino acids. This makes plant protein less efficient than animal proteins.<sup>6</sup> With India having 38 percent undernourished and 21 percent stunted there is need to provide nutrition security<sup>7</sup> Food commodities required to fulfill nutrition security include animal proteins - milk, meat, fish, and eggs necessary for a nutrition balanced diets<sup>8</sup>. In India limited number of earlier studies looked into animal resource consumption.<sup>9,10,11</sup> In fast changing lifestyles regular update on consumption patterns are necessary. This study focuses on consumption pattern of animal protein foods.

## **METHODOLOGY**

Consumption pattern of eggs, meat and seafood was collected to assess the animal protein intake. A multi stage random sampling procedure was adopted in the selection of the sample. Telangana state was first identified for the study. In the state of Telangana, Greater Hyderabad Municipal Corporation (GHMC) which is the capital of Telangana was selected. To assess the frequency of consumption of eggs, meat and sea food, those who consume non-vegetarian foods were identified. From the group of non-vegetarians families willing to answer were identified. Two hundred and forty families belonging to the middle-income group were randomly selected. A semi-structured questionnaire was prepared in English and was pretested in a group of 10 adults, as the main study group is adults. Demographic profile consisting of religion, type of family, type of diet, age of the respondent and family size, education and employment status is collected. Frequency of consumption of the animal products - eggs, chicken, mutton, fish and beef was collected. In a sub sample of 60 households information on monthly quantity of product purchased and expenditure, reasons for selection of meat, Day of preference of purchase. knowledge of nutritive value, preference of seasons for consumption, place of consumption, place of purchase of raw meat. Data is presented as percentages.

## RESULTS AND DISCUSSION

The responses obtained from the families are presented as demographic profile, consumption pattern of eggs, meat and sea foods..

### **Demographic Profile:**

Among Hindus, Nuclear families are 87.5 percent, joint families 2.3 and extended families or families with one of the in laws together constitute 10.2 percent. (Table 1 ) Among Muslims 81.5 percent are Nuclear families ,joint families are 11.1 percent . extended and families with one of the in laws are 7.4 percent.

**Table 1. Type of Family**

Type of family	Hindus	Muslims	Total
Nuclear	87.5(154)	81.5 (44)	86.1(198)
Joint	2.3 (4)	11.1 (16)	4.3 (10)
Extended	4.5 (8)	1.9 (1)	3.9 (9)
1-In law	5.7 (10)	5.5 (3)	5.7 (13)
Total	100 (176)	100 ( 64)	100 (240)

Age of respondents ranged between 20-70 years. (Table 2). Majority (82.6 percent) are in the age groups between 31-50 years .In the age groups of 20-30 and above 50 years constitute 17.4 percent.

**Table: 2. Age wise Distribution of Respondents**

Age in Years	No	Percent
20- 30	6	2.5
31- 40	136	56.7
41-50	62	25.9
51-60	26	10.8
61-70	10	4.2
	240	100

Family size ranged between 2 to 10 members. (Table 3). Among Hindu and Muslim families majority are with 5 to 7 members, percentages are 58.5 and 56.3 respectively. Among the 2-4 members Hindu families are more ( 39.8%) while in the group with 7-10 members Muslim families are more

(29.6%). Overall percent did not indicate much differences between the two religions therefore both are considered as one group for further aspects .

**Table: 3. Family Size of Respondents**

No	Hindus		Muslim		Total	
	%	No	%	No	%	No
2-4	39.8	70	14.1	9	32.9	79
5-7	58.5	103	56.3	36	57.9	139
8-10	1.7	3	29.6	19	9.2	22
	100	176	100	64	100	240

All family members are educated (Table 4). Undergraduates are 6.2 percent among males and 29.8 percent among females. Graduate members are 51.4 percent among males and 28.3 percent in females. Post graduates are more in females ( 28.3 %) than in males ( 19.3%) . Engineers among males are more (19.5%) than females (7.1 %) Doctors constituted 3.6 and 2.9 percent among males and females respectively. As both males and females in the family are equally, highly qualified, economically sound, consumption of animal products can have an impact. .

**Table 4: Educational Status of Family Members**

Education	Males		Females		Total	
	%	No	%	No	%	No
Under Graduates	6.2	24	29.8	104	17.3	128
Graduates	51.4	200	28.3	99	40.5	299
Post graduates	19.3	75	32.5	114	25.6	189
Engineering	19.5	76	7.1	25	13.7	101
Medicine	3.6	14	2.3	8	2.9	22
	100	389	100	350	100	739

**Consumption of animal products** is discussed under three heads –

1. Consumption of Eggs
2. Consumption of Meat
3. Consumption of Seafood's

**Consumption Pattern of Eggs:**

Egg is a wholesome food and a complete protein having all the amino acids in required quantity for growth and repair. It is relatively cheap; therefore, it attains significance in the consumption pattern of all non-vegetarians. Most of the respondents consumed eggs either as boiled eggs or as omelet/ scrambled form. Consumption of boiled egg daily is reported by 14.2 percent, boiled egg white by 8.3 percent and as omelet by 3.3 percent. Remaining group consumed either alternate day , twice a week ,once a week or often in curies .A small group of 9.2 percent and 13.8 percent are not consuming egg either as whole boiled egg or in the omelet form . In the case of egg white, boiled 65.8 consumed with varied frequencies 34.2 percent, never consumed (Table 5) .

**Table 5: Frequency of Consumption of Eggs**

<b>Foods</b>	<b>Daily</b>	<b>Alt. day</b>	<b>2/Week</b>	<b>1/Week</b>	<b>Often</b>	<b>Never</b>	<b>Total</b>
Egg whole boiled	14.2(34)	15.0(36)	19.6(47)	24.5(59)	17.5(42)	9.2(22)	100(240)
Egg white boiled	8.3(20)	7.9(19)	12.1(29)	17.5(42)	20.0(48)	34.2(82)	100(240)
Omelet	3.3(8)	9.2(22)	30.0(72)	26.2(63)	17.5(42)	13.8(33)	100(240)

Younger age groups (<30 years) preferred boiled eggs every day before or after an exercises/gym. Those having health issues - high BP/ heart problem/ high cholesterol. Consumed only egg white. Consumption of eggs are taken as an alternative to animal products, or vice versa by some families. Some of the vegetarians consume cakes/ biscuits/ or egg as omelet/boiled.

**Consumption of Meat:**

Chicken (skinless or boneless), mutton and beef were only included in the questionnaire, as the pilot study indicated consumption of only these items. Respondents felt procuring and preparing meat is time consuming, is expensive, eating meat daily is not feasible and not good for health, consumption is limited mostly to once a week (Sundays) or whenever time permits. (Table 6)

Chicken is available as broiler or country type. Broiler chicken is largely preferred, as it is cheap, easily available than country chicken. Broiler skinless chicken is consumed once a week by 29.2 percent while boneless is preferred by 51.7 percent. Daily or alternate day consumption is by 0.4 percent. Chicken is usually cooked without adding vegetables but those with multiple problems – diabetes, cardiac vascular problems and blood pressure, red meat is to be avoided for health reasons (12) therefore chicken is cooked with vegetables.

Mutton ( goat meat ) is widely used in Hyderabad. Consumption of mutton is distributed throughout the week. Daily consumption is by 5 percent , alternate day and twice a week is 2.4 and 5.4 respectively, once a week by 32.5 percent and 20 percent did not prefer taking mutton. Mutton is mixed with vegetables and made into a curry .Mothers reported that small quantities of mutton mixed with vegetables would be sufficient for more members than mutton cooked without vegetables. This is the reason that mutton consumption is wide spread. Another reason is in many houses children and adolescents try to avoid vegetables, if mutton is cooked with vegetables they enjoy eating vegetables also along with mutton.

**Table 6: Frequency of Consumption of Meat.**

Foods	Daily	Alt. day	2/Week	1/Week	Often	Never	Total
Chicken boneless	0.4(1)	0.4(1)	3.3(8)	19.6(47)	29.2(70)	47.1(113)	100(240)
Chicken skinless	0.4(1)	0.4(1)	3.8(9)	51.7(124)	28.7(69)	15.0(36)	100(240)
Mutton	5.0(12)	2.4(6)	5.4(13)	32.5(78)	34.7(83)	20.0(48)	100(240)
Beef				19.2(46)	12.5(30)	68.3(164)	100(240)

Beef consumption is dependent on customs, culture, taboos and traditions. Beef consumption is determined by religion. Hinduism bans beef while Islam bans pork <sup>10</sup>. Beef is not consumed by several non-vegetarians( Sikhs, Muslims, christens , bharias, parsis and Jews <sup>15</sup> These days some Hindu adolescents take items like pizza or burger where beef is used. Beef is not cooked at home. Beef is consumed once a week by 19.2 percent and often by 12.5 percent. 68.3 percent do not consume beef; this is more prevalent among Hindu families. A study stated that it is safe to eat non vegetarian food in India but cautioned that it should be hygienically cooked <sup>16</sup>

**Consumption of Sea Foods:**

Fish is an important source of protein and vitamins, it has a special place in health and nutrition food among non-vegetarians. It is recommended for people with diabetes, heart and kidney problems instead of red meat. . Demand for fish is increasing, as people are aware as a source of nutrition food. Among the various seafood's, fish is mostly consumed by 35.4 percent once a week, while 40 percent use often. Commonly used varieties are Pomphrett, tuna, sardines, and Salmon. Sea fish is very expensive in Hyderabad, preference is for river fish which is cheaper , 22.5 percent consume river fish once a week and 65percent often. FAO reported that the per capita consumption of fish is 9.8 kg

/annum <sup>11</sup>, while ICMR recommendation is 12kg/annum <sup>17</sup>. Consumption of fish in UP is 1.1kg/per capita /annum.in 2011.

**Table: 7. Frequency of Consumption of Sea foods .**

Foods	1/Week	Often	Never	Total
Pomphrett/Sea fish	35.4(85)	40.0(96)	24.6(59)	100(240)
River Fish	22.5(54)	65.0(156)	12.5(30)	100(240)
Prawns	1.6(4)	54.6(131)	43.8(105)	100(240)

Consumption of Prawns once week is by 1.6 percent and often by 54.6 percent. Prawns are obtained sea, river and cultured prawns. Sea prawns are nutritionally better than river or cultured prawns. Many preferred sea prawns only. (Table 7).

**General Information:**

Preference for mutton is more in winter, followed by rainy season and then summer. Mostly people take on Sundays or Wednesdays, other days they go with eggs. When it comes to place of purchase, they preferred retail shops. Consumption at home is reported by 89.9% percent, 10.1 % preferred going to restaurant for celebrations like birthday, wedding anniversary or any other event. Many (85%) reported purchasing curries from curry points - chicken, egg, or mutton and fish, even dhal and vegetable preparations. Amount spent on non-vegetarian was between to Rs.1000- Rs. 3000/- per month. Choice of meat, chicken or fish depended on taste, accustomed to eat, Nutritional value, cheap, shop is accessible and available. The survey indicated a larger group shifting to non-vegetarian foods especially eggs and chicken, while fish is seldom used.

**CONCLUSION:**

Eggs, meat or seafood is consumed almost by everyone. Frequency depended on convenience and cost. None of the vulnerable groups -Children, adolescents, pregnant and lactating women understood the importance /significance of following a diet with nutritional implications - under nutrition / obesity/ immunity to fight corona virus Covid19. In the present day scenario with widespread corona virus Covid 19 which created an emergency situation it is not double burden malnutrition in India any more it is **TRIPLE BURDEN MALNUTRITION** - undernutrition, overnutrition-obesity and Corona Virus Covid 19 impact requiring immediate steps to improve immunity. .Continuous education

is necessary to address the three forms of Malnutrition: First: Underweight Second: Overweight /obesity Third: Develop immunity to fight Corona Virus.

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