

Consumption Behavior and Eating Pattern of Green Leafy Vegetables

Anjali Devi C

Professor, Department of Food & Nutrition Osmania University Hyderabad, India

Abstract: Green leafy vegetables are nutrient rich, cost effective foods and are accessible throughout the year. Though India ranks second in the production of green leafy vegetables there is lack of widespread public awareness regarding the health benefits of Green leafy vegetables. This study is planned to assess the consumption pattern among the upper middle class and high income groups in Hyderabad. 230 adults were randomly selected. Semi structured pre tested questionnaire was used to collect information on the demographic profile; socio economic status consumption behavior of green leafy vegetables and reasons for selecting was collected. 15 commonly available and normally consumed green leafy vegetables were listed and the frequency of consumption was collected. Curry leaves are used by 100 percent in small quantities daily, mainly used as seasoning or as curry powder to eat with idly. Coriander leaves and mint are consumed daily by 69.6 and 8.7 percent respectively. Amaranth, cabbage and spinach are consumed every alternate day by 1.3, 0.9 and 0.9 percent respectively. Highest percentage consuming most often are amaranth, gogu, cabbage fenugreek leaves, ponaganni and spinach by 68.7, 46.9, 48.7, 39.3, 36.5, and 32.2 respectively. Tamarind leaves are consumed by 87.4 percent regularly in the season drumstick leaves, gangabayalakura, soya kura, chukka kuraare most often consumed. They are not consumed by 69.6, 47.8, 46.5, and 8.3 percent respectively. Consumption of green leafy vegetables much below the recommended allowances and not daily in spite of continuous nutrition education needs to be rechecked.

Keywords: Green leafy vegetables, consumption behavior, high and middle income groups

1. Introduction

Green leafy vegetables are nutrient rich, cost effective foods and are accessible throughout the year. They provide dietary fiber, proteins, essential vitamins, and minerals like iron, calcium, and magnesium, they provide protection against hyper-cholesterolemia, cardio vascular disease, and diabetes (1, 2, 3, 4, 5). Though India ranks second in the production of green leafy vegetables next to China, there is lack of widespread public awareness regarding the health benefits of Green leafy vegetables. The data suggests that green leafy vegetable intake is 7g/cu/day in the combined state of Andhra Pradesh (6) Indian culinary practices appear to be based on consumption and preference for taste rather than nutrient retention. (7-10) On the other hand changing lifestyles, changes in eating patterns resulted in micronutrient deficiencies (11) causing low immunity levels. In the present day scenario of fast spreading corona virus covid 19 it is of greatest concern. In this background the present day consumption pattern of leafy vegetables is the need of the day. This study is planned to study the cultural behavior and consumption pattern of green leafy vegetables in Hyderabad.

2. Methodology

Selection of customers: 230 people were randomly selected from among the middle and high income groups, to elicit information on frequency of consumption of green leafy vegetables. A semi structured questionnaire was prepared in English and was pretested in a group of 10 adults as main study group are adults. A list of green leafy vegetables commonly sold in the market was prepared, frequency of consumption was listed as daily, alternate day, twice in a week, once a week, most often and never consume. Demographic profile consisting of age, gender, type family, type of diet, religious background, education, occupation

using the modified Kuppaswamy socio economic scale (12) cultural behavior and reasons for purchase of leafy vegetables was collected.

3. Results and Discussion

Demographic Profile: Distribution of families by religion is given in Table 1 Hindus constituted 76.5 percent and Muslims are 23.5 percent

Table 1: Distributed of families by religion

Religion	Percent	No.
Hindus	76.5	176
Muslims	23.5	54
Total	100.0	230

Nuclear families constitute 87.5 and 81.5 percent in Hindus and Muslims respectively.

Table 2: 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 (6)	4.3 (10)
Extended	4.5 (8)	1.9 (1)	3.9 (9)
One -In law	5.7 (10)	5.5 (3)	5.7 (13)
Total	100 (176)	100 (54)	100 (230)

Among extended families Hindus constitute 4.5 percent while Muslims are 1.9 percent. Among families with one of the in-laws the percentage in Hindus is 5.7 percent and in Muslims it is 5.5 percent. Family type makes significant difference in the context of food consumption patterns as the elders can influence the eating patterns of green leafy vegetables. Non-vegetarians constitute 85.7 percent and vegetarians are 14.3 percent (Table 3).

Table 3: Type of Diet

Diet	Percent	No.
Vegetarian	33	14.3
Non Vegetarian	197	85.7
Total	100.0	230

Table 4: Age wise Distribution of Respondents

Age in Years	No	Percent
<20	6	2.6
21-30	58	25.2
31-40	68	29.6
41-50	62	26.9
51-60	26	11.3
61-70	8	3.5
71-80	2	0.9
	230	100

Age of respondents ranged between 20 to 80 years (Table 4). Majority are in the three age groups between 21-50 accounting to 81.7 percent while the percent distribution below 20 years is 2.6 percent and above 51 years 15.7 percent.

Joint families are 2.3 percent among Hindus and 11.1 percent in Muslims (Table 2). Total number of members in each family varied from 2 to 10 members, (Table 5). Most of them are with 3, 4 or 5 members indicating one or two children per family. Families with more than seven are the joint families among Hindu's. Among Muslims those with more than seven members are nuclear families having around five to seven children.

Table 5: Family Size of Respondents

No. of members	Hindus		Muslims		Total	
	No	%	No	%	No	%
2	25	14.2	4	7.5	29	12.6
3	45	25.6	5	9.3	50	21.7
4	61	34.6	20	37.1	81	35.3
5	40	22.7	16	29.6	56	24.3
6	3	1.7	5	9.3	8	3.5
7	1	0.6	1	1.8	2	0.9
8	0	0	1	1.8	1	0.4
9	0	0	1	1.8	1	0.4
10	1	0.6	1	1.8	2	0.9
	176	100	54	100	230	100

Frequency of Consumption of Green leafy vegetables: Commonly used green leafy vegetables and those available in the market are chosen to elicit information on consumption pattern. Fifteen such leaves were picked. Frequency of Consumption is recorded as daily, alternate day, twice a week, once a week, most often and never used. Respondents were very clear of daily and most often consumption, with regard frequencies like alternate day, twice a week and once a week, they could not tell exactly, they got irritated when such frequencies were asked, as they said they use as per convenience.

Daily consumption of curry leaves was 100 percent, coriander leaves 69.6 percent, mint leaves 8.7 percent and fenugreek leaves 1.7 percent. A study conducted in 2009 in Bangalore reported amaranth and spinach was used by 90 percent, frequency not reported. Coriander leaves and curry

leaves are used for seasoning (2) similar findings are seen in the present study.

Vegetables used on alternate days are amaranth by 1.3 percent; cabbage 0.9, fenugreek leaves by 2.6 percent, spinach by 0.9. Twice a week consumption ranged from 2.2 percent being the lowest for cabbage and highest percentage is 9.6 for fenugreek leaves. Once a week consumption is recorded by 19.6 percent for amaranth, gogu leaves by 43.1 percent, cabbage by 41.1 percent, fenugreek leaves 45.2 percent, Ponnaganni leaves 21.3, spinach 56.9. Those consuming most often ranged from 10.4 percent in case of Mint and highest 91.7 percent in case of Chukka Kura. Tamarind leaves come only for three months in a year during summer. During that time frequency of consumption of is high. There is group who don't consume some leafy vegetables the percentages varied between 3 percent for amaranth to 69.6 percent for gangabayalukura.

Cultural behavior: It is believed that greens like amaranth, fenugreek leaves are considered heat producing, therefore good for health. 65 percent said consumption of green leafy vegetables relieves constipation, but are not aware why it relieves constipation. On the other hand 78 percent said for small children and for lactating mothers greens are not good, they cause vathumu (body Pains), diarrhea and green stools for the neonate. 48 percent said green leafy vegetables in rainy season is not consumed as it contains small insects not seen through naked eye, causes diarrhea, therefore not good for health. 85 percent said that children don't like or eat as the preparations are green/ brown in color. 68 percent of mothers said mint is used regularly to cook as pudina rice, chutney, and use in the- hara masala (mint leaves, coriander leaves and green chilies) which is used for non-vegetarian curries. Among the 230 respondents interviewed, none of them said they have to eat green leafy vegetables daily, 10 percent said that they watch the TV which says green leafy vegetables are important but they could not use it daily, as the preparations are bland, children and most office goers, did not like to take in the lunch box, daily.

Reasons for buying: Many respondents said they purchase greens as per availability, accessibility, in season, when they are cheap, prescribed by a doctor, learnt through TV.

4. Conclusion

Consumption of leafy vegetables showed that many consume leafy vegetables not as per the requirements. Supplementation of foods rich in micronutrients or nutrient supplements are necessary to tackle micronutrient deficiencies if any. Studies conducted as early as 2009 reported deficiency of intake of green leafy vegetables (8, 9) and the same trend persists even today, in spite of several welfare programs. Taking advantage of the massive welfare programs many women, men, even children are resorting to alcohol consumption – a serious concern for the welfare of the country.

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Table 6: Consumption Pattern of Green Leafy Vegetables

Frequency of Consumption of Green Leafy Vegetables														
S	Foods	Daily		alternate day		2/week		1/week		most often		Never		Total
No		%	No.	%	No	%	No	%	No	%	No	%	No	%/No.
1	Amaranth			1.3	3	7.4	17	19.6	45	68.7	158	3	7	100/230
2	Gogu leaves							43.1	99	46.9	108	10	23	100/230
3	Cabbage			0.9	2	2.2	5	41.3	95	48.7	112	6.9	16	100/230
4	Fenugreek leaves	1.7	4	2.6	6	9.6	22	45.2	104	39.2	90	1.7	4	100/230
5	Poannaganni					1.7	4	21.3	49	36.6	84	40.4	93	100/230
6	Spinach			0.8	2	8.7	20	56.9	131	32.3	74	1.3	3	100/230
7	Tamarind leaves			1.7	4	3.5	8	7.4	17	87.4	201		0	100/230
8	Drumstick leaves									30.4	70	69.6	160	100/230
9	Bachhalikura									52.2	120	47.8	110	100/230
10	Gangabayalakura									52.2	120	47.8	110	100/230
11	Soya kura									53.5	123	46.5	107	100/230
12	Chukka kura									91.7	211	8.3	19	100/230
13	Coriander leaves	69.6	160			11.3	26	10.4	24	8.7	20		0	100/230
14	Curry leaves	100	230										0	100/230
15	Mint leaves	8.7	20	18.7	43	13.9	32	8.7	20	10.4	24	39.6	91	100/230