

Pulses and Legume Consumption - Situational Analysis

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Abstract: Pulses are termed as a poor man's meat as they have twice the quantity of proteins than whole grains, like rice, wheat, oats and barely. Pulses are rich in lysine while cereals are rich in methionine, a combination of both can give protein equivalent to animal protein, therefore if taken in required quantities can reduce malnutrition- under nutrition. A study is therefore conducted to assess the consumption pattern of pulses and cereals Two hundred and forty adults from Hyderabad were randomly selected from the middle-income group. A semi structured questionnaire was constructed to assess demographic profile and the frequency of pulse consumption. In a sub group of 50 families, per capita daily intake of pulses and cereals, and existing beliefs are collected .Nuclear families constituted 86.7 percent and families with 3 to 5 members 82.1 percent. Education level indicated graduates, post graduates and professionals together constituted 91.7 percent among males and 58 percent among females. None of them are illiterate. Pulses are consumed along with cereals or with a cereal combination. Selection of pulse depended on the region, availability and accessibility. Pulses consumed are red gram dhal, bengal gram dhal and whole, black gram dhal and whole, green gram dhal and whole , lentils, cowpea, rajmah, soy bean and horse gram in varying frequencies and quantities. At least one type of pulse is included in the daily diet, either for breakfast, lunch, dinner or as a snack but the per consumption unit/day figures are only 33.3 grams per day as against the RDA of 60 grams, meeting only 55 percent of requirements, even the production of pulses indicate a shortage of production by 10 percent . In the case of cereal consumption, also a similar trend exists, only 69.3 percent of RDA is met though the production is more than the requirement -109.6 percent. The belief that some pulses are heat producing, gas producing, pus forming still exists in spite of them being educated and belonging to a higher income group.

Keywords: Pulses, legumes, consumption Pattern, middle income group, cereals

1. Introduction

Pulses are harvested legume crops which include several varieties of beans, peas, lentils and chickpea. Pulses are a poor man's meat as they have twice the quantity of proteins than whole grains, like rice, wheat, oats and barely. There is a difference between legumes and pulses. Legumes include several varieties of beans, peas, lentils and chickpea, pulses do not include legumes with high levels of fat eg. Soybean and peanuts, at the time of harvest. All pulses are legumes but all legumes are not pulses. (2) Pulses are often referred to as " Poor men's meat" and millets "Orphan crops" The mindset needs to be changed as pulses are an important food group in tackling protein energy malnutrition, therefore its plays a crucial role in the balanced diet (3). India is the home to the highest number of malnourished children under 5 years of age, 38 percent are stunted and 21 percent are wasted as per the Fourth National Health and Family Survey(4)Protein energy malnutrition and micronutrient deficiencies can be reduced by increasing the consumption of pulses which are rich sources of proteins, minerals ,iron and fiber. More over Pulses are rich in the amino acid - lysine while cereals are rich in methionine, a combination of both can give protein equivalent to animal protein, therefore if both are taken in required quantities can reduce malnutrition- under nutrition. Thirty one percent of Indians are vegetarians. Therefore a large part of protein requirement can be met through pulses and the quality of pulse protein can be improved by the combination of cereal and pulses. (5,6,7). There has been a change in the food consumption patterns, directly affecting the nutritional outcomes. The changes are effected by rising income, changing prices, urbanization, globalization, demographic shifts, improved transportation , changing consumer tastes and preferences (5) Food security stands on the 3 pillars of availability, access

and absorption (nutrition) (8,9).Recently there has been a shift from food availability to food insecurity, and from energy intake (input) to anthropometric measure (output) thereby shifting the focus to proper nutrition (10) The shortfall in consumption of pulses can be due to changing tastes and preferences, greater diversification in diets as well as demand –supply mismatch (11).

Pulses have nutritional benefits: Low fat, twice the quantity of proteins than whole grains, like rice, wheat, oats and barely etc. low glycemic index, has high content of soluble and insoluble fiber. Soluble fibers help in reducing LDL and blood sugar level, insoluble fiber help in regular bowel movement. Pulses contain essential vitamins and minerals – iron, potassium, magnesium, calcium, and zinc. B vitamins like folate, thiamine, niacin, amino acids and lysine . WHO species that cardio vascular diseases, stroke and type 2 diabetes, a third of them can be avoided through healthy diets of which pulses form a part. Legumes are an integral part of DASH diet (dietary approach to stop hypertension), vegetarian's diet, vegan diet, lower glycemic index diet and medical style of eating. For weight management they are slowly digested carbohydrate, may aid in satiety. Legume consumers are much likely to be obese, than non-legume consumers. (5) Boosting pulses is essential as growers will get better prices and consumers get the much needed nutrition (13). The present study is planned to assess the consumption pattern of pulse and cereal combination, requirement and production, as such studies are scanty.

2. Methodology

Two hundred forty people were randomly selected from Hyderabad, to assess the consumption pattern of pulses. Market survey was done to record available pulses and rates

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in the market. Pulses generally consumed are listed, semi structured questionnaire was prepared with demographic information and frequency of consumption - two times/day, daily, alternate day, twice in a week, once week, most often and not using. In a subgroup of 50 families, consumption of pulses and cereals, customs and beliefs were collected. Data is tabulated and presented as percentages.

3. Results and Discussion

Results are projected as demographic profile of respondents, frequency of consumption of pulses, comparison of the intake of pulses and cereals against Recommended Dietary Allowances and production figures, food beliefs and restrictions about pulses.

Demographic Profile: Age of respondents ranged between 20-80 years, with 82.6 percent in the age groups between 21 and 50, other groups together constituted 17.4 percent (Table 1).

Table 1: Age wise Distribution of Respondents

Age in Years	No	Percent
<20	6	2.5
21- 30	58	24.2
31-40	68	28.4
41-50	72	30.0
51-60	26	10.8
61-70	8	3.3
71-80	2	0.8
	240	100

Most of the families are nuclear (85.7 percent), joint families are 2.3 and extended families or families with one of the in laws are 14.3 percent. (Table 2)

Table 2: Type of family

Family type	%	No
Nuclear	86.7	208
Joint	4.2	10
Extended	3.8	9
One -In law	5.3	13
Total	100	240

Non-vegetarians are 85.7 percent while 14.3 percent are vegetarians. Total number of members in each family ranged from two to 10. Families with three to five members constituted 82.1 percent (Table 3). It is anticipated that joint families, families with one of the in-laws or elder members in the homes, may influence the consumption patterns. Survey was done in a subgroup of 50 families to elicit information on the beliefs, customs and practices.

Table 3: Family Size

No of persons	Total	
	%	No
2	12.1	29
3	20.8	50
4	33.8	81
5	27.5	66
6	3.3	8
7 -10	2.5	6
	100	240

Educational level ranged between 10th class to post graduates. None of them are illiterate. (Table 4) Among males, those with B. Tech and M Tech qualifications are 19.5 percent, among females the percent is 13.7 percent. Doctors are 3.6 and 2.9 percent among males and females respectively. Postgraduates are more in females (20.3%) than in males (17.2 %), Only females are with 10th class qualifications (9.7 percent) With Intermediate level 29.7 percent in females 6.2 percent are in males. Males and females are equally, highly qualified, food selection and food consumption behavior can have an influence.

Consumption of Pulses: Pulses are consumed along with cereals or with a cereal combination. Selection of the pulse depends on the region, availability and accessibility. Pulses consumed are red gram dhal, Bengal gram dhal and whole, blackgram dhal and whole, green gram dhal and whole, lentils, cowpea, Rajmah, soy bean and horse gram (Table 5).

Frequency of consumption varies from daily to most often. Red gram dhal is consumed by all the families, consumptions varied from once daily (11.7 percent) to occasional by 33.3 percent, daily consumption of bengal gram is 2.1 percent, black gram dhal 1.3 percent.

Whole pulses are consumed in varying frequencies Bengal gram whole (92.5 percent), black gram whole (85 percent), green gram whole (80.8 percent), cowpea (78.7 percent), Rajmah (75 percent) and soybean (37.1). A small percent expressed that they do not make at home but eat when served in functions or in restaurants this percent ranged between 4.2 being Bengal gram to 25 percent (rajmah,) 62.9 percent do not consume soybean. All pulses are taken along with rice, wheat or millets.

Cereal –pulse combination in the ratio of 2:1, is essential to meet the essential amino acids requirements, making vegetables proteins equivalent to animal proteins. Table 6 gives the consumption level, requirements (13, and production figures of pulses and cereals (14, 15). Pulses are consumed daily, but the quantity is not as per the requirement of 60 g/day per consumption unit. The average consumption is 33.3 g /day/per consumption unit which is meeting only 55 percent of requirement. The availability of pulses per day as per production figures is 54.5 g/per capita (16, 17).Pulse production is not matching with the minimum requirements, production figures are meeting only 90.8 percent of RDA..On the other hand cereal consumption is 277 grams/day per consumption unit, meeting 69.3 percent of the requirements as against 400 grams of RDA while the production figures are more than the requirements, it is 109.6 percent.

4. Conclusion

The study revealed that there is a need to increase the pulse consumption levels by making pulses available at affordable prices and conduct awareness programs so that malnourished- underweight and stunted percentage can be decreased. It is necessary to think of inter cropping pattern with millets and pulses making both available and provide nutrition security rather than food security.

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Table 4: Educational status of family members

Education	Males		Females		Total	
	%	No	%	No	%	No
10th Class	0	0	9.7	34	4.6	34
Inter mediate	6.2	24	29.7	104	30.9	228
Graduates	51.4	200	28.3	99	26.9	199
Post graduates	17.2	67	20.3	71	18.7	138
Engineering	19.5	76	7.1	25	13.7	101
Medicine	3.6	14	2.3	8	2.9	22
Others	2.1	8	2.6	9	2.3	17
	100	389	100	350	100	739

Table 5: Frequency of consumption of Pulses

Pulses	1/day	3/week	2/week	1/week	Occasional	Never	Total
Red gram dhal	11.7(28)	12.1(29)	14.6(35)	28.3 (68)	33.3(80)	0	100 (240)
Bengal gram dhal	2.1 (5)	6.2(15)	12.9(31)	36.7 (88)	37.9 (91)	4.2 (10)	100 (240)
Bengal gram whole		1.7(6)	7.5 (18)	27.9 (67)	54.6 (131)	7.5 (18)	100 (240)
Black gram dhal	1.3(3)	1.7 (4)	8.2 (20)	34.2 (82)	39.6 (95)	15.0(36)	100 (240)
Black gram Whole		5.0 (12)	6.6 (16)	36.3 (87)	37.1 (89)	15.0 (36)	100 (240)
Green gram dhal			9.2 (22)	29.1 (70)	42.5 (102)	19.2 (46)	100 (240)
Green gram whole		1.3 (3)	0.8 (2)	13.8 (33)	65.8 (158)	18.3(44)	100 (240)
Lentil		2.9 (7)	2.9 (7)	32.4 (78)	39.6 (95)	22.1(53)	100 (240)
Cowpea		1.3(3)	4.2 (10)	22.5 (54)	50.8(122)	21.3(51)	100 (240)
Rajmah		1.3 (3)	3.3 (8)	14.6 (35)	55.8 (134)	25.0 (60)	100 (240)
Soy bean			1.7 (4)	2.9(7)	32.5(78)	62.9(151)	100 (240)
Horse gram					46.3(111)	53.7(129)	100 (240)

Table 6: Consumption, Requirement and Production figures

Foods	Consumption			Production	
	g/ day/ PCU	RDA g/day	% meeting requirement	Production 2018	% meeting requirement
Pulses	33.3	60	55.5	54.5	90.8
Cereals	277	400	69.3	438.4	109.6

Table 7: Beliefs of about Pulses

Concepts	Type of pulse	No	%
Heat producing , Good for consumption	Red gram	210	87.5
Removes heat	Green gram dhal ,whole	110	45.8
Creates joint pains	Cowpea, Bengal gram	128	53.3
Produces gas	Bengal gram	109	45.4
Pus is formed on wounds	Bengal gram	200	83.3
Difficult to digest	Rajmah, whole bengal gram	159	66.3